Western Michigan University is located in Kalamazoo, midway between Chicago and Detroit. Three major highways, Amtrak, commercial airlines, and numerous bus routes connect the city with other midwestern cities. The population of Kalamazoo is 79,146. Kalamazoo County has a population of 217,630.

The provisions of this catalog are not an irrevocable contract between the student and the University. The University reserves the right to change any provision or requirement at any time within the student’s attendance. The University further reserves the right to ask the student to withdraw for cause at any time.

Western Michigan University requires that all students demonstrate appropriate skills in reading, writing, mathematics, and computer literacy before the awarding of any degree. These requirements may be met, at the discretion of the University, through regular courses of study or special testing.

Western Michigan University retains the right to rescind any WMU degree which was improperly obtained. Before taking any such formal action, however, the University will provide appropriate due process rights to the degree holder.

It is the policy and commitment of Western Michigan University not to discriminate on the basis of race, sex, sexual orientation, age, color, national origin, religion, or handicap in its educational programs, student programs, admissions, or employment policies. Western Michigan University complies with all requirements of Title IX of the 1972 Education Amendments, Executive Order 11246 as amended, and Section 504 of the Rehabilitation Act of 1973.

Copies of the complete Western Michigan University Undergraduate Catalog are available for examination at most high schools, libraries, other state universities, community colleges, and state government offices. Each entering student, freshman or transfer, is entitled to one copy without charge. Additional copies are available during business hours at Western's Campus Bookstore, and on evenings and weekends at the Information Center in Seibert Administration Building. The cost is $2.00 each.

Changes in administration and instruction may be made after the publication date.
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About Western Michigan University

Accreditation

In 1915 Western Michigan University was placed on the approved list of the North Central Association of Colleges and Secondary Schools. The following year it was approved by the organization which, in time, evolved into the present National Council for Accreditation of Teacher Education. The National Council for Accreditation of Teacher Education has accredited the following programs: bachelor's and master's programs for teacher preparation in elementary, secondary, special education, and K-12 education, educational specialist, and doctorate programs in science education and special education; master's program in reading, and master's, educational specialist, and doctoral programs in educational leadership and counseling. Programs in the Department of Art are accredited by the National Association of Schools of Art and Design. Programs in the College of Business are accredited by the American Assembly of Collegiate Schools of Business. Programs in the Department of Chemistry are accredited by the American Chemical Society. The computer science-theory and analysis major in the Department of Computer Science has been accredited by the Computing Sciences Accreditation Board, Inc. The baccalaureate programs in computer systems engineering, electrical engineering, industrial engineering, and mechanical engineering are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. Programs in the Department of Counselor Education and Counseling Psychology have been accredited by the Council for Accreditation of Counseling and Related Educational Programs. Programs in the School of Music are accredited by the National Association of Schools of Music. Programs in the Department of Occupational Therapy are accredited by the American Medical Association and the American Occupational Therapy Association. The Physician Assistant Program is accredited by the American Medical Association Committee for Allied Health Education Accreditation. Programs in the School of Social Work are accredited by the Council on Social Work Education. Programs in the Department of Speech Pathology and Audiology are accredited by the American Council on Professional Standards of the American Speech-Language-Hearing Association.

Western Michigan University is a member of the American Association of Colleges for Teacher Education, American Council on Education, and American Association of State Colleges and Universities, and is on the approved list of the American Association of University Women.

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Founded
1903

President
Diether H. Haenicke, Ph.D.

State Assisted, Co-educational Colleges and Schools
Arts and Sciences
Business Education
Engineering and Applied Sciences
Fine Arts
School of Music
General Studies
The Graduate College
Health and Human Services
School of Social Work

Governing Body
Under the Michigan Constitution of 1963, Western Michigan University has constitutional status, with its own Board of Trustees appointed by the Governor.

Educational Goals
To develop in each student the ability to think objectively and critically, to assess the validity of the information that is presented, respond to our environment, and communicate clearly and effectively; to introduce the student to the world in which the educated and responsible citizen must live; to provide the student with a foundation for tenable values; to provide the student with sufficient knowledge in a discipline, or a group of related disciplines, so as to have an understanding of its methodology, some initial competence in the field, and an appreciation of the vastness of the knowledge still to be explored.
## 1987-88 Calendar

### Fall Semester, 1987
- August 31, Monday: Advising Day
- September 1, Tuesday: Final Registration
- September 2, Wednesday: Classes Begin
- September 7, Monday: Labor Day Recess
- October 9, Friday: Classes Dismissed, 2 p.m. (Laboratories excepted)
- October 10, Saturday: Homecoming
- October 30, Friday: Last Day to Withdraw Without Academic Penalty
- November 25, Wednesday: Thanksgiving Recess (Noon)
- November 30, Monday: Classes Resume
- December 14-18, Monday-Friday: Final Examination Week
- December 19, Saturday: Semester Ends
- Commencement (11 a.m.)

### Spring Session, 1988
- April 30, Saturday: Final Registration
- May 2, Monday: Classes Begin
- May 27, Friday: Last Day to Withdraw Without Academic Penalty
- May 30, Monday: Memorial Day Recess
- June 18, Saturday: Commencement (11 a.m.)
- June 21, Tuesday: Session Ends

### Summer Session, 1988
- June 28, Saturday: Final Registration
- May 2, Monday: Classes Begin
- July 26, Friday: Last Day to Withdraw Without Academic Penalty
- August 20, Saturday: Session Ends

### Winter Semester, 1988
- January 2, Saturday: Final Registration
- January 4, Monday: Classes Begin
- February 26, Friday: Last Day to Withdraw Without Academic Penalty
- March 7, Monday: Semester Recess
- March 14, Monday: Classes Resume
- April 1, Friday: Recess—all day
- April 18-22, Monday-Friday: Final Examination Week
- April 23, Saturday: Semester Ends
- Commencement (11 a.m.)

## 1988-89 Calendar

### Fall Semester, 1988
- August 29, Monday: Advising Day
- August 30, Tuesday: Final Registration
- August 31, Wednesday: Classes Begin
- September 5, Monday: Labor Day Recess
- September 30, Friday: Classes Dismissed, 2 p.m. (Laboratories excepted)
- October 1, Saturday: Homecoming
- October 28, Friday: Last Day to Withdraw Without Academic Penalty
- November 23, Wednesday: Thanksgiving Recess (Noon)
- November 28, Monday: Classes Resume
- December 12-16, Monday-Friday: Final Examination Week
- December 17, Saturday: Semester Ends
- Commencement (11 a.m.)

### Spring Session, 1989
- April 30, Saturday: Final Registration
- May 2, Monday: Classes Begin
- May 27, Friday: Last Day to Withdraw Without Academic Penalty
- May 30, Monday: Memorial Day Recess
- June 18, Saturday: Commencement (11 a.m.)
- June 21, Tuesday: Session Ends

### Summer Session, 1989
- June 28, Tuesday: Final Registration
- July 4, Monday: Independence Day Recess
- July 29, Friday: Last Day to Withdraw Without Academic Penalty
- August 20, Saturday: Session Ends

### Winter Semester, 1989
- January 3, Tuesday: Final Registration
- January 4, Wednesday: Classes Begin
- March 3, Friday: Last Day to Withdraw Without Academic Penalty
- March 6, Monday: Semester Recess
- March 13, Monday: Classes Resume
- March 24, Friday: Recess—All Day
- April 17-21, Monday-Friday: Final Examination Week
- April 22, Saturday: Semester Ends
- Commencement (11 a.m.)
### Spring Session, 1989
- **April 29, Saturday**: Final Registration
- **May 1, Monday**: Classes Begin
- **May 26, Friday**: Last Day to Withdraw Without Academic Penalty
- **May 29, Monday**: Memorial Day Recess
- **June 17, Saturday**: Commencement (11 a.m.)
- **June 21, Wednesday**: Final Registration

### Summer Session, 1989
- **June 27, Tuesday**: Classes Begin
- **July 4, Tuesday**: Independence Day Recess
- **July 28, Friday**: Last Day to Withdraw Without Academic Penalty
- **August 19, Saturday**: Session Ends

### Calendar

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Admission

Western Michigan University admits students whose educational backgrounds indicate a high probability for success in college work. Application may be made for any semester or session by degree bound, first time freshmen or transfer students. By nondegree bound guests attending another university or adult, nondegree bound applicants to degree programs will depend heavily on previous academic records.

In its quest for academic excellence, the University recognizes the need for educational opportunities for people of widely varying ages and backgrounds. Therefore, admission programs will be available for potentially successful students from: completed college, culturally deprived, or economically impoverished segments of society. In addition, the University will seek to provide enrollment opportunities to adults returning to school after a considerable absence.

Admission to Western Michigan University is non-discriminatory. For a full statement of factors not included in admission decisions, see page one of this catalog.

Degree Bound Students

FRESHMEN
To be considered for freshmen admission, with no previous college work, students should:
1. Submit an application (available from high school counselors or the WMU Office of Admissions) with a nonrefundable $15 application fee;
2. Have their high school send an official copy of their transcript directly to the Office of Admissions (transcripts brought or sent by students cannot be accepted); and
3. Make arrangements to take the examinations of the American College Testing (ACT) Program with results sent directly to Western Michigan University (ACT Code 2066). (Note: Students with superior ACT scores may apply through a simplified process. Details will be sent to those who are eligible.)

High school students seeking freshmen admission for the fall semester may apply any time after completion of the junior year of high school. An admission decision may be made on the basis of a six semester high school transcript. A final transcript will be necessary to confirm admission. Students who have already graduated from high school should have their final transcript sent.

Students who have completed a General Educational Development (GED) test should submit official GED scores as well as high school transcripts.

In reviewing applications from prospective freshmen, the University will give primary consideration to high school grades in college preparatory or other academic subjects and scores on the ACT. To give each student the fullest possible consideration, seventh and/or eighth semester transcripts may be required; an admission interview may be requested, and/or individual attributes and special abilities may be considered.

TRANSFERS
To be considered for admission as a transfer from another college or university, students should submit an application (available from community college counseling offices or the WMU Office of Admissions) with a $15 nonrefundable application fee. In addition, they must request that each college they have attended send an official transcript directly to the Office of Admissions at Western. Transcripts brought or sent by the student cannot be accepted as official. If the student has completed fewer than twenty-six college hours, a high school transcript must also be sent.

Transfer students should apply at least one semester prior to the term in which they plan to enter Western for fullest consideration for financial aid and advising/registration. At the latest, applications should be in the Office of Admissions by August 1 for the fall semester, December 1 for the winter semester, April 1 for the spring session, and June 1 for the summer session. If currently enrolled at their previous school, students should have a partial transcript sent. If possible, an admission decision will be made on the basis of the partial transcript with admission confirmed by receipt of an acceptable final transcript. The final transcript must be received within ten days of the student’s enrollment at WMU.

Admissions decisions of transfer students will be made on the basis of previous college work (and high school grades if fewer than twenty-six hours will be transferred). At least a “C” average in transferable work would be required.

Western Michigan University normally accepts work taken at a regionally accredited college or university. Work taken at a college or university accredited by an agency other than a regional accrediting agency (ex: North Central) may be accepted on a provisional basis, subject to validation. The validation process consists of successful, subsequent completion of 26 hours of course work at Western or at another regionally accredited school with a minimum GPA of 2.0. The credit will be awarded after the validation has been completed. Students accepted for transfer to Western will receive an evaluation of their previous college work, showing courses transferred with WMU equivalencies. Course equivalencies for selected institutions and other credit transfer information are available from Western’s Office of Admissions. The student’s academic adviser will determine the applicability of transferred courses to the student’s major.

Grades and honor or quality points are not transferable or recorded on the WMU permanent record. Transferable courses completed at another college will be accepted for credit only. Courses in which “D’s” or their equivalents have been earned will be accepted for credit only if the cumulative grade point average is 2.0 or better in transferable work from the transferring institution. “D” grades may not be used in fulfilling major or minor requirements. Credit earned as “credit by examination” does not normally transfer to WMU.

Transfer students will fulfill University Intellectual Skills Program requirements in writing, reading, and quantification.

Writing: Students who transfer a college level writing course of 2.7 or more semester hours credit (or a sequence of courses that satisfies the college-level writing requirement at the transfer institution) will be exempted from the writing assessment upon entry. These students will be considered to have met the Intellectual Skills college-level writing course requirement. All other transfer students will be placed into a remedial or college-level writing course, according to assessment results.

Reading: Students who transfer thirty semester hours or more of credit with a grade point average of 2.0 or better, or who transfer the equivalent of ED 104, are exempted from the reading assessment upon entry. All other transfer students will have their reading skills evaluated by a standardized test, and may be placed into ED 104, Effective College Reading.

Quantification: Students who transfer a mathematics course at the level of MATH 110 or higher are considered to have entry-level computational skills and need not take the computational skills assessment test upon entry. Further coursework in mathematics is not at this time required to fulfill Intellectual Skills Development Program requirements. All other transfer students may be placed into MATH 109, according to assessment results.

Nondegree Bound Students

ADULT NONTRADITIONAL PERMISSTION TO TAKE CLASSES (PTC)
Students whose education has been interrupted by a period of five years may wish to apply for nondegree PTC status. Students who have attended another institution within the last five years are not normally eligible for PTC admission. Interested students must file an application for admission. The Office of Admissions may request PTC applicants to send transcripts of previous work.
PTC applicants approved by the Office of Admissions may register for any course for which the prerequisites have been met. PTC students generally will take only two courses per semester and are subject to normal University scholarship standards. PTC students may apply for degree admission at any time. Admission standards in effect at the time of degree application will be used in reviewing students’ records.

GUEST STUDENTS
Students who are attending and are in good standing at another college or university may be granted permission to take classes as a guest student at Western Michigan University. Guests are encouraged to check in advance at their home institution so that they may select appropriate courses at Western for transfer. Guest student applications are available from the Office of Admissions or Office of the Registrar at all Michigan colleges and universities.

SENIOR CITIZENS
Persons sixty-two years of age and older may enroll in University classes without charge through the Senior Citizens’ Opportunity Program in Education (Project SCOPE). Such students will be admitted by completing an application for Permission to Take Classes (PTC) status. Additional information is available in the Student Services section of this catalog.

Readmission
Students who have been admitted and attended classes on or off campus, but did not enroll for the following semester, will be eligible to re-enroll for up to one year providing they are in good standing and have not attended another college or university. After one year or if they were admitted but did not enroll, readmission may be completed by filing a readmission form for those in good standing and without subsequent college work. Readmission students who have attended another college of university after leaving Western should have official transcripts sent by those institutions directly to the WMU Office of Admissions. Readmission will be determined by review of all college work taken.

Western Michigan University students who have been dismissed will normally not be readmitted for at least one fifteen-week semester. Dismissed students applying for readmission must complete an application and obtain their academic adviser’s approval before being granted readmission. The University will request evidence that the causes of past academic difficulty have been removed before granting readmission.

FORGIVENESS POLICY
Western Michigan University students who return to their studies after a ten-year or longer absence from Western will be readmitted. At the student’s election, previous hours earned at Western Michigan University, still acceptable in a student’s program, will be counted toward meeting graduation requirements. However, no G.P.A. or honor points will be recorded for these hours. The grade point will be determined from work attempted after the re-entry date of the student. Other university regulations apply. (This policy is only approved for undergraduate students.) Students who believe they qualify for this policy should write to the Registrar’s Office, 3210 Administration Building.

Notification of Admission
Western Michigan University operates on a “rolling admission” process. Notification of admission status is mailed to the student after an application is complete and a decision has been made. Beginning applicants whose high school record clearly meets all admission requirements will be notified immediately that they have been granted tentative early admission. Tentative early admission is automatically confirmed when the student’s final transcript arrives verifying graduation from high school with an acceptable record.

Campus Visits
The University encourages all prospective students to visit campus as part of their college decision making. Appointments are available with admissions counselors, faculty advisers, and other University officials requested by students. Campus tours are available on a daily basis Monday through Friday. Students who wish to visit campus should make arrangements with the Office of Admissions up to ten days in advance of the planned visits.

Admission Interviews
Admission officers may request a personal interview with some students before making a final decision on their applications. The interview can provide information helpful in making the appropriate decision for an individual.

Advanced Placement Program
Western Michigan participates in the Advanced Placement (AP) Program of the College Board. Students who present AP scores of three (3) or higher will receive college credit in the appropriate subject.

College Level Examination Program (CLEP)
1. The general CLEP examination is available only to nontraditional students at WMU.
2. A nontraditional student is defined as a person who has spent a minimum of four years in non-school occupations since attending an educational institution on a full-time (minimum of twelve semester hours) basis.
3. Nontraditional students may take the general CLEP examinations only before completing fifteen hours after entering or re-entering WMU.
4. The following eligibility rules apply to nontraditional students who wish to take the general CLEP examinations:
   • Students who have already received credit for a college writing class cannot receive credit by passing the English examination.
   • If a student passes the humanities exam (with a score of 540 or above), three hours of credit will be awarded.
   • If a student passes the social sciences-examination with a score of 540 or above, three hours of credit will be awarded.
   • If a student passes the foreign language examination with a score of 540 or above, three hours of credit will be awarded.

5. The following guidelines shall apply in the earning of CLEP credit:
   • Students who have received college credit for two courses in any of three areas, the humanities, social sciences, or natural sciences, (excluding mathematics courses), from the Distribution Program of General Education, or comparable transferred courses, cannot receive credit for the respective examinations.

6. A grade of C or better is required on each CLEP examination.

English Competence of Students From Non-English Speaking Backgrounds
Prospective students whose native language is not English will be required to demonstrate proficiency in the English language prior to enrollment in an academic program at Western Michigan University. The University strongly prefers examination through either the Test of English as a Foreign Language (TOEFL) or the Michigan Test of English Language Proficiency (MTEL). Exceptions to these standard tests will require special approval.

To be eligible for unrestricted full-time enrollment in an academic program, a minimum total score of 550 must be achieved on the TOEFL examination. For the MTEL a minimum score of 85 percent is required. Within certain limits, a prospective student who has achieved less than the minimum score for unrestricted enrollment may be allowed to register for courses on a restricted basis, which will include a course of study designed to improve the student’s ability to use the English language. Limits and restrictions for such qualified enrollment will be established and applied by the Office of International Student Services.
Academic Advising

The faculty and administration at Western Michigan University understand that academic advising is a necessary part of undergraduate education. The University has committed many faculty and staff to this essential service, and strongly encourages all students to make full use of the available resources in order to receive the best possible education.

All students should consult with their curriculum advisers who will help them plan their degree programs. Curriculum advisers offer academic advising which includes General Education requirements, specific curriculum requirements, career opportunities, etc. In addition, they offer academic counseling, that is, exploration of alternatives and other educational possibilities. This is a useful and productive means of attempting to match a student’s interests and abilities with an academic program. Curriculum advisers will make referrals to other advising facilties and departmental advisers when it is appropriate. It should be emphasized that it is the student's responsibility to arrange to meet with curriculum and/or departmental advisers. A listing of curriculum advisers may be found in the Schedule of Classes, which is published each semester and session. Students not certain of their curriculum or adviser should contact the Advising Office of the College to which they have been admitted. (See list below.) Students should refer to their Admission Certificates to find out to which curriculum and College they have been admitted.

ACADEMIC ADVISING FOR FRESHMEN STUDENTS

Beginning students admitted for the Fall Semester will receive a written invitation to one of the Orientation sessions held during the summer. Those students admitted for the Winter Semester will be invited to an Advising-Registration Conference, which is scheduled during the advance registration (request for classes) period. During both of these programs, students will have the opportunity to meet with their curriculum advisers, at which time accurate academic information and assistance in requesting classes for their first semester. Students are strongly urged to attend the Orientation session or the Advising-Registration Conference for the comprehensive advising that is available, as well as important campus information that is discussed. Students unable to attend one of the above programs will have to make individual appointments for advising prior to submitting their requests for classes. These appointments are on a limited basis, especially during the advance registration (request for classes) period.

Freshmen admitted for Spring or Summer Sessions should make individual appointments with their curriculum and major/minor advisers, since no Orientation sessions or Advising-Registration Conferences are scheduled prior to the beginning of these enrollment periods.

ACADEMIC ADVISING FOR TRANSFER STUDENTS

Newly admitted transfer students will be invited to one of the Advising-Registration Conferences scheduled especially for transfer students. Invitations to these conferences, usually scheduled prior to the Fall and Winter Semesters, will be sent along with the Admission Certificates, or shortly thereafter. At these conferences, students will be advised as to how transfer courses apply to programs at Western. In addition, students will receive curriculum and major/minor advising, as well as Intellectual Skills Program advising. It is important that transfer students bring their most recent Credit Evaluations to these conferences. Transfer students are urged to take advantage of these conferences for comprehensive advising.

Transfer students unable to attend one of the Advising-Registration Conferences will have to make individual appointments with advisers. However, these are available only on a limited basis during the period of advance registration (request for classes). Students should be aware that the advising will be less comprehensive and may involve appointments with more than one adviser.

Students admitted for Spring or Summer Sessions should make individual appointments with curriculum and major/minor advisers.

COLLEGE ADVISING OFFICES

College of Arts and Sciences, 2060 Friedmann Hall, 383-6122
College of Business, 250 North Hall, 383-3982
College of Education, 2385 Sangiorgi Hall, 383-1840
College of Engineering and Applied Sciences, 2038 Kohrman Hall, 383-0545
College of Nursing, 2146 Dalton Center, 383-8019
College of General Studies, 2090 Friedmann Hall, 383-0941
College of Health and Human Services, B 124 Henry Hall, 383-8116
Honors College, D-1 Hillside West, 383-1787
University Curriculum, 201 Moore Hall, 383-0015

Career Education

All students are urged to make use of the career education facilities of the University for assistance in deciding upon a major and minor, planning for realistic entry-level jobs, and visualizing a career path for the future.

Career counseling and advising are available in the offices of the Testing and Evaluation Services, the Counseling Center, University Placement Services, the Counseling Center for Women, Services, and curriculum and departmental advisers. Two courses directly related to career advising are offered. They are: A-S100, Career Exploration and Development, and CAS 373, Communication Skills and Career Planning. The office of the University Placement Services offers seminars and workshops to assist students in their transition from college to the world of work.

A suggested schedule of career education activities follows.

FRESHMEN AND SOPHOMORES

This is the time for assessment and exploration.

1. Be clear as to why you are in college, what you hope the return on your monetary investment in and motivation to attend classes, and willingness to take responsibility for your own academic progress.

JUNIORS AND SENIORS

This is the time to actively plan for the first job you will hold after graduation.

1. Research various careers for which your educational background would be appropriate, or which interest you but do not require a specific educational background. Read about them, talk to people who are actually working in them, attend meetings and join professional organizations related to them, read publications written by and for these people, or volunteer to work in areas that interest you. Try to find part-time or summer employment so that you can get the feel of what it is like to actually do this kind of work.

2. Get to know your major professors well. They can give you a lot of support, many valuable tips, and may recommend you to future employers.

3. Get involved in campus activities and/or classes that will help you develop the skills you have identified as being necessary to excel in a career which interests you.

4. Start getting familiar with the Placement Services. Talk to the placement counselors, find out how they can help you negotiate the job market. Check on the market projections in your field of interest, learn how to conduct your part of a job interview, learn to write resumes and letters of inquiry and application. Sign up for on-campus interviews. Talk to as many people in your field of interest as you can.

5. Be able to articulate your job objectives—what you want to do, why you feel that you can do it well, and for whom you wish to do it. This vital information will be able to give potential employers.
Student Fees

Fees

ADMISSION VALIDATION DEPOSIT
(Entering Students) A $50 deposit is required of all new, beginning students, transfer students, and former students who have been reactivated for admission on campus for the fall semester. The deposit will be applied toward the student fees in each case and must be paid according to certain prescribed dates, which are provided by the Admissions Office at the time of admission. Refunds of this deposit are also made in accordance with detailed instructions received with the Certificate of Admission.

APPLICATION FEE
A non-refundable payment of $15 must accompany each new application for admission as an undergraduate student or for admission to The Graduate College.

AUDIT FEES
Auditors (students who register for classes but do not desire credit) are governed by the same regulations as students desiring credit.

FACILITY FEE
As a part of total student fees, each student is assessed $2.75 per credit hour for the retirement of bonds issued to construct various student facilities. This amount is included within the hourly tuition rate as described under “Tuition and Fees” in this section.

FLIGHT INSTRUCTION
Based on the courses taken, fees range from $250 to $1,800 per course. For specific course fee information, consult the Department of Engineering Technology.

GRADUATION FEE
A graduation fee of $30 is due and payable at the time a student applies for graduation with the Records Office.

HEALTH FEE
All students* carrying:
- 7 or more credit hours per semester, $36.00
- 4 or more credit hours per session, $18.00
- Plus a $5.00 visit fee for each clinician visit.
- Students enrolled for less than 7 hours per semester (4 hours per session) may buy in at $36.00 or be seen on a fee-for-service basis ($15.00 per clinician visit). Students will be assessed $1.00 per credit hour. This fee is included within the hourly tuition rate as described under “Tuition and Fees.”

*Not applicable to extension and continuing education students. Student fees are subject to change by action of the Board of Trustees. Partial payments will not be accepted.

LATE REGISTRATION FEE
A late registration fee of $20.00 will be assessed each student who registers after the final day of registration established by the Director of Registration. This fee does not apply to those students completing drop-add procedures, only to students who did not register prior to the first day of classes. This fee is a charge for the special handling required. It is not refundable.

Graduate students, if not otherwise enrolled, are assessed for use of University facilities and staff services while completing a master’s thesis, specialist’s project, or a doctoral dissertation, at the rate of $25 a semester or $125 a session.

ROOM AND BOARD
Cost of room and board in 1986-87 is $1,306* for fall semester and $1,371* for winter semester, per student. The rate for room only in those residence halls that do not provide board is $538* for fall semester and $552* for winter semester, per student. A first payment of $175 to be applied toward room and board payment will be required with the signed contract before a housing assignment is made. Note: *Includes $25 deferred maintenance fee.

All prices quoted are on the basis of two or more students per room. Due to the unsettled condition of prices for food, labor, and utilities, the University reserves the right to increase the charge during the year if, in its opinion, such an increase is necessary.

Newly admitted undergraduate students are automatically sent information about residence hall offerings for the semester they anticipate coming to the University. Individuals returning to the University as re-entries, and newly admitted graduate students, will receive information by return mail upon requesting details from the Manager of Residence Hall Facilities, Student Services Building. Residence hall accommodations are not automatically made as a result of admission to the University.

STUDENT ASSESSMENT
A student assessment of $3.00 per semester and $1.50 per session is added to the tuition and fees for 1986-87. This fee is applied toward the student’s fee for use of University facilities while completing a master’s thesis, specialist’s project, or a doctoral dissertation, at the rate of $25 a semester or $125 a session.

TUITION AND FEES
Student fees are assessed on a credit hour basis. See Fee Revisions. Fees per credit hour for 1986-87 are listed below. The amount shown includes general purpose, facility fee ($2.75 per hour), and the student health service fee ($1.00 per hour).

Resident Undergraduate—Lower Division, $49.25
Resident Undergraduate—Upper Division, $54.00
Resident Graduate, $68.25
Non-Resident Undergraduate—Lower Division, $123.25
Non-Resident Undergraduate—Upper Division, $135.25
Non-Resident Graduate, $165.00

By utilizing the following services, which are explained in more detail on succeeding pages, you will be able to fully integrate your academic education with career education.

Testing and Evaluation Services,
D-4 West Hillside
383-0955
Counseling Center,
2510 Faunce Student Services Building
383-1850
University Placement Services,
B Wing Ellsworth Hall
383-1710
College Advising Offices
Departmental Advising Offices
Those undergraduate students who have not completed fifty-six credit hours by the start of each semester/session will be classified Lower Division. Those undergraduate students who have completed fifty-six credit hours will be classified as Upper Division.

UNIVERSITY COMPUTER FEE
Effective with the spring session 1987, a University computer fee will be assessed to all students registered for on-campus courses as follows:
- Fulltime (those enrolled for 7 or more credit hours per semester or 4 or more credit hours per session)
  - Fall and Winter, $50.00
  - Spring and Summer, $25.00
- Part-time
  - Fall and Winter, $25.00
  - Spring and Summer, $12.50

Fee Revisions
Fees and costs pertain to the 1986-87 academic year, except as noted, and are subject to change by action of the Board of Trustees. Questions concerning current fee schedules should be directed to the Office of the Controller.

Complete Withdrawal From All Courses
Students completely withdrawing from all classes must report to the information desk at the Drop/Add Center or to the Academic Records Office during the official drop/add days in order to process their withdrawal and assure a 100 percent refund.

Students who find it impossible to be on campus to process a complete withdrawal may call the Academic Records Office at 383-1770 during office hours or write to the Academic Records Office, Room 3210 Administration Building, for aid in processing their withdrawal. All written requests for complete withdrawal must bear the appropriate postmark date for consideration of the 100 or 50 percent refund (see refund policies).

Refund Schedule
FOR COMPLETE WITHDRAWAL
100 percent of the student fees will be refunded through the end of the final day for adding a course. 50 percent will be refunded from the end of the final day for adding a course through the fifth week of classes in a semester or second week in a session. Refunds to students who made an admission deposit will be reduced by the $50 deposit.

Note: The refund date will normally be determined by the date that the Registrar receives a Change of Enrollment Request form or an Appeal to Withdraw form.

FLIGHT INSTRUCTION FEES
Refund of flight instruction fees will be made in accordance with the policy established by the Department of Engineering Technology.

Refunds
STUDENT FEES
Changes in student credit hour load prior to the end of the final day for adding a course are considered to be reassessments, and a refund will be granted, in full, for any net reduction in the credit hour load. An increase in credit hour load will result in an upward adjustment of the fee assessment.

Residency
The following policy adopted by the Board of Trustees of Western Michigan University applies to all students:

1. Since normally a student comes to Western Michigan University for the primary or sole purpose of attending the University rather than to establish a domicile in Michigan, one who enrolls in the University as a non-resident shall continue to be so classified throughout his or her attendance as a student, unless and until he or she demonstrates that his or her previous domicile has been abandoned and a Michigan domicile established.

2. The residence of a student who is a minor follows that of his/her parents or legal guardians, except that a minor student who comes to the institution from another state or country cannot be registered as a resident of this state on the basis of having a resident of this state as a guardian, except on permission of the Board of Trustees.

3. No student 18 years of age or older shall be eligible for classification as a resident unless the student shall be domiciled in Michigan and has resided in Michigan continuously for not less than one year immediately preceding the first day of classes of the term for which classification is sought.

4. A student shall not be considered domiciled in Michigan unless the student is in continuous physical residence in this state for one year and intends to make Michigan his/her permanent home, not only while in attendance at the University but thereafter as well, and has no domicile elsewhere.

5. The residency of a student who otherwise would be classified as a resident will follow that of his or her spouse if the spouse would qualify as a resident for tuition purposes.

6. An alien lawfully admitted for permanent residence in the United States, who has obtained a permanent visa, and the spouse and minor children, who have met the other requirements herein for residence, may register as residents of this state.

Please note that the deadline for applying for a change in resident classification is 20 days after the first day of classes for each semester or session. Any questions concerning residency classification should be directed to the Controller’s Office, 3082 Seibert Administration Building, Telephone: 383-1605.

Financial Aid and Scholarship Assistance
Western’s Office of Student Financial Aid and Scholarships administers the Michigan Competitive Scholarship and University scholarship programs, as well as the Pell Grant, Supplemental Educational Opportunity Grant, Supplemental Western Assistance Grant, federal and state College Work-Study, and long- and short-term loan programs.

The information in this section describes scholarship and financial aid programs and criteria for the 1986-87 awards. Awards and federal and state regulations require changes in these programs for the 1987-88 and subsequent award years. The University will be responsible for administering these programs according to updated descriptions and criteria.

The scholarship program at Western Michigan University rewards academic excellence. Beginning freshmen who take part in the annual Medallion Scholarship Competition receive scholarships of $750 to $5,000 a year. A $500 scholarship for beginning freshmen and transfer students is based on grade point average as computed by the WMU Office of Admissions and does not require an application, other than admission to WMU.

Recipients of an annual $1,500 WMU scholarship for transfer students are selected by Michigan community college presidents. Students transferring to WMU with a superior grade point average and an associate’s degree are automatically considered for an annual $3,000 WMU scholarship.

WMU and sponsored scholarships are also available for current WMU students. Application forms for most of these scholarships are available at the Office of Student Financial Aid and Scholarships.

Students at Western may also apply for scholarships in their field of interest through their academic department. These scholarships are offered by individuals and by local and national industries in recognition of Western’s unique contribution to many fields of study.

Nontraditional undergraduate and graduate students may apply for several scholarship and grant programs. Information concerning graduate fellowships, associateships, and assistantships may be obtained from The Graduate College.

Employment opportunities, both on and off campus, are available to students at Western. On-campus opportunities include regular University employment and College Work-Study employment. Internships provide career-related work experience and may offer summer or part-time employment or may stipulate that the student alternate a semester of work with a semester of school attendance. Information is available from the WMU Student Employment Referral Service and from WMU departments.
Several kinds of loans are available at Western, including the following long-term loan programs: Perkins Loan (formerly National Direct Student Loan), Guaranteed Student Loan, Michigan Direct Student Loan, United Student Aid Fund, Parent Loan, and Supplemental Loan for Students.

The Office of Student Financial Aid and Scholarships also administers the WMU Short-term Loan Program which provides emergency funds for WMU students enrolled at least part time.

Federal, State of Michigan, and WMU Gift, Employment, and Loan Opportunities Based on Need

Eligibility for Financial Aid

The family’s ability to contribute to the cost of education affects the amount of aid a student can receive. In determining the amount of the family’s expected contribution, the following are taken into account: the parents’ adjusted gross income and/or the student’s income, Social Security benefits, Aid to Dependent Children, Michigan residence, and family assets.

Federal Aid Programs

Pell Grant, Supplemental Educational Opportunity Grant, Guaranteed Student Loan, Perkins Loan (formerly National Direct Student Loan), and College Work-Study.

Eligible applicants for federal aid are:
1. Citizens or permanent residents of the United States
2. For the Pell Grant program and for the Guaranteed Student Loan, Michigan State Direct Student Loan, and United Student Aid Fund programs, students enrolled at least half time, carrying a minimum of six undergraduate or five graduate credit hours each academic semester.
3. For the Guaranteed Student Loan and Perkins Loan (formerly National Direct Student Loan), College Work-Study Program, Michigan Educational Opportunity Grant, Michigan Competitive Scholarship, Michigan Adult Part-Time Grant, Michigan College Work-Study Program, or Supplemental Western Assistance Grant, students must submit the Family Financial Statement to the American College Testing (ACT) service. This form is available from high school principals and counselors, from Western's Office of Student Financial Aid and Scholarships, or from any other higher education institution.

State of Michigan Aid Programs


Eligible applicants for State of Michigan aid are:
1. U.S. citizens or permanent residents who are Michigan residents
2. Students enrolled full time, carrying a minimum of twelve undergraduate or nine graduate credit hours each academic semester.
3. For the Michigan Adult Part-Time Grant program, students enrolled for three to eleven hours a semester.

WMU Aid Programs

Supplemental Western Assistance Grant and WMU Nontraditional Student Scholarship

Eligible applicants for WMU aid are:
1. For the Supplemental Western Assistance Grant, U.S. citizens or permanent residents.
2. For the Nontraditional Student Scholarship, U.S. citizens or permanent residents who are Michigan residents.
3. For the Nontraditional Student Scholarship, students who have been out of high school for at least two years, and students who have been admitted to a degree or certification program or who will gain admission status by the end of the semester awarded.

Guidelines also require that students applying for federal, state, or WMU aid programs make satisfactory academic progress at the institution where they will receive the aid.

Michigan Competitive Scholarship—Students who authorize their Family Financial Statement to be forwarded to the Michigan Competitive Scholarship program and who meet the other eligibility criteria will be notified of their scholarship award by the Michigan Competitive Scholarship program.

Michigan Adult Part-Time Grant—In addition to their Family Financial Statement, students should submit to WMU a nontraditional award application available from the WMU Office of Student Financial Aid and Scholarships, and who meet the other eligibility criteria will be notified of their scholarship award by the Michigan Competitive Scholarship program.

WMU Nontraditional Student Scholarship—Students must submit to the Office of Student Financial Aid and Scholarships a nontraditional award application available from the WMU Office of Student Financial Aid and Scholarships, and who meet the other eligibility criteria will be notified of their scholarship award by the Michigan Competitive Scholarship program.

Eligibility for Federal Aid:

Students transferring to Western also submit a Financial Aid Transcript form from all schools attended after high school. These schools list the aid a student has received or state that the student has not received aid. Financial Aid Transcript forms are available from the Office of Student Financial Aid and Scholarships.

Students selected for verification by the federal government may be asked to provide additional information including:

• Dependent Students
1. Signed copies of the parents’ federal 1040s (all pages and schedules) for the year immediately preceding the award year.
2. Self-Supporting Students
1. A signed copy of the student’s (or student and spouse’s) federal 1040 (all pages and schedules) for the year immediately preceding the award year.
2. In some cases, a signed copy of the parents’ federal 1040 (all pages and schedules).

• Dependent and Self-Supporting Students
1. Records of untaxed income, such as Aid to Families with Dependent Children benefits, Social Security benefits, Veterans Administration benefits, unemployment compensation, and child support payments.

The student’s name and social security number must be written on the upper right corner of all parental information documents so that accurate filing is possible.

On March 1 of each year, the Office of Student Financial Aid and Scholarships will begin awarding funds to students whose Family Financial Statement is postmarked to ACT, Iowa City, Iowa, by March 1 of the year preceding the award year.

Western’s Office of Student Financial Aid and Scholarships ordinarily will
award first Pell Grant, then other grants, employment, and loan programs, provided students have sufficient financial need and meet other program eligibility requirements.

**Financial Aid Programs**

**Pell Grant**
This program entitles eligible undergraduate students to grants of $105 to $2,300 for each academic year.

The student’s Pell Grant index number, the cost of education figure, and the number of hours for which the student registers (half-time, three-quarter time, or full time) determine the amount of the student’s Pell Grant.

Students whose financial situation has recently changed for the worse because of death, divorce, separation, or loss of income should read the criteria for filing the Special Condition Application for Federal Student Aid form. Those who meet any of the special conditions should file the form, which is available from high schools, WMU’s Office of Student Financial Aid and Scholarships, or any other higher education institution.

**Supplemental Educational Opportunity Grant**
This program, designed for exceptionally needy undergraduate students, provides grants of $200 to $1,000 for each academic year. Both dependent and self-supporting students are eligible to participate in this program.

**Michigan Educational Opportunity Grant**
This state program, designed to assist exceptionally needy undergraduate students who are residents of the state of Michigan, provides grants of $200 to $1,000 for each academic year.

Both dependent and self-supporting students are eligible to participate in this program.

**Michigan Adult Part-time Grant**
This state program, designed to assist exceptionally needy undergraduate students who are Michigan residents, provides grants of up to $200 for each academic year.

**Michigan Work Study**
This federal program funds employment opportunities for needy undergraduate and graduate students.

**Michigan College Work Study**
This state program funds employment opportunities for needy undergraduate and graduate students who are residents of the state of Michigan.

The WMU Student Employment Referral Service places students awarded College Work Study in campus jobs across the University. When possible, students select jobs related to their degree programs or interests.

Students work from eight to twelve hours a week while attending school and may earn up to $1,200 for the academic year.

**Michigan Guaranteed Student Loan**
This federal program ensures that students who are residents of Michigan unable to obtain a Michigan Direct Student Loan, participate in this program.

The names of participating institutions can be obtained from the United Student Aid Fund, Inc., 1800 Broadway, Indianapolis, Indiana 46202. The same conditions apply to this loan as to the Guaranteed Student Loan.

**Perkins Loan (formerly National Direct Student Loan)**
Under this program undergraduates may borrow up to $4,000 through their sophomore year and up to $7,000 after two years of their undergraduate career. Graduate students may borrow a maximum of $18,000 including undergraduate loans. The interest is 5 percent.

Repayment of the loan plus interest begins six months after the student ceases to be enrolled at least half-time, carrying six undergraduate or five graduate credit hours each semester. The minimum repayment is $30 a month.

A portion of the student’s loan, both principal and interest, may be canceled for each year the student teaches full time in:

1. A school designated by the United States Secretary of Education as having a high enrollment of students from low income families, or

2. A school for physically, mentally, or emotionally handicapped children according to the following schedule: 15 percent for the first year, 20 percent for the second and third year, 30 percent for the fourth year.

Note that:

- Fifteen percent of the loan (principal and interest) may be canceled for each year that the student teaches full-time in the Headstart Program, up to the whole loan amount.

- The student’s loan can be canceled at the rate of 12 1/2 percent for each complete year of service in the Armed Forces of the United States (in an area of hostilities that qualifies for special pay) up to 50 percent of the loan amount.

- The student’s total disability or death cancels the loan.

- The student may defer payment up to three years for service in the Peace Corps.

Michigan State Direct Student Loan
Michigan residents who have been denied a Guaranteed Student Loan are eligible to apply for the Michigan Direct Student Loan Program.

For the purposes of this program, a Michigan resident either (1) is dependent upon the support of parents or guardians who reside in and are legal residents of Michigan at the time of application for the loan, or (2) is independent of the support of parents or guardians and has resided in Michigan for not less than twelve consecutive months immediately prior to application for the loan.

The Michigan State Direct Student Loan is, in effect, a guaranteed student loan from the State of Michigan. The application process and form are the same as for the Guaranteed Student Loan, the difference is that instead of hometown lenders, the state issues the funds.

**United Student Aid Fund**
Students unable to qualify for a Perkins Loan (formerly National Direct Student Loan) and unable to obtain a Michigan Direct Student Loan or Guaranteed Student Loan, or non-residents of Michigan unable to obtain a federally guaranteed loan in their own state, may apply to their local lending institution which participates in this program. The names of participating institutions can be obtained from United Student Aid Funds, Inc., 1800 Broadway, Indianapolis, Indiana 46202. The same conditions apply to this loan as to the Guaranteed Student Loan.

**Federal and WMU Loan and Employment Opportunities Not Based on Need**
Federal opportunities include: Parent Loan (PLUS), Supplemental Loan for Students (SLS), and Congressional Teacher Scholarship programs.
Eligible applicants for federal opportunities include:
1. U.S. citizens or permanent residents.
2. Students who are not in default on student loan payments and who do not owe student grant refunds.
3. For the Parent Loan (PLUS) and the Supplemental Loan for Students (SLS) programs, students enrolled at least half time, carrying a minimum of six undergraduate or five graduate credit hours a semester (fall/winter), and three undergraduate or graduate credit hours a session (spring/summer).
4. For the Congressional Teacher Fellowship, students who are enrolled full-time, and students who have graduated or who will graduate in the top ten percent of their high school class. (Students who possess a GED may also apply.) Applicants must be U.S. citizens or permanent residents who are Michigan residents.
5. For women and men who are members of the Armed Forces a variety of educational assistance programs are available.

WMU opportunities include: Student Employment Referral Service, Professional Practice Services, the Academic Management Services Plan, and the WMU Short-Term Loan Program.

Eligible applicants are:
1. WMU students who are enrolled for one or more undergraduate or graduate credit hours a semester or session.
2. For the WMU Short-Term Loan Program-WMU students who have no financial obligations outstanding to the University.

Non-Need Based Opportunities

Loans
Supplemental Loan for Students
Self-supporting graduate and undergraduate students who are not eligible for a Guaranteed Student Loan or for a Michigan State Direct Student Loan may apply for a Supplemental Loan for Students. Because repayment arrangements vary widely from lender to lender, students should contact their lender for repayment details.

Supplemental Loan for Students application forms are available from the student’s hometown bank, savings and loan association, or credit union.

Parent Loan
Parents of dependent undergraduate and graduate students who do not qualify for the Guaranteed Student Loan or the Michigan State Direct Student Loan may apply for a Parent Loan. To be eligible, students must be registered at least half time, carrying six undergraduate credit hours or five graduate credit hours a semester.

While the application process is the same as for the Guaranteed Student Loan, approval and repayment procedures are different. Lenders determine the criteria for making Parent Loans, and borrowers begin repayment sixty days after the loan is disbursed. For the 1986-1987 academic year, interest rates for Parent Loans were 12 to 14 percent.

Parent Loan application forms are available from a hometown bank, savings and loan association, or credit union.

Payment Plan
The Academic Management Services Plan allows parents and students to pay tuition, fees, and on-campus housing costs on a monthly basis. The plan involves no interest payments and may be renewed annually for $45. Contact AMS toll free at 1-800-556-6684 or write: Academic Management Services, Incorporated, 1110 Central Avenue, P.O. Box 1000, Pawtucket, Rhode Island 02862-1000.

WMU Short-Term Loan Program
Western’s Office of Student Financial Aid and Scholarships provides emergency short-term loans to WMU students who are enrolled for one or more credit hours. Both graduate and undergraduate students who have no financial obligations outstanding to the University may apply.

The maximum amount of the loan depends on the student’s classification and the purpose of the loan. In most cases, the maximum for a personal loan is $100, and the maximum for a tuition loan is $500. A modest simple interest rate of 5 percent is charged for most short-term loans, and the duration of the loan generally does not exceed ninety days.

The loan funds listed below have been established by University alumni, faculty, staff, and friends. Some funds specify curriculum, academic rank, or geographic location. Application must be made in person to the WMU Office of Student Financial Aid and Scholarships.

- A U.W. Graduate Social Work Fund
- A U.W. Nursery Education Loan Fund
- Alpha Beta Epsilon, Xi Chapter, Loan Fund
- Alumni Short-Term Loan Fund
- Robert Anderson Memorial Loan Fund
- Associated Women Students Loan Fund
- AUSCO Loan Fund
- Fannie Ballo Memorial Fund
- Robert B. Barr Loan Fund
- John L. Benidix Memorial Loan Fund
- Amelia Biscomb Memorial Loan Fund
- William R. and Emma Wales Brown Student Loan Fund
- Ernest Burgham Rural Loan Fund
- Chapman Student Loan Fund
- Class of 1936 Loan Fund
- College of Applied Sciences Loan Fund
- Communications Arts and Sciences Loan Fund
- Dorothy Dalton Loan Fund
- Delta Kappa Gamma Alpha Psi Loan Fund
- Delta Sigma Theta Loan Fund
- Vesta and Irene Dima Loan Fund
- The Gordon and Ferne Efferdink Loan Fund
- Frank Fatzinger Memorial Loan Fund
- Michael Finley Memorial Loan Fund
- Foreign Student Aid Loan Fund
- James Gardner Memorial Loan Fund
- Marie Harik Loan Fund
- Harry Bringham Loan Fund
- Leroy H. Harvey Memorial Loan Fund
- Eunice E. Herald Home Economics Loan Fund
- Decime M. Herman Debate Loan Fund
- Hilites Buyers Guide Loan Fund
- John C. Hoekje Loan Fund
- Honors College Loan Fund
- Home Economics Memorial Loan Fund
- Donald Huergenza Memorial Loan Fund
- Inter-Fraternity Council Loan Fund
- Frank Fatzinger Memorial Loan Fund
- Frewinn W. James Loan Fund
- Rev. B. Moses James Memorial Loan Fund
- John Jenkins Memorial Loan Fund
- Water Lenny Jenkins Memorial Fund
- Gordon O. Johnson Loan Fund
- Kalamazoo Area Chapter MAECD Loan Fund
- Kalamazoo Ladies’ Library Association Loan Fund
- Kalamazoo Motor Freight Loan Fund

Alice J. Kauffman Loan Fund
Jerome E. Jeane Loan Fund
Kwans Educational Aid Fund
The Dr. Radford Kuykendall Memorial Loan Fund
Alice L. Lefevere Memorial Fund
Elizabeth E. Lichly Loan Fund
Marvel F. Liddy Student Loan Fund
David E. Lingle Memorial Loan Fund
Larry G. Lochet Memorial Fund
M. Dezea Loutzenhiser Short Term Loan Fund
Rayth W. Lower Memorial Loan Fund
Charles H. Maher Loan Fund
R. C. Mahon Foundation Loan Fund
Mildred Maloney Memorial Loan Fund
Jean G. Malstrom Loan Fund
Mathematics Faculty Memorial Loan Fund
William McCracken Memorial Loan Fund in Chemistry
Mexican-American Loan Fund
Migrant Student Loan Fund
Frederick W. Miholic Memorial Fund
Frederick W. Miholic Memorial Fund for Special Education
Muskegon County Retired Teachers Association Loan Fund
Charles S. Nichols Memorial Loan Fund
Occupational Therapy Fund
Omnibus Loan Fund
Dr. Gerald Osborn Memorial Loan Fund
Panhellenic (Grand Rapids) Loan Fund
Panhellenic (Detroit) Loan Fund
Panhellenic WMU Council Loan Fund
Truman A. Pascoe Memorial Fund
Ray C. Pellet Memorial Loan Fund
PIMA (Michigan Division) Loan Fund
Arches S. Potter Memorial Fund
Douglas V. Ratcliffe Memorial Loan Fund
Nellie N. Red Memorial Loan Fund
Raeleigh A. and Vivianne C. Robinson Memorial Loan Fund
Evelyn Underwood Rogers Loan Fund
Dr. Mike L. Sebaly Short Term Loan Fund
Rotary Student Loan Fund
Marian T. Segal Memorial Loan Fund
Marion J. Sherwood Memorial Loan Fund
Katherine Shiver Loan Fund
Sigma Phi Omega Bob Hayes Memorial Fund
Sigma Tau Gamma Memorial Loan Fund
James N. Sleep Memorial Loan Fund
Dorothea Sage Snyder Loan Fund
T. Towner Smith Loan Fund
R. Franklin Smith Memorial Loan Fund
Southwestern State Employees’ Credit Union Loan Fund
Marion R. Spear Occupational Therapy Fund
George Sprau Loan Fund
Kenneth H. Squires Memorial Loan Fund
Mr. and Mrs. J. Fred Staley Fund
State D. A. R. Scholarship Loan Fund
Helen Stabler Fund
Elaine Louise Stevenson Student Loan Fund
Stone D. A. R. Student Loan Fund
Ron Strawser Memorial Loan Fund
Student Loan Fund
Student Service Emergency Loan Fund
Marion Tarnin Memorial French Loan Fund
TAPPI (Kalamazoo Valley Section) Loan Fund
Adrian Trimppe Distributive Education Loan Fund
C. N. Van Deventer Loan Fund
University Dames of WMU Loan Fund
Dr. Charles Van Ripper Speech Pathology and Audiology Loan Fund
Waldo-Feather-Frazier Loan Fund
Dwight B. Waldo Memorial Fund
Walter Wegener Scholarship Loan Fund
James A. Welch Foundation Loan Fund
Mary Howe Watt Student Loan Fund
HeLEN and Bernard Weiss Loan Fund
WMU Language Department Loan Fund
WMU Paper Technology Alumni Association Loan Fund

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FINANCIAL AID AND SCHOLARSHIP ASSISTANCE

WMU Parents Association Loan Fund
WMU Southern California Alumni Loan Fund
Howard A. Loeb Loan Fund
W. Dean Worden Loan Fund
Crystal Werner Memorial Fund

Congressional Teacher Scholarship Program
This federally funded program provides college scholarships to outstanding high school graduates to encourage them to pursue teaching careers at the pre-school, elementary, or secondary school level. The maximum award is $5,000 a year, not to exceed the cost of attendance. The college budgets established for determining eligibility in the Michigan Competitive Scholarship Program will be used to determine the maximum award. Preference for awards will be given to students who demonstrate need, but the amount of the award will not be restricted to need. Awards are limited to four years of undergraduate eligibility.

Application forms are available at high schools, college financial aid offices, and education offices at colleges and universities. Students may also obtain applications from the Michigan Department of Education. In addition to submitting the application, the student must have a financial statement on file with WMU. As an alternative, the student may submit a copy of page one of the parent(s) Federal Income Tax Return, Form 1040 or 1040A for the year preceding the award year. Self-supporting students should attach a copy of page one of their own Federal Income Tax Return form for the year preceding the award year.

Employment
WMU Student Employment Referral Service
The WMU Student Employment Referral Service actively recruits both on- and off-campus employment opportunities. Students may review the jobs listed with the service in room A-100 Ellsworth Hall. Openings include food service and clerical positions of all levels, retail sales positions, and technical positions requiring computer science skills.

Regular University Employment
Students may best obtain regular University part-time employment by directly contacting the areas of the University where they wish to work. Students are employed by WMU departments, offices, libraries, laboratories, residence halls, and by the Bernhard Student Center.

Residence Hall Adviser Positions
Students who are residence hall advisers receive free room and board on campus (single room). Contact the WMU Office of Residence Hall Life at 338-6110 for further information.

Residence Hall Assistant Director Positions
Assistant directors receive free room and board on campus (single room) and $500 a semester. Because assistant directors are responsible for the residence hall in the director’s absence, the position usually requires experience as a residence hall adviser. Contact the WMU Office of Residence Hall Life at 338-6110 for more information.

Professional Practice Services
This service offers a variety of career-related employment opportunities. The service helps students find an existing co-op/internship program or design a program on their own and contact prospective employers. Internships may offer summer or part-time employment or may stipulate that the student alternate a semester of work with a semester of school attendance. Professional Practice Services offers both paid and unpaid internships.

Students may request help from Professional Practice Services by visiting the WMU Student Employment Referral Service in A-100 Ellsworth Hall.

Some WMU departments offer co-op internship programs similar to those offered through Professional Practice Services. Interested students may contact their department advisers and chairpersons.

U.S. Armed Forces Programs
The United States Armed Forces offer women and men a variety of educational assistance programs.

Employment

Professional Practice Services

Western Michigan University Scholarship Programs

Prestigious WMU Scholarships
Western Michigan University awards scholarships on the basis of academic achievement. Financial need is not a criterion. Prestigious WMU scholarships include: the Medallion Scholarship, the WMU Board of Trustees Scholarship, the WMU Academic Scholarship for Beginning Freshmen, the WMU Scholarship for Currently Enrolled Students, and the WMU Academic Achievers Award. In addition to these scholarships, students may hold the Alvin M. Bentley Foundation Scholarship, a Waldo-Sangren Scholarship, a Russell H. Seibert Award, the Elizabeth Durand Hebbert Scholarship, a Clifford and Ella Chapman Distinguished Senior Scholarship, the Edwin and Adelaide Stiflen Scholarship, and the David and Priscilla Norris Scholarship.

WMU Scholarships for Beginning Freshmen

Medallion Scholarship Competition Program
Through the Medallion Scholarship Competition, the WMU Scholarship Committee selects recipients of the Medallion Scholarship, the WMU Board of Trustees Scholarship, the WMU Tuition Scholarship, and the WMU Academic Scholarship. WMU invites high school seniors who have earned a grade point average of 3.70 or above to participate in the competition. High school seniors who have a grade point average of 3.5 as computed by Western and an ACT score of 30 or above may also be selected to participate. The WMU Scholarship Committee also considers extracurricular activities, employment history, and volunteer work.

Competition participants must apply for admission to WMU by January 15 of their senior year of high school.

Medallion Scholarship Competition application forms are available from the WMU Office of Admissions and from high school counselors.

Each competition participant receives either the Medallion Scholarship, the WMU Board of Trustees Scholarship, the WMU Tuition Scholarship, or the WMU Academic Scholarship.

Medallion Scholarship
The Medallion Scholarship, the University’s most prestigious scholarship program for new freshmen, exemplifies Western’s commitment to recognize and encourage superior academic achievement.

Medallion scholars receive $20,000, awarded $5,000 each year of a four-year degree program at Western Michigan University. For 1986-87, Western awarded seven Medallion Scholarships.

Some Medallions carry the name of the donor and are awarded to students entering programs designated by the donor; others are open to students in all degree programs.

WMU Board of Trustees Scholarship
Western Michigan University awards ten Board of Trustees Scholarships each year to beginning freshmen who have not previously enrolled in a post-secondary institution.

This scholarship has a current value of $12,000. $3,000 is awarded each academic year.
The scholarship is based on financial need and freshmen may apply for this $500 one-year award shortly after being admitted to Western.

A minimum of ten WMU Distinguished Community College Scholars Awards are given annually to Michigan residents transferring to Western with an associate’s degree from a Michigan community college. Recipients of this $6,000 scholarship receive $3,000 each academic year.

To be eligible, students must have a grade point average of 3.5 or above for transferable courses and must be admitted to WMU by April 1. Recipients are selected by the WMU Scholarship Committee.

WMU Community College Presidential Scholarship
Michigan community college presidents select the recipients of this $3,000 scholarship, which provides $1,500 each academic year.

To be eligible, students must have a grade point average of 3.5 or above for transferable courses and must be admitted to Western by April 1.

WMU Academic Scholarship for Transfer Students
Students who transfer to WMU with a grade point average of 3.5 or above will be eligible for a $500 scholarship for the academic year. This scholarship is renewable, provided that the student meets credit hour and grade point criteria.

To be eligible, students must be admitted to Western. The University notifies recipients at the time of their admission and continues to make these awards as long as funds are available.

WMU Scholarships for Currently Enrolled Students

WMU Academic Scholarship
Currently enrolled WMU students whose WMU grade point average is 3.25 or above are eligible to apply for this $500 fall/winter semester award. Western awards 4.0 grade point averages and continues awarding down to a 3.25 grade point average as long as funds are available.

Application forms are available at Western’s Office of Student Financial Aid and Scholarships. Selections will be made by a scholarship committee. The amount of the stipend depends on the student’s need and the availability of funds. Awards may be renewed for more than one semester.

Russell H. Seibert Award
The Seibert Fund for WMU undergraduate students provides either a stipend of up to $250 a semester for scholarly projects or a reimbursement of expenses for projects requiring supplies, equipment, or travel. Scholarly projects include student research, teaching assistantships, and assistantships for work with community leaders, artists, or scholars.

Application forms and information may be obtained from the WMU Honors College.

Additional Scholarships for Current Enrolled Students

Waldo-Sangren Scholarship
WMU sophomores, juniors, and seniors who have a grade point average of 3.2 or above may apply for this $2,500 scholarship. To apply, students must submit an innovative project proposal. Projects are usually related to students’ degree programs. The Waldo-Sangren selection committee has awarded projects in disciplines as varied as art, chemistry, music, physical education, oral tradition history, archaeology, nutrition, sociology, and computer science. Recipients carry out their projects under the guidance of faculty sponsors.

Both the Waldo-Sangren brochure and the scholarship application form are available at the Office of Student Financial Aid and Scholarships.

Alvin M. Bentley Foundation Scholarship
An award of up to $2,500 will be granted to a full-time undergraduate approved by the Bentley Foundation. The foundation’s selection criteria include: Michigan residency, scholastic curriculum and achievement, extracurricular activities, proficiency in arts and sciences, leadership qualities, vocational and occupational experiences, financial need, and social and cultural interests. The dean of each WMU college must recommend applicants for this scholarship.

David and Priscilla Morris Scholarship
This scholarship pays WMU tuition and fees for extremely needy undergraduate students. For application details, students may write the scholarship area of Western’s Office of Student Financial Aid and Scholarships or may make an appointment to see a Student Financial Aid counselor.

Elizabeth Durand Hebben Scholarship
This $200-$500 scholarship is initiated by Elizabeth Durand Hebben, who as a WMU student became aware of the many students in financial need. The desire to help these students has resulted in Elizabeth and George Hebben’s continued, generous support of this scholarship.

WMU juniors and seniors with significant financial need may apply for the Hebben scholarship at the Office of Student Financial Aid and Scholarships. Selections will be made by a scholarship committee. The amount of the stipend depends on the student’s need and the availability of funds. Awards may be renewed for more than one semester.

Eliza and Ella Chapman Distinguished Senior Scholarship
The senior class of WMU undergraduate students provides either a stipend of up to $250 a semester for scholarly projects or a reimbursement of expenses for projects requiring supplies, equipment, or travel. Scholarly projects include student research, teaching assistantships, and assistantships for work with community leaders, artists, or scholars.

Application forms and information may be obtained from the WMU Honors College.
WMU College and Departmental Scholarships

College of Arts and Sciences

College of Arts and Sciences Merit Scholarships—The College of Arts and Sciences, from gifts to the Annual Fund of the University, offers merit scholarships for outstanding undergraduate students. Merit scholarships recognize and honor exceptional aptitudes, unusual talents, and achievements beyond their grade point average. Three annual awards of $1000 (divided equally between the fall and winter semesters) will be offered to a student in each of the three divisions of the college. To be eligible a student must be enrolled in a curriculum and major in the college, have at least sophomore standing (twenty-six-credit hours) at the time of award, have a minimum grade point average of 3.5, and not have another WMU scholarship concurrently with this one. The merit scholarships are one-year awards.

Announcements of the scholarships and application dates will be made in January of each year.

Biology and Biomedical Sciences

The Margaret Thomas Du Mond Scholarship Award—This award, established in honor of Mrs. Du Mond, an alumna of the department, by her husband, is available to upperclass biology and biomedical sciences majors with preference given to those who plan to become teachers. The award is granted annually to a student with a grade point average of at least 3.0, demonstrated career potential, and financial need. Contact the Biology Office for information and applications.

The Frank Hinds Zoology Award—This award was established in honor of a dedicated teacher who served WMU for 35 years. The award of $250 is granted annually to a declared department major of sophomore or junior standing that has completed at least three courses in Biological Sciences at WMU, has a grade point average of 2.5 or better, and has an outstanding overall record. Contact the biology office for information and applications.

Hazel Wrinck Botany and Ecology Award—Sponsored by the Kalamazoo Garden Council, this award of $500 is available to upperclass biology majors with a project in the areas of botany or ecology. Contact the chairman of the Department of Biology and Biomedical Sciences.

The Distinguished Senior Award in Biology—The biology faculty selects one or sometimes two outstanding seniors for this award. All biology majors with a grade point average of 3.5 or above are considered; no application is required.

The Distinguished Senior Award in Biomedical Sciences—This award is given to the student judged by the biomedical sciences faculty to be the outstanding senior biomedical sciences major. No application is required.

The Preprofessional Award in Biology—This award is given to the student deemed by the biology faculty to be the outstanding biology major in a preprofessional curriculum. Students with a grade point average of 3.5 are considered; no application is required.

The Merrill Wiseman Award—This award, named in honor of a distinguished teacher who was on the biology faculty for forty years, is made annually to an outstanding student in the field of microbiology, no application is required.

Chemistry

The William McCracken Award—Named in honor of the first head of the chemistry department, is given to a senior who, in the opinion of the chemistry staff, has shown the greatest aptitude in the field of basic chemistry.

The American Institute of Chemists Award—This award is given to a senior majoring in chemistry who has demonstrated scholastic achievement, leadership, and character.

The Merck Index Award—This award is given to an outstanding senior in chemistry who has a good record in chemistry courses.

The Analytical Award—Sponsored by the American Chemical Society, is given to a junior who is outstanding in analytical chemistry.

The Adil Khan Award—Named in memory of a former faculty member, is given to an outstanding senior in physical chemistry, who has a high cumulative GPA in chemistry courses.

The Jensen Award—This award is given to an outstanding junior in physical chemistry, who has a high cumulative GPA in chemistry courses.

The CRC Press Freshman Chemistry Achievement Award—This award is given to a freshman for outstanding academic achievement in general chemistry.

Economics

The Wall Street Journal Award—This award is given annually to the outstanding senior in economics.

English

The George Sprau Award in English—This award is given to outstanding English majors in the junior and senior classes. Up to $500 may be given to a second semester junior who must use the award during the senior academic year. In addition, awards of up to $100 may be given to outstanding English majors in the graduating class.

The Jean and Vincent Malmstrom Scholarship—The purpose of this $500 annual award, provided through the generosity of Jean and Vincent Malmstrom, is to stimulate an interest in the English language and the relevance of the teaching of English and the language arts. Applicants must be seniors or second semester juniors at WMU. The award may contact the chair of the English department.

The Roger F. Nagy Promising Scholarship in English Award—Preference is given to second semester sophomores or first semester juniors. The award will be made in recognition of outstanding promise in the field of English. Normally, recipients will have an overall grade point average of 2.5 with a 3.0 grade point average in English course work or such academic performance requirements as determined by the selection committee.

The Distinguished Senior Award in English—This award is given to an outstanding English major with a grade point average of 3.5 or better, and has an outstanding overall record. Contact the chair of the English department.

The Distinguished Senior Award in Environmental Studies—This award is given to a senior majoring in environmental studies who has demonstrated excellence in environmental science, and who has made significant contributions to the field of environmental studies.

Environmental Studies

The Environmental Studies Scholarship—This $300 annual award, made possible by WMU recycling efforts, is open to environmental studies majors who have completed the Environmental Studies 110 and at least two required classes in the concepts component. Applicants must exhibit scholastic ability and strongly potential for environmental service. Applications may be obtained from the environmental studies office.

Geology

The Department of Geology Development Fund Scholarships in geology and geophysics are available in variable amounts. Senior Honor Awards in geology, earth science, and geophysics are awarded annually to outstanding seniors. The Kalamazoo Geological and Mineral Society Scholarship—This award provides financial assistance to a qualified geology major of junior status who plans to enroll in the six-week summer field course. An honorary one-year membership in the Kalamazoo Geological and Mineral Society accompanies the variable monetary stipend. Information and applications are available from the geology department chairperson.
History

The James O. Krauss History Award—This award was established in honor of a distinguished scholar and teacher who was on the faculty for thirty years and was head of the department for eleven. It is awarded annually to the outstanding faculty member who has the most outstanding record in history.

The Smith Burnham History Award—This award was established to honor a widely known speaker and head of the department for twenty years. It is made annually to the junior history major who has the most outstanding record. The Margaret Macmillan Award—This award is for the best written work (of at least ten pages) by a junior or senior. The Robert H. Russel Award—This award is for the best written work by a graduate student.

Both awards are designed to recognize excellent writing and all students in 200, 500, and 600 level history courses are eligible. The written work must be part of the assigned course work and meet certain grade standards. For information on the complete rules inquire in the History Office.

Languages and Linguistics

President's Award for Study Abroad—The President of WMU has established an annual award of $1,500, to be given to a major in the Department of Languages and Linguistics who wishes to study abroad for the purpose of improving his/her foreign language skills. The award is to be used for an approved program of foreign language study at a foreign university or in a study-abroad program sponsored by an American university. Preference will be given to students who intend to study in a full-year program.

Mathiee Steckelberg Scholarship—This endowment fund, established through the generosity of the late Mathiee Steckelberg, former head of the language department, enables the Department of Languages and Linguistics to recognize outstanding scholarship performance by students majoring in French, German, Spanish, and classical languages. Academic performance and potential in the particular language area will be stressed in the selection of recipients for the four annual, nonrenewable awards.

Victor Coutant Award in Classics—A generous gift by Dr. Victor Coutant, professor emeritus of modern and classical languages, has made possible for the Department of Languages and Linguistics to present an annual cash award to an outstanding student in Latin or Greek, as selected by the faculty of the classics section of the department.

Performance in mythology, ancient history, and/or ancient philosophy may also be considered in the selection of the recipient of the award.

Hermann E. Rothfuss Award in German—An annual cash award for an outstanding student in German has been established in the name of Dr. Hermann E. Rothfuss, professor emeritus of German. The recipient will be selected by the faculty of the German section of the Department of Languages and Linguistics. Academic performance and contributions to German-American understanding will be considered in the selection of the student to receive the award.

Travel/Study Abroad Award—To encourage more foreign language students to travel and study abroad, two to four awards of $500 each will be granted annually by the Department of Languages and Linguistics. Recipients must have an academic record of 3.25 or better in a declared major or minor in the department, and must have submitted an acceptable individual project to be pursued during the travel and study abroad.

Departmental section awards—The following awards are presented annually by the individual sections of the Department of Languages and Linguistics: French—the Prix d'Honneur, par l'Ambassadeur de France (given by the French Embassy to the outstanding student of French in the graduating class); the Prix de l'Alliance Francaise, the Frances E. Noble Prize for Excellence in French, German—the Preis der Bundesrepublik, Latin—the Excellence in Latin Award, Linguistics—the Excellence in Linguistics Award, the Latin Studies Program Award, Spanish—the Herb B. Jones Award for Excellence in Spanish; and several additional awards for excellence in Spanish.

Mathematics and Statistics

The Senior Award—This award is given to the senior major judged by the Department of Mathematics and Statistics to have exhibited the highest proficiency and promise in mathematics and statistics.

The Grover Bartoo Memorial Scholarship—This scholarship is awarded annually to the outstanding junior major.

The Dr. John F. and Nora Everett Award—Annual prizes are awarded to seniors showing outstanding promise as teachers of secondary school mathematics.

Philosophy

The Robert Friedmann Philosophy Prize—This award was established by the Department of Philosophy in honor of the late Robert Friedmann upon his retirement. The award is given annually to the outstanding senior philosophy student.

Physics

The Paul Rood Scholarships—The scholarships of $1,400 for four years are available for physics majors. These scholarships are based on the student’s academic achievement and interest in physics irrespective of financial need. Recipients of these scholarships are also eligible for other forms of financial aid including other WMU scholarships. Application forms may be obtained from the Department of Physics.

The Charles J. Wilcox Memorial Award—This award, made possible by family and friends of a physics graduate student, is given to outstanding graduating seniors majoring in physics.

Copies of A Handbook of Chemistry and Physics are awarded annually to the best students completing the sequence of calculus-based introductory physics courses.

Political Science

Newbery Memorial Scholarship—This scholarship has been established by the League of Women Voters of the Kalamazoo area in memory of Arden J. Elsasser, who gave faithful service to this organization and contributed to the Kalamazoo community. The award, which is made annually, will normally be $300. This amount may vary depending on the availability of funds. Application is open to undergraduate or graduate students in political science at Western Michigan University. Applicants must have a minimum grade point average of 3.0 overall and in political science, and must have second semester junior standing by the end of the term in which the award is granted. Contact the chair of the political science department for information and application requirements.

D. C. Shilling Junior and Senior Scholarship Awards—These annual awards are presented to outstanding political science majors for excellence in scholarship and academic performance. The scholarship is divided into two awards: one for the outstanding junior, and the other for the distinguished graduating senior. The fund that supports the scholarship was established by Mrs. Zoa D. Shilling in memory of her husband, Dr. D. C. Shilling, the first chair of the political science department.

Zoa D. Shilling and D. C. Shilling Junior and Senior Scholarship Awards—These annual awards are presented to outstanding majors in public administration in political science for excellence in scholarship and academic performance. The scholarship is divided into two awards: one for the outstanding junior, and the other for the distinguished graduating senior. The fund that supports the scholarship was established by Mrs. Zoa D. Shilling because of her interest in helping political science students and encouraging scholarly achievement. The fund is putational to her husband, who was the first chair of the political science department.

George Klein Memorial Scholarship Award—An annual award to the political science major who has demonstrated a high level of scholarly achievement and intellectual interest in the fields of international relations and comparative politics. The fund that supports the scholarship award was established in memory of Dr. George Klein through contributions at the time of his death, December 5, 1981. Dr. Klein was a scholar of international reputation and long-time faculty member in the Department of Political Science. His teaching and research focused on international relations and the Soviet Union and Eastern Europe.

Mark Denefield Memorial Endowed Scholarship—An annual award to a beginning junior majoring in political science who has met the basic requirements of, and demonstrated superior academic performance at, WMU, and compiled a record of community service and service to others. The fund that supports the scholarship award was established in memory of Mark Denefield, a graduate of the Department of Political Science, who died in 1985.

Psychology

Departmental apprenticeships and assistantships—The Department of Psychology offers undergraduate teaching apprenticeships and undergraduate practicum assistantships to advanced undergraduate students demonstrating academic excellence and leadership ability within the department's program. Further information may be obtained from the psychology department.

Ann C. Mountjoy Memorial Scholarship—A scholarship awarded annually to an outstanding minority undergraduate major in psychology.

Psychology Alumni Award—A scholarship awarded annually to a psychology major of at least junior standing who has demonstrated academic achievement and professional responsibility in psychology.

Faculty Research Award—This award is presented to the senior psychology major(s) with academic promise and research potential in psychology.
Sociology
Leonard C. Kercher Award—Through the generosity of Dr. Kercher, founder and long-time head (1940-72) of the Department of Sociology, and friends, assistantships of at least $250 a semester are available for outstanding sociology and criminal justice students each year.

Undergraduate assistantships—The department awards up to ten assistantships during the fall and winter semesters each year to sociology and criminal justice students who wish to become more involved in the department’s activities and projects. These students receive a stipend, and are assigned to work for a faculty member or on a department project.

College of Business
General scholarships open to all students in the College of Business
Old Kent Bank Scholarship—This annual award in memory of Robert M. Rogge is given to a student enrolled in any curriculum in the College of Business. The award is based on academic ability and financial need. Apply directly to the College of Business.

First Federal Savings and Loan Association of Kalamazoo Scholarship—This annual award is presented to a student enrolled in the business administration curriculum. The student must exhibit scholastic ability and financial need. Preference is given to students who are residents of western and southwestern Michigan. Apply directly to the College of Business.

College of Business Achievement Awards—These awards are given to outstanding students enrolled in a College of Business curriculum. The awards are financed by general gifts from alumni, and by specific gifts to the College of Business. Apply directly to the College of Business.

Al Pugno Scholarships—An endowment given in memory of Al Pugno supports these scholarships. One or more annual awards are given to students enrolled in any College of Business curriculum. The recipients must exhibit financial need. Apply directly to the College of Business.

Dean Arnold E. and Roseanne Schneider Award—Applies to the College of Business Scholarship Committee.

Zonta Scholarship—Applies to Department of Business Information Systems.

Accountancy
Plante and Moran Scholarship—An annual award by Plante and Moran, Certified Public Accountants, is presented to a student majoring in accountancy for the recipient’s senior year in honor of retired Professor Frederick Everett. Contact the Department of Accountancy.

College of Business Achievement Award—Two annual awards are given to accounting majors for their junior and senior years at Western Michigan University. Contact the Department of Accountancy.

Ernst and Whinney Award—This award is given annually on the basis of scholastic achievement to a student who has majored in accounting. The student’s grades in accounting and overall are the factors considered in making the selection.

William J. Maze, Jr., Beta Alpha Psi Accounting Scholarship—This award is open to juniors and seniors who are active members of Beta Alpha Psi. High academic achievement is a basic criterion for this selection. Contact the Department of Accountancy, College of Business.

Crowe, Chizek & Company Scholarship—Two annual awards are given to accounting majors for their junior year at Western Michigan University. Contact the Department of Accountancy.

Marketing
Dow Marketing Scholarship—Two or more scholarships of $500 each are awarded during the winter semester for the following school year to declared marketing majors who have completed fifty to ninety-five credit hours, who are carrying a minimum of twelve semester hours, and whose cumulative grade point averages are at least 2.5. Also considered are work experience, participation in University and community activities, and faculty recommendations. Awards are available in amounts of $250 a person during registration for the fall semester and again during registration for the winter semester, provided the minimum grade point average of 2.5 and a course load of twelve semester hours are maintained. Application forms must be obtained from, and should be turned into, the marketing department secretary by February 28.

Southwestern Michigan Association of Purchasing Management Scholarship—Two scholarships of $500 are awarded during the winter semester for the following school year to declared industrial or general marketing majors of at least junior class standing, carrying a minimum of twelve semester hours but less than ninety-six hours. Applicants must carry a minimum of twelve semester hours and have a grade point average greater than 2.5. In addition, students must have a demonstrated interest in purchasing. Also considered are work experience, participation in University and community activities, and faculty recommendations. Awards are available upon certification of fall semester registration, provided the minimum grade point average of 2.5, a course load of twelve semester hours, and registration for the industrial or general marketing major have been maintained. Application forms can be obtained from, and should be returned to, the Department of Marketing, College of Business by January 31. Final selection will be made by the board of directors of the Southwestern Michigan Association of Purchasing Management.

Five Advertising scholarships are awarded annually during the winter semester for the following academic year to a declared advertising major who has completed fifty to ninety-six credit hours, who is carrying a minimum of twelve credit hours, and whose...
cumulative grade point average is a minimum of 2.5. Consideration is also given to a demonstrated career interest in advertising/marketing, work experience, participation in University and community activities, and faculty recommendations. Application forms can be obtained from, and should be returned to, the marketing department secretary by February 15.

1. The William R. Biggs/Gilmore Associates, Inc. Advertising Scholarship—This scholarship provides $250 and a paid advertising internship opportunity with the Biggs/Gilmore agency.
3. Ron Haskell Advertising Scholarship—This $100 scholarship is sponsored by the Kalamazoo Exchange Club.
4. Marketing/Advertising Round Table (MART) Scholarship—The Marketing/Advertising Round Table (American Advertising Federation) sponsors this $500 award.
5. Zane Cannon Memorial Scholarship—This scholarship of at least $200 will be awarded each year. Sponsored by memorial gifts in honor of the late Professor Zane Cannon.

GFV Communications Scholarships—One or more scholarships at $1,000 each. Criteria: Majors in Advertising, General Marketing, Industrial Marketing, or Retailing at Western Michigan University. Must have demonstrated dedication and proficiency in the chosen field; two recommendations from Marketing Department faculty, college transcript; written narrative on the reasons for pursuing this career path, career objectives, and a brief autobiography; proven leadership skills, and an interview by a GFV Communications representative.

Robert B. Trader Marketing Scholarship—One scholarship of at least $400 per year.

Criteria: Majors in Advertising, General Marketing, Industrial Marketing, or Retailing; completion of 55 to 95 semester hours; minimum course load of 12 semester hours; cumulative GPA of 3.0; participation in University and community activities, related work experience.

College of Engineering and Applied Sciences

The College of Education awards several scholarships annually to students who might not be recognized through other programs. These awards, ranging in value from $500 to $1,000, are divided equally between fall and winter semesters. A minimum grade point average of 3.0 is required for all awards. Following is a list of the scholarships available and the amount of each.

1. Zora Ellsworth Memorial Scholarship—Two (2) awards of $1,000 each.
2. College of Education Undergraduate Scholarships—Four (4) awards of $1,000 each.
3. Dorothy H. and Cora Hurst Charles Scholarship—One (1) award of $500.
4. College of Education Undergraduate Scholarships—Four (4) awards of $500 each.

Further information regarding these scholarships is available in the dean’s office, College of Education.

College of Engineering and Applied Sciences

Scholarship—A limited number of scholarships is awarded each year to stimulate interest in technology or industrial education. The scholarship is open to all graduating seniors in Michigan high schools who have had at least one course in industrial arts and who plan to enter an engineering or technology curriculum. The award is $1,000 for the first year and is renewable for an additional three years, for a total of $4,000.

Apply to the Department of Engineering Technology.

Robert B. Day Memorial Scholarship—Each spring, the department presents an award to an outstanding student involved in the foundry, foundry, or metallurgy program, who has demonstrated purpose and commitment to one of these three areas. These awards are given in honor and recognition of the late Dr. Day, who actively supported the metallurgical programs during his tenure as a professor at WMU.

Herman Ellinger Scholarship—These $400 awards are designed for students majoring in the automotive technology and management curriculum, but include other automotive areas. Awards may be renewed, based on the student’s achievement and the recommendation of the scholarship committee.

Apply to the Department of Engineering Technology.

Foundry Educational Foundation Scholarship—The Foundry Educational Foundation offers a number of scholarships each year to any technical student having a direct interest in the foundry industry. A student must have FEF registration completed by November 1 each year to qualify. Apply to the Department of Engineering Technology.

Duke Harrah Memorial Scholarship—Four awards of at least $250 each are made each year to students in aviation curricula who have demonstrated academic excellence and leadership in departmental activities.

H. H. Harris Foundation Scholarship—The foundation has made funds available to students in technical programs with an interest in the foundry industry. Awards range from $300 to $2,000. Apply to the Department of Engineering Technology.

Lloyd Hutt Memorial Scholarship—This is open to all graduating seniors in the Grand Rapids Public Schools who have demonstrated ability in the field of industrial arts. The award is $500, divided equally between fall and winter semesters, and may be renewed, based on the student’s achievement and the recommendation of the scholarship committee.

Iron and Steel Society-Detroit Section Scholarship—The $1,000, one-year scholarship is open to second semester freshmen and above who are seeking a career in the ferrous metals or related fields. Apply to the Department of Engineering Technology.

Kal-Blue Reprographics Scholarship—This scholarship is open to undergraduate students enrolled in the engineering graphics curriculum who have a grade point average of 3.0 in graphics classes and a 2.5 overall. Applicants must have completed fifty-six semester hours. The scholarship is $100 for the academic year. Apply to the Department of Engineering Technology.

George Kohrman Scholarship—This scholarship is open to students interested in any engineering technology curriculum who have reached at least junior status. The award of $1,000 for the academic year is renewable based on achievement of at least a 2.5 cumulative grade point average and a 3.25 in required courses offered by the department. Apply to the Department of Engineering Technology.

David Lane Memorial Scholarship—These awards are made each year by the American Die Casting Institute. Selections are made from those students completing the Foundry Educational Foundation requirements. Awards are usually $1,000 each. Apply to the Department of Engineering Technology.

FINANCIAL AID AND SCHOLARSHIP ASSISTANCE 19
Students interested in fashion merchandising at Western. Apply directly to the Fashion Merchandising program in the Department of Consumer Resources and Technology.

### Food Distribution

**Food Distribution Scholarships**—Each year Western offers up to five scholarships to qualified students majoring in food distribution. Amounts are variable. Applications may be obtained from the Department of Consumer Resources and Technology, and awards are announced each November.

**S.C. Johnson Scholarship**—This award is offered to a food distribution major with the highest G.P.A. in the department. The award is $4,000 for one year and is non-renewable. This award is made available by the Johnson Wax Company.

**Julie Kravitz Memorial Scholarship**—This award is granted each year to a student, preferably from the Cleveland, Ohio, area, with a major in food distribution. Awarded to students who have a minimum grade point average of 3.0 and full-time WMU status by the beginning of fall semester when the scholarship begins.

**Mr. and Mrs. C. J. Christoff Scholarship**—This award is offered to a food distribution major with the highest G.P.A. in the department. The award is $4,000 for one year and is non-renewable. This award is made available by the Johnson Wax Company.

**Jules Englebardt Memorial Scholarship**—This award is based on scholarship and need, and is for $1,000, and is renewable.

**Scholarship of the NFBA Foundation Inc.**—This award is based on scholarship and need, and is for $1,000, and is non-renewable. This award is offered to a student from the Cleveland, Ohio, area, with a major in food distribution.

**S.C. Johnson Scholarship**—This award is offered to either a freshman or a senior student each year, is for $1,000, and is non-renewable. This award is based on scholarship and need, is for $1,000, and is non-renewable.

**Julie Kravitz Memorial Scholarship**—This award is granted each year to a student, preferably from the Cleveland, Ohio, area, with a major in food distribution. Awarded to students who have a minimum grade point average of 3.0 and full-time WMU status by the beginning of fall semester when the scholarship begins.

**Home Economics**

**Chrysl I. Grady Scholarship**—An endowed scholarship from the estate of Chrysl I. Grady. This scholarship is awarded to a student majoring in consumer economics and is renewable for each subsequent year. The endowment is $10,000.

**American Cyanamid Company**

**American Maize Products Company**

**Appleton Paper, Inc.**

**BetzPaperChem, Incorporated**

**American Maize Products Company**

**BTR Paper Group**

**BetzPaperChem, Incorporated**

**Champion International Corporation**

**Cargill, Incorporated**

**Central National Gottesman, Incorporated**

**Champion International Corporation**

**Ciba-Geigy Corporation**

**Consolidated Papers Foundation, Incorporated**

**Corrugated Container Corporation**

**Cyprus Industrial Minerals Company**

**Diamond Shamrock Chemical Company**

**Dow Chemical U.S.A.**

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**Members of the Paper Technology Foundation, Incorporated**

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**The Outstanding Summer Camp Award**—The University President’s Award is presented annually to the Cadet Corps Commander. Academic and Military Achievement Awards are presented to outstanding cadets in each class year group. The outstanding Summer Camp Award is presented to the Western Michigan University cadet achieving the highest score at the annual R.O.T.C. Summer Camp.
The E.I. DuPont DeNemours Scholarship Fund
DuPont IT-PURE Titanium Dioxide Named Scholarship
Eastman Kodak Company
Engelhard Corporation
Federal Paper Board Company, Incorporated
French Paper Company
Georgia Kaolin Company
Georgia Pacific Corporation
P. H. Gaffelt Company
Grain Processing Corporation
Green Bay Packaging Inc.
Hammer mill Paper Company
Hercules Incorporated
James River Corporation
J. M. Huber Corporation
Imperial Oil and Grease Company
Ingersoll-Rand Company
Inland Container Corporation
International Paper Company
The Johnson Corporation
Kamry Incorporated
Perry H. Koplik & Sons, Incorporated
Mead Corporation
Measurix Corporation
Menasha Corporation
MOST Products
Nalco Chemical Company
Niagara Lockport Industries, Incorporated
Nicollet Paper Company
NSC Foundation, Incorporated
The Ott Company
Owens-Tillinois
Packaging Corporation of America
PennTech Papers, Incorporated
Plainwell Paper Company
Port Huron Paper Company
Potlatch Corporation
Rust International Corporation
Sandoz Foundation, Incorporated
Smores-Eastern Company
Simpson Paper Company
Sunds Defibrator, Incorporated
Thiele Kaolin Company
Union Camp Corporation
Vaimst-KMW, Inc.
S.D. Warren Company, Division of Scott Paper Company
Westvaco
White Pigeon Paper Company
Scholarship Funds
Raymond L. Janes (Beloit) Scholarship Fund
David and Doris Bossen Named Scholarship Fund
Burgess Cellu lose Foundation Named Scholarship Fund
Mae Muner Callaghan Named Scholarship Fund
Olin W. Callaghan Named Scholarship Fund
Carlton H. Cameron Named Scholarship Fund
Cargill Incorporated Named Scholarship Fund
Champion International Foundation Named Scholarship Fund
Champion Packaging Division Named Scholarship Fund
Bert Cooper Named Scholarship Fund
Corn Products Named Scholarship Fund
Theodore W. and George C. Dunn Memorial Scholarship Fund
E. I. Du Pont DeNemours Scholarship Fund
James A. Foxgrover Memorial Scholarship Fund
James A. Foxgrover Scholarship Fund (Caldor Endowment)
Gibsen Named Scholarship Fund
Philip H. Gateliter Named Scholarship Fund
Grain Processing Scholarship Fund
Gerald A. Hale Scholarship Fund
Hammer mill Paper Company Named Scholarship Fund
Albert S. Harman Named Scholarship Fund
J. M. Huber Named Scholarship Fund
John F. King Family Scholarship Fund
Perry H. Koplik Company Foundation
Kukolich Scholarship Fund
Lous Lerner Endowment/Tevo Corporation
K. A. Uro Lowgren Scholarship Fund
E. D. Marvin Scholarship Fund (Ott Felt Company)
John and Diane Maryanski Scholarship Fund
Mead Corporation Scholarship Fund
Michigan Carton Company Named Scholarship Fund
Packaging Corporation of America Named Scholarship Fund
Paper Technology Alumni Association
PIMA Michigan Division Scholarship Fund
John C. Peterson Memorial Fund (Betz PaperChem)
Recknagel Scholarship Fund
Sandoz Foundation, Incorporated, Named Scholarship Fund
William and Martha Siekman Named Scholarship Fund
Simpson Paper Named Scholarship Fund
St. Regis Paper Company Named Scholarship Fund
Union Camp Corporation Named Scholarship Fund
Vicksburg Foundation Scholarship Award
Senior Theses and Engineering Problems Award—Kalamazoo Valley Section of TAPPI offers thesis awards each year in the amounts of $100, $60 and $40 to students in paper science or paper engineering curricula.
Printing Management/Marketing Scholarships available only to WMU printing management/marketing students:
E. G. Kelly Endowment Scholarship—This scholarship amount is variable. Available to entering freshmen. It is awarded on the basis of need and is renewable. It is available after 1987.
Graduate Education Foundation Fellowship—One fellowship of $1,800 plus travel is awarded to a junior for an academic year and is renewable.
Hamblin Company—One scholarship of $1,000 is available to entering freshmen. It is awarded on financial need and is not renewable.
Kalamazoo Valley Printing House Craftsmen Club—Two scholarships, each $800 per year are available to entering freshmen based on need and academic achievement and are renewable.
Northeast-Printer’s Scholarship—One scholarship of $500 is available to a student with a freshman through senior standing. It is awarded on basis of financial need and academic achievement and is renewable.
Quimby, Walstrom Paper Company—One scholarship of $1,500 is available to a student with a freshman through senior standing. It is awarded on basis of financial need and is not renewable.
National scholarships available to WMU students enrolled in the printing program Ann Arbor Graphic Arts Memorial Foundation—Six to ten scholarships of $100 to $1,000 each are available to entering freshmen. They are awarded on basis of need and academic achievement and are renewable.
Quimby, Walstrom Paper Company—One scholarship of $1,500 is available to a student with a freshman through senior standing. It is awarded on basis of financial need and academic achievement and is renewable.
National scholarships available to WMU students enrolled in the printing program Ann Arbor Graphic Arts Memorial Foundation— Six to ten scholarships of $100 to $1,000 each are available to entering freshmen. They are awarded on basis of need and academic achievement and are renewable.
Forms and portfolio guidelines are available from the Advising Office, 1406 Sanger Hall, Western Michigan University, Kalamazoo, MI 49008 or call (616) 383-6028.

Lydia Siedschlag Scholarship—Special scholarship has been established in the Art Department for students living in Siedschlag Hall, an on-campus residence hall for women. All art majors, enrolled full-time, with a minimum GPA of 3.0, and living in Siedschlag Hall will automatically be considered. Recipients are notified prior to the Annual Art Awards Ceremony in late winter.

Art Star Awards—The Department of Art offers yearly grants-in-aid to junior and senior art majors. Based on faculty recommendations, grants are awarded from the areas of drawing, painting, watercolor, sculpture, graphic design, photography, printmaking, ceramics, textile design, jewelry/metal smithing, art history and art education. Recipients are notified prior to the Annual Art Awards Ceremony in late winter.

Mary Coutant Memorial Prize—The family of Mary Coutant established this annual prize to recognize an outstanding student within the Art Department. All sophomore art majors enrolled as full-time students with a minimum overall GPA of 3.0 or above will automatically be considered. The recipient is notified prior to the Annual Art Awards Ceremony in late winter.

Rose and James Kerr Awards—These are annual awards granted to outstanding art students. Recipients are selected on the recommendation of a faculty committee.

Walter Enz Memorial Award—The family of Walter F. Enz established this annual grant to honor the outstanding student in the art department. The recipient is selected each year by a committee of art faculty, including Professor Donald E. King, and one member of the Enz family.

Dance

Dorothy Underdown Dalton Young Artist Scholarships—These scholarships are awarded to dance majors in three categories. New dance major scholarship recipients are given to incoming dance majors based on artistic and intellectual promise. Exceptional dance major scholarships are awarded to junior or senior dance majors who have achieved excellence in their dance participation at Western Michigan University. Dancers with musicians scholarships are granted to dance majors who have exhibited exceptional artistic, and musical ability and musicianship for proposed collaborative projects with musicians.

Music

Music Scholarships—Western Michigan University’s School of Music makes annual awards of $500 to $2,000 a year for undergraduate and $600 to $5,000 a year for graduate students who demonstrate outstanding musical and academic potential as music majors. These awards are made in recognition of the variety of talents that are necessary for success in the various professional fields of music. Students will qualify to hold an award until graduation (four year maximum for undergraduates and two year maximum for graduates) provided musical and academic excellence are maintained.

Undergraduate students may receive consideration for a scholarship award at the same time they audition for admission to the University. Questions may be directed to: Music Student Adviser, School of Music, Western Michigan University, Kalamazoo, Michigan 49008-3899.

Theatre

The David Wayne Scholarship—This annual award is given in recognition of student(s) with an overall cumulative grade point average of 3.0, who have a genuine interest in theatre demonstrated by their achievement and participation in the University theatre program. The Laura V. Shaw Scholarship—This annual award is given in recognition of outstanding scholarship (applicants must have an overall grade point average of 3.0), talent, and contribution to the University theatre program. The Beulah and Harold McKee Theatre Award—This annual award is given to a student entering the theatre program who demonstrates outstanding promise.

Questions may be directed to: Music Student Adviser, School of Music, Western Michigan University, Kalamazoo, Michigan 49008-3899.

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Requirements include a 3.0 high school grade point average and active participation in school and/or community theatre.

The University Theatre Guild Scholarship—This annual award is given to a student who has been an active and consistent participant in the theatre production program and has demonstrated a professional attitude. A 3.0 grade point average and a minimum course load of twelve semester hours at the time of application and during the year of award are required.

The Mary and R.E. Jackson Scholarship—This award is given to an outstanding theatre major, possessing a 3.0 grade point average and a professional attitude toward his/her work.
College of General Studies

College of General Studies Award for Meritorious Accomplishment—This award, ranging up to $500 a year, recognizes students enrolled in the College of General Studies who have distinguished themselves in some way in addition to academic achievement. Funds for this program are made available through donations by alumni and friends of the University. Apply directly to the Dean’s Award Committee at the college office.

College of Health and Human Services

College of Health and Human Services Scholarship Program—Several awards in varying amounts are made on a departmental rotational basis to outstanding students who are enrolled in the college’s curricula. Funds for this program are made available through donations by alumni and friends of the University. Apply directly to the school, department, or program office in the major field of study.

Jeffrey and Barbara Vortman Scholarship Award—This scholarship is awarded annually in the amount of $500; preference is given to an undergraduate or graduate student with a demonstrated commitment to pursuing a career in the health and human services fields. Selection of the successful recipient is determined by the College Scholarship Committee, which also considers academic excellence, financial need, and record of community service.

Hazel and Theodore Peng Scholarship Award—These scholarships are awarded annually to students who are enrolled simultaneously in Western Michigan University and the Bronson School of Nursing and who are graduates of high schools in southwest Michigan. Awards are based on financial need and academic merit and are determined by a special scholarship committee comprised of representatives of both the School and the University.

Gerontology

Gerritson Scholarship—Established to honor former Dean of Academic Services Leonard Gerritson, this award recognizes undergraduates of high academic achievement who are pursuing a minor in the gerontology program. Apply to the College of Health and Human Services.

Occupational Therapy

Michigan Occupational Therapy Association—An award has been established by the Michigan Occupational Therapy Association for the purpose of aiding worthy students in occupational therapy. Applicants must exhibit scholarship, show a definite need, be Michigan residents, and be juniors or seniors in occupational therapy. Apply directly to the Department of Occupational Therapy.

Southwestern District Occupational Therapy Association—An award has been established for the purpose of aiding worthy students in occupational therapy. Applicants must demonstrate need. Scholarship will be considered also. Apply to the Department of Occupational Therapy.

The Marion R. Spear Award—This award was established in honor of the founder of the Kalamazoo School of Occupational Therapy and first director of the occupational therapy curriculum at WMU. It is awarded annually to one outstanding senior or graduate student who gives promise of being a superior occupational therapist.

Mabel A. Valdez Award—The Mabel A. Valdez Award was established in memory of a former faculty member of the occupational therapy department. It is awarded by the Occupational Therapy Department to support student attendance at national and international occupational therapy conferences and conventions.

Physician Assistant

John Josten Scholarships—These scholarships for physician assistant students were established to honor the first director of the Physician Assistant Program. Cash awards are made to outstanding students who have demonstrated academic excellence (minimum 3.2 grade point average) and who show a definite need. Apply directly to the scholarship committee of the Physician Assistant Program.

School of Social Work

Whitney Young Scholar’s Program—This competitive program is open to minority and first-year minority graduate students. Applicants submit a project or essay to be evaluated by a panel of judges. There are usually three semifinalist awards of $50 each and two final place awards of up to $200 each. Apply to the School of Social Work.

The Robert Barstow Alumni Scholarship Award—In recognition of Professor Emeritus Robert Barstow’s outstanding contribution to the School of Social Work and the Social Work Profession, the Alumni established this scholarship award. The annual award is available to one full-time graduate and one senior status undergraduate social work student. Selection criteria include academic merit and interest in the area of child welfare. Potential recipients are identified by School of Social Work personnel.

Child Welfare Traineeship Grant—This traineeship is available to graduate and senior status undergraduate Social Work students. Funds granted are exclusive to tuition and related costs for one academic year. Selection criteria include a willingness to commit to working in the area of child welfare after graduation. Apply to the School of Social Work after admission to the graduate program or the undergraduate major.

Speech Pathology and Audiology

Clinician of the Year Award—This award is presented annually to a junior- or senior-level student who, in the judgment of the speech pathology and audiology faculty, has demonstrated outstanding competence in practicum activities.

Intercollegiate Athletics

Athletic Grants-In-Aid—Western Michigan University makes certain grants-in-aid available to students excelling in athletics and participating in varsity sports. A student must be recommended by the Division of Intercollegiate Athletics.

International Education and Programs

Study Abroad Scholarships—Five international exchange scholarships are awarded annually to qualified students for study in foreign universities in Europe and Asia. These scholarships are awarded on an annual basis in a competitive process conducted during the winter semester before the period overseas.

Contact the Office of International Education and Programs, 2000 Friedmann Hall, for information and application forms.

Free University of Berlin Exchange Scholarship—This scholarship enables one WMU student to study at the Free University in the city of West Berlin, Germany for an academic year beginning in October. Includes tuition, housing, and stipend.

Keo University Exchange Scholarship—This scholarship enables one WMU student to study Japanese language at Keio University in Tokyo, Japan, for eleven months beginning in September. Includes tuition, housing, and stipend.

Nankai University Exchange Scholarship—This scholarship enables one WMU student to study Chinese language at Nankai University in Tianjin, People’s Republic of China, for an academic year beginning in August. Includes tuition and housing.

University of Passau Exchange Scholarship—This scholarship enables one WMU student to study at the University of Passau in the city of Passau, Bavaria, Germany, for an academic year beginning in October. Includes tuition and housing.

President’s Award for Study Abroad—The President of WMU has established an annual award of $1,500, to be given to a major in the Department of Languages and Linguistics who wishes to study abroad for the purpose of improving his/her foreign language skills. The award is to be used for an approved program of foreign language study at a foreign university or in a study-abroad program sponsored by an American university. Preference will be given to students who attend to study in a full-year program.
Services for Students

The Academic Skills Center

The Academic Skills Center, located in room 1044 Moore Hall, is designed to offer students the opportunity to strengthen their learning skills and improve their academic performance. Programs are offered within the following framework:

1. All undergraduates are eligible to register for services; graduate students may register for specific workshops on a space available basis.
2. Programs and workshops carry no academic credit.
3. There is no charge for services. Telephone: 383-8122

WRITING LAB

The Writing Lab offers individual tutoring to show students how to revise, then edit papers for class. Supplementary exercises as appropriate are available to help students become confident, effective writers.

SUPPLEMENTAL INSTRUCTION

Supplemental Instruction (SI) offers assistance in specific high risk courses. Qualified students conduct the program which focuses on review of course content as well as effective strategies for learning the course material.

SPECIAL SERVICES

The Special Services Program (SSP) is a federally funded TRIO project that seeks to assist physically handicapped, learning disabled, low-income and first-generation college students in ways that contribute to graduation from the university. It provides academic support and offers guidance toward achieving a balance among academic, social, financial and career concerns.

STUDY SKILLS

The Study Skills Workshop helps students learn how to maximize their time, modify inefficient study habits and improve test-taking skills. Participants examine and develop particular strategies for time management, concentration and memory, note-taking and test-taking.

CRITICAL READING WORKSHOP

The Critical Reading Workshop introduces reading strategies and thinking skills to help students develop the ability to read critically. Students learn how to develop a set of questions to focus attention on what the author is saying.

VOCABULARY WORKSHOP

The Vocabulary Workshop focuses on the 100 most common roots of the English language and reviews prefix meanings through brief exercises and drills. The workshop can help improve scores on the vocabulary section of national standardized reading tests.

MATH WORKSHOP

The Math Workshop reviews basic concepts covered on the Computational Skills test. Students identify weak areas and then receive guided instruction and practice to develop competency. It is open only to students who do not need to place into college-level math courses.

EDITING BRUSHUPS WORKSHOP

The Editing Brushups Workshop clarifies the most frequently abused principles of usage and punctuation. Sessions supplement instruction on the writing process by answering specific questions. It is designed for writers who want rules explained and illustrated.

SPELLING WORKSHOP

The Spelling Workshop covers syllabification, phonetic patterns and rules and also uses computer-assisted instruction drill tailored to individual needs. Students create their own dictionaries of troublesome words.

INTERNATIONAL STUDENT COMMUNICATION WORKSHOP

The International Student Communication Workshop stresses the writing of clear, precise sentences and paragraphs. An integrated-language approach offers practice in pronunciation, vocabulary, and listening comprehension. The workshop emphasizes students' active participation.

Alpha Program

The Alpha Student Development Program is designed to assist students who have demonstrated academic ability but have not utilized that potential to its fullest. The Alpha student is provided with additional academic support in order to increase his or her chances of academic and personal achievement.

Alpha is an academic year (fall and winter), contractual, probationary program. Students are selected and admitted through the Office of Admissions, with advice from the Alpha Program Office. Generally, students are admitted to the program during the fall semester. However, winter admission may take place at the discretion of the Program Director in conjunction with the Admissions Office.

The guidelines for acceptance into the Alpha Program include:

- meeting with an Alpha adviser at least twice each semester;
- enrolling in one of several courses designated for Alpha students.

Before the end of each enrollment period, the student's grades and progress are reviewed by an Alpha adviser. If the student has met the conditions of the academic probation period, he/she will be allowed to continue college coursework in good standing.

Center for Women's Services

The Center for Women's Services provides information and programs on skill development to women and men on campus and in the community. The Center offers a referral list and information files for specialized help on women's problems; program planning for student organizations; supportive services, such as discussion groups and informal lunch meetings; materials to help with decisions on careers; and workshops to develop personal growth techniques such as assertiveness, stress management, leadership, and decision-making.

Persons who want to volunteer at the Center, learn about programs or serve on the Advisory Committee may call the Center.

Located in A-331 Ellsworth Hall, between the Bernhard Student Center and the parking ramp, the office is open from 7:45 a.m. to 4:45 p.m. on Monday through Friday, and on Thursday evening and Saturday by appointment. Telephone: 383-6097.

Commuter Student Services

The Office of Commuter Student Services at Western Michigan University is a service center for the 13,000 students who live off campus and commute to classes from many distances and locations. It is located in Room 3510 of the L. Dale Faunce Student Services Building. Its primary function is to administer a complete rental program for students in need of off-campus housing. Car pools, share-a-ride, roommate listings, tenant/landlord mediation, transportation information, and communication are just some of the other on-going programs carried out by Commuter Student Services. The success or failure of a student's academic life can often be traced to the living environment. Don't minimize the importance of good housing. Telephone: 383-6115.
Counseling Center

Many important decisions and situations will leave students feeling confused and upset. In addition, it may be likely that the inherent stresses of university life will, at some time, interfere with academic achievement and personal growth. The University Counseling Center, located on the main floor of the Faunce Student Services Building, exists to help students deal effectively with such concerns.

The Center is staffed with professionally trained counselors and psychologists and is accredited by the International Association of Counseling Services. Among Counseling Center Services are the following:

Personal Counseling to assist individuals in better understanding themselves and the emotional conflicts that may interfere with their everyday lives as students, to help them become more aware of alternative means of coping with conflicts, and to aid them in developing more satisfying and fulfilling lifestyles.

Educational Counseling to help students deal with conflicts concerning vocational planning, educational goals, course selection, and curricular choices.

Career Development Programs to provide students with the resources, skills, and experiences necessary for reasonable educational and career choices. Individualized activities are offered to (1) increase self-understanding, including insights into one's interests, values, abilities, and skills; (2) learn how to acquire information about careers; (3) review choices, make decisions, and establish plans of action; and (4) test the feasibility of individual plans by experiencing the reality of the working world.

The Career Exploration/Media Center contains a wide and varied selection of printed materials with an emphasis on self-understanding, career exploration and preparation, occupational information, and job trends. Included is a section of college and university catalogs, educational guides, and audovisual materials pertinent to career awareness.

Training and Internship Programs for graduate students and interns from the Department of Counseling Education and Counseling Psychology, School of Social Work, and Department of Psychology are available. Included in the training experience are demonstrations, case studies, and supervision.

The Counseling Center is thoroughly committed to the need for confidentiality in client/counselor communications. Therefore, confidentiality of client information is maintained in a manner consistent with professional standards of ethical practice and conduct. Copies of the Counseling Center Policy on Confidentiality may be obtained at the Center's reception desk.

Appointments can be made by telephone (383-1850) or by stopping at the Counseling Center reception desk between 7:45 a.m. and 4:45 p.m., Monday through Friday. Students unable to utilize the Center's services must make arrangements for evening appointments.

Housing

All students enrolled at Western Michigan University are permitted to live on campus in housing of their own choosing. However, students are encouraged to give consideration to the convenience, educational, financial, and social benefits of living in a residence hall or on an off-campus apartment. These facilities provide the convenience of being close to classes and other University activities.

RESIDENCE HALLS

Each year hundreds of WMU students discover more about the world they live in, their colleagues, and themselves through the involvement of living in a residence hall. Opportunities for group participation and leadership development await those interested. Any currently enrolled WMU student, regardless of the number of semester hours he or she is enrolled for, may reside in a hall. Newly admitted undergraduate students are automatically sent information (fall-month of May, winter-November, spring-February, and summer-March) detailing the residence hall offerings available for the semester or session they anticipate attending at University. Individuals returning to the University as re-entrants, and newly admitted graduate students, will receive information by return mail upon requesting details from the Manager of Residence Hall Facilites, Faunce Student Services Building or calling (616) 383-6100. Admission to the University does not guarantee that a residence hall assignment will be available. Likewise, receiving a contract and submitting a residence hall assignment does not guarantee that a space will be available. Assignments are made on a first-come, first-served basis up to the space available. Any requests received after all halls have been filled to capacity will be placed on a waiting list.

Fourteen residence halls offering a variety of services are located around the campus. Some halls provide room-only accommodations, with the residents purchasing their meals off campus or in the Bernhard Student Center. One room only hall is available for continuous housing throughout the year. Residents of this hall are permitted to remain during vacation periods. Since all other residence halls close for the periods between semesters and sessions, residents of these halls who choose to remain must make their own alternate housing arrangements during these periods. Residents are permitted to remain in their assigned rooms during the Thanksgiving and March recess periods.

Most of the residence halls furnish twenty meals per week (Sunday evening excluded), with the dining rooms open from 7:00 a.m. to 6:15 p.m. six days a week and from 8:00 a.m. until 1:00 p.m. on Sunday. (Serving hours subject to change at the University's discretion.) The dining service enjoys an excellent reputation with an extensive menu developed in consultation with professional dietitians and residents. Dining service residence halls are available during the fall and winter semesters and the spring session. The availability of dining service during spring session is subject to change. During these periods, meals usually begin the day classes start and stop the last day of classes. Meals are not served during the Thanksgiving and Christmas recess periods.

Different assignment patterns are used in the various residence halls. In some locations residents are assigned by sex to alternate floors or alternate suites. In others, students where co-ed assignments exist, separate bath and toilet facilities are provided for each sex. One hall is reserved exclusively for men, and one for women.
International Student Services

Western Michigan University has long recognized the value of international educational interchange. Over the years, thousands of students from other nations have entered the University to pursue their educational objectives. Conversely, many U.S. students have sought to broaden their educational background by undertaking a period of study and/or travel in a foreign country. This educational interchange has given the University an international atmosphere that has fostered both formal and informal cross-cultural contacts and the development of positive interpersonal relationships, on the campus as well as in the community. The Office of International Student Services was established to assist students involved with this interchange process.

FOREIGN STUDENT SERVICES

The Office of International Services deals with the special needs and circumstances of foreign students, as well as with co-curricular programs, and related educational offerings. It is involved in the development of educational programs for both domestic and foreign students, with the objective of augmenting the education of all students. In addition, the Office of International Services offers student services, including student organizations and advising.

Funds will be available to cover the student's educational expenses. The student and his/her sponsor, and offering institution, must submit the following documents to the University that he/she is academically, socially, and personally qualified to undertake the academic program being pursued.

1. Have returned a signed contract.
2. Have completed and mailed all financial aid forms (Pell Grant, etc.) prior to an on-campus interview.
3. Complete a personal on-campus interview orientation with a MLK staff person.

Participants begin their freshman year during the summer at Western Michigan University. Each student is assigned a counselor. The counselor is a graduate or upperclass student who functions as friend, student evaluator, personal counselor, or minister—someone who is familiar with the family circumstances. After the application is reviewed and approved, it is referred to the MLK Program office. The program then contacts the student. Before a student is admitted, he/she must:

1. Have returned a signed contract.
2. Have completed and mailed all financial aid forms (Pell Grant, etc.) by an on-campus interview.
3. Complete a personal on-campus interview orientation with a MLK staff person.

The Martin Luther King, Jr. Program

The Martin Luther King, Jr. Program is a one year, probationary student development program that has been in existence at WMU since 1968. Named in honor of Dr. King, this particular program has the distinction of being the forerunner of similar programs in colleges and universities throughout the United States.

Initially, the program was designed to encourage "marginal" minority students to pursue a post-secondary education. Funded through a grant from theKellogg Foundation, the program was able to provide scholarships as well as remedial help to its participants. "Project 73," the original name of the program, began in the fall of 1968 with the first WMU freshmen coming from high schools throughout Southwestern Michigan. It now is a year-round program, beginning in the summer of the student's freshman year.

The primary purpose of the MLK Program is:

1. To encourage students who would otherwise pursue a higher education to do so.
2. To provide supportive services—such as academic advising, counseling, tutoring, and testing—to meet each individual student's needs.
3. To support students throughout their career at Western Michigan University.

Application is made through the Office of Admissions. The standard WMU application is used. Students interested in the program should note this on the application or include a letter to that effect. There is a $15.00 fee for application to Western. (The fee can be waived by a high school counselor, caseworker, or minister—someone who is familiar with the family circumstances.)

The program is open to any student interested in financial assistance, regardless of race, who is admitted to WMU. Each year, 18-20 students are accepted into the program, which is a one-year, residential program. The program provides academic support, counseling, and living arrangements for the student and his/her sponsor. The program begins in the fall of the student's freshman year.
Ministry Student Services

The office of Minority Student Services is committed to the goals of increasing minority presence and participation at Western Michigan University by encouraging Black, Hispanic, Native American, and Oriental enrollment. This goal is based on the premise that every minority student who desires to uplift his/her skills through higher education should be given the opportunity to do so, upon having demonstrated sufficient desire and potential to complete this task. The objectives of this office are:

1. To stimulate interest in higher education through minority student identification and the dissemination of matriculation information to these students.
2. To recruit minority students into the various programs at WMU through an extensive program of statewide visitation to high schools and community agencies.
3. To provide supportive services to minority students in order to ensure successful academic experiences that may aid the students in becoming self-sufficient and better prepared for specific professional careers.
4. To monitor, evaluate, and improve university-wide operations as they relate to minority students.

Through these efforts, it is hoped that the greatest opportunity for a successful and relevant educational experience is provided for our minority populace. Telephone: 383-2204

Project SCOPE

SENIOR CITIZENS’ OPPORTUNITY PROGRAM IN EDUCATION

This program allows persons sixty-two years of age and older to enroll in University classes without charge, following these guidelines:

1. Persons sixty-two years of age or older desiring Senior Citizen status should seek admission to the University prior to the final day of registration, preferably within the admission deadlines printed in the Schedule of Classes. A short form admission (PTC—permission to take classes) is available. Admission at the time of registration will be offered on an emergency basis and is to be avoided, if possible.
2. The Permit to Register issued to the students who request senior citizen privileges in their admission application will be labeled “Senior Citizen.” Such students are to enroll during the last hour of the final day of registration each semester or session.
3. No special parking privileges will be offered to Senior Citizen students. Those who elect this status shall register their vehicles and pay for the usual part-time student parking sticker with the Public Safety Department, or use metered parking.
4. Senior Citizen students will be issued the regular student ID card with a special Senior Citizen label entitling them to use of the University libraries and other academic facilities necessary for their performance in the class for which they are enrolled. No additional validation will be afforded, thereby making other non-academic facilities, such as the Health Service, unavailable.
5. No student is required to declare himself or herself a Senior Citizen student. This status would be inappropriate for a student who does not wish to be confined to selecting only from those classes which are still available during the last hour of the final day of registration.
6. All students eligible for Senior Citizen status will be registered officially on the class roll, receive a grade, and have all academic work recorded on a permanent student record. Telephone: 383-1950.

Religious Activities

Western Michigan University recognizes that helping people to clarify their values, act on their commitments, articulate their own beliefs, and understand that the lives of others is an important part of the educational process. The University endorses no particular faith or religious tradition, but it welcomes and facilitates the presence of many religious organizations.

A broad spectrum of religious opportunities including traditional, contemporary, and experimental worship, individual and small group Bible studies, workshops and retreats, study-travel experiences, social concerns, religious drama, and action groups is available to interested students.

Various church groups provide support for clergy whom they assign to campus ministry. Those professionals are available to students and their families for personal and religious counseling, information on all campus religious programs, and materials and resources for religious activities. Campus ministers are not employees of Western Michigan University, but serve as a resource for students as representatives for their various churches.

The Office of Religious Activities, which is a part of University Student Services, serves as a clearinghouse for campus religious programs and is responsible for management of the Kanley Memorial Chapel and for scheduling events there.

The Kanley Memorial Chapel facility includes an interfaith chapel, several meeting rooms, and offices. It is maintained by the University as a center for religious activity and serves as the meeting place for most student religious organizations. It is also the home of regular weekday and Sunday worship services and provides a popular site for student weddings.

The Office of Religious Activities and ten campus ministers have offices in the building. In addition to Kanley Memorial Chapel, there are live student centers operated by specific denominations on or near campus.

Specific information regarding the religious groups on or near campus is available in the Office of Religious Activities. Telephone: 383-4986.

Sara Swickard Preschool

The Sara Swickard Preschool is open from 7:00 a.m. to 5:30 p.m. weekdays. It is located on Western’s campus at 1211 Knollwood. The location is convenient for student parents who wish to leave their children on the way to class.

Children 2 1/2 to 9 years old may be enrolled full or part-time (2 to 10 1/2 hours each day). The program and environment are designed to minimize failure and competition while promoting cooperation, creative thinking, problem-solving, and kindness. Application to the Preschool should be made well in advance. Forms are available at the Preschool. Telephone: 383-4092.

The Sindecuse Health Center

The Health Center is a student-oriented medical facility that exists to support and promote optimal health for the University community. As a student attending Western Michigan University, Nazareth College, Kalamazoo Valley Community College, or Davenport College, you have access to high-quality, convenient, low-cost health care through our many professional services which include comprehensive examinations, treatments, urgent care, and minor surgical procedures. Our physicians, physician assistants, nurses, laboratory personnel, pharmacists, and sports medicine staff work as a team to assist you with your health care needs. With your help, the care we provide can be continuous during the time you’re in school, comprehensive by addressing all your health concerns, and coordinated, with one clinician knowing all your health care problems and concerns.

HEALTH HISTORY QUESTIONNAIRE

Upon admission to the University, each student is asked to complete a Health History Questionnaire that is filed at the Health Center for reference when medical care is sought or required. This questionnaire is sent to each student by the Admissions Office, along with notification of acceptance into an academic program. Completing this questionnaire and returning it to the Health Center is an important part of your admissions process. All health information and records within the Health Center remain strictly confidential. Student signature is required for release of information to anyone.

SERVICES

The Center provides evaluation and treatment for a wide variety of illnesses and injuries, as well as preventive health checkups, pre-martial examinations, contraceptives services, pregnancy testing, and counseling for sexually transmitted infections. In addition, it offers the medical specialties of dermatology, gynecology, and orthopedics. When necessary, staff members can refer you to other medical specialists within the Kalamazoo area.

PHARMACY

A full-service pharmacy provides prescription medications at a cost savings to students. It also carries a limited amount of non-prescription medications. Prescriptions written by your personal physician from home can be filled, as well as prescriptions written by Health Center physicians. You may pay for pharmacy items by cash, check, MasterCard, Visa, or you may bill your student account. Most major insurance cards for prescription coverage are also accepted.

LABORATORY SERVICES

The Center’s full-service laboratory performs most standard diagnostic tests. These are often evaluated while you wait, so that you receive prompt treatment, saving you both time and money. Electrocardiograms, interpreted by a cardiologist, are also available.
X-RAY SERVICES
The radiology department performs all general diagnostic x-rays to determine bone or tissue injury. All x-rays are developed for immediate evaluation by Health Center clinicians and are further interpreted by a radiologist.

Urgent Care
The Health Center’s urgent care clinic is designed for sudden injuries or problems that need immediate attention. No appointment is necessary.

Appointment Information
You are encouraged to choose a physician or physician assistant with whom you feel comfortable and to request this clinician by appointment whenever you need health care. Appointments may be scheduled from 7:45 a.m. to 4:45 p.m. Monday through Friday by calling 383-6005.

If you have an appointment, you go directly to your clinician’s office without waiting. You should arrive ten minutes early for your appointment and plan on your visit lasting at least an hour. If you have prescription drug coverage through outside insurance, you should bring that identification card and information with you.

If you cannot keep your appointment, let the Health Center know so that your time may be used to help another student.

Allergy Injections
If you receive allergy injections, all you have to do is provide the Health Center with your antigen and an injection schedule from your allergist. Then all your injections can be administered at the Health Center while you’re attending school.

Immunizations
Several serious diseases, including measles, mumps, German measles, tetanus, and diphtheria, are all vaccine preventable. You should be immunized to protect yourself and the University community. The Health Center offers all immunization updates and immunizations required for overseas travel.

Tuberculosis Testing
Routine tuberculosis testing, required for some classes and jobs, is available.

Sports Medicine Clinic
The Sports Medicine Clinic provides comprehensive diagnosis and treatment of sports-related injuries, as well as any physical therapy services you may need. If you’ve paid your Student Health Fee and voted yes to the knee surgery, then you’re covered by Health Center insurance.

Health Center parking spaces and get a one-hour permit when you check in. If the Center’s spaces are full, you may park in any student parking area. Parking spaces designated during Health Center visits may be voided at the Public Safety Annex when presented with your Health Center receipt.

Student Health Fee Benefit Plan
All Western students carrying seven or more credits a semester or four or more credits a session are assessed a prepaid Student Health Fee. Except for a small physician visit charge and the cost of medications from the Health Center pharmacy, the fee covers all health care requested by Health Center clinicians and provided at the Center.

Students enrolled for less than the above hours and those attending other colleges within the Kalamazoo area may “buy in” to the Student Health Fee plan or use the Health Center on a fee-for-service basis.

In addition, spouses of currently enrolled students, nonenrolled students with current admission status and their spouses, and recently graduated students (one semester or two sessions immediately following graduation) may also buy the benefit plan or pay on a fee-for-service basis.

The Student Health Fee complements your hospital and medical insurance. Many students have health insurance that protects them from the costs of hospitalization. Your fee protects you against the majority of costs you face outside the hospital, which are not covered by most insurance companies. Any student who has paid the fee is eligible for all Health Center services. Eligibility extends from the first day of the applicable semester for which the fee has been paid, to the first day of the next semester or session.

Uncovered Costs
Visit to medical specialists outside the Health Center, or to hospital emergency rooms or immediate care centers, and transportation to and from the Health Center by ambulance are not covered by the fee. Services not ordered by Health Center personnel, but requested by clinicians outside the University, can be provided by the Health Center, but will be charged to you according to the current fee schedule.

Charges that are not covered by the Student Health fee or your insurance may be paid in cash, by check, or by MasterCard or Visa credit cards. However, all fees under $1 must be paid in cash. You may also charge your health care costs against your student account, but this must be paid in full prior to registering for the following semester or session. The University assesses a service charge for any costs that are not paid within sixty days.

Optional Hospital, Medical, and Surgical Insurance
All students are urged to carry some form of medical and accident insurance that covers medical, surgical, and hospitalization expenses not covered by the Student Health Fee. Some insurance companies offer coverage for expenses only when you’re hospitalized. Other companies pay for diagnostic procedures performed by specialists outside the Health Center, as well as hospitalization. It’s important to verify the services included in any insurance policy you purchase. If you are covered by your parent’s insurance, you should know the name and address of their company and all policy numbers as they apply in the insurance identification card. Be sure to carry this information with you at all times.

If you are not presently covered by a major medical insurance program, consider the student plan for hospitalization insurance offered through Western. This plan is provided at reduced rates to students and their dependents.

Student Health Advisory Committee
The Student Health Advisory Committee gives you the chance to actively help plan ways in which the Health Center can offer high-quality health services at the lowest possible price for students. The committee participates in policy formulation, program review, and program development for the Health Center. Seven undergraduate and two graduate students (selected by committee interview), and five faculty and staff members serve on the committee. Membership in the group, which meets throughout the calendar year, is open to any interested student. For more information regarding meeting times or application for committee membership, contact the committee’s recording secretary in the Health Center director’s office.

University Wellness Programs
You, more than anyone else, are in charge of your health. A healthy body, high self-esteem, the ability to develop meaningful relationships, the skills to manage stress, and prevention of illness are all within your personal power to achieve. The Health Center’s Office of University Wellness Programs offers a wide range of opportunities to help you achieve your health potential. All programs are provided for you at no charge as a Student Health Fee benefit. Health promotions opportunities include:

• A Wellness Resource Center, located in the front lobby of the Health Center, containing written information on a variety of health promotion and disease prevention topics.

• Self Care Cold Centers, located in the Health Center front lobby and in all Residence Halls.

• Total Fitness—A total fitness program, sponsored by Campus Recreational Activities, designed to help you achieve fitness using exercises set to music. This co-ed program focuses on flexibility, muscle tone and strength, and cardiovascular endurance. In addition to improving fitness, it provides a healthy outlet for reducing stress and tightening muscles.

• Fitness Testing—You may have your body fat composition, muscle strength, and flexibility evaluated through the Sports Medicine Clinic.

• The 2nd for Life Fitness Room, located in the Gary Center, contains a full line of weight equipment, exercise bicycles, rowing machines, hand weights, a nordic skier, and exercise mats. Evening fitness room hours for students are scheduled through the Office of Campus Recreational Activities.

• Computerized Nutrition Assessment—Optimal nutrition can be a key to improved physical and intellectual performance. What you eat has a definitive impact on how you look, how well you feel, your resistance to illness, and prevention of heart disease, osteoporosis. The Health Center can help you analyze your diet and suggest food sources that can help you achieve a balanced nutrient intake for high-level wellness.

• Weight Control—Success in managing weight depends on many things, only one of which is wanting to do it. Our eight-week weight management workshop can help you increase your skills in eating and nutrition management, stress management, thought management, behavioral techniques, and commitment to increased physical activity.

• Managing Stress—Feeling overstressed and out-of-control can affect your emotional stability, your relationships, your ability to concentrate and think clearly, and your sense of purpose in
life. In addition, stress is known to play a
significant role in many physical illnesses and
to contribute to lower resistance to all infections
and disease. None of us can escape stress, but
how we perceive it an deal with it can become a
life-long habit. The Health Center offers stress
management information and workshops to help you increase your ability to manage and
minimize distress in your life.

- Quit-For-Life Stop Smoking Program—
Cigarette smoking causes a powerful physical
and psychological drug addition. It is the
strongest observable risk factor for sudden
cardiac death. Smokers who choose a new
nonsmoking lifestyle say they feel better and
have a greater sense of personal effectiveness
and self-esteem. The Health Center can help
you develop skills for a lifetime of freedom from
smoking. We offer group workshops and
materials to assist and support you in
developing a new nonsmoking self-image and
healthy alternatives to smoking.

- Reproductive Health—Sexual relationships
can be hazardous to your health. Young adults
in a University setting are statistically at high risk
for unintended pregnancy and sexually
transmitted infections. A special program is
available that covers reproductive health
concerns for men and women, prevention of
common sexually transmitted infections, including herpes, chlamydia, AIDS and
venereal warts, and effective methods of
contraceptive protection.

The Health Center invites you to actively
participate in maintaining and improving your
health. Optimal health results from an
appropriate combination of preventive health
care and living a healthy lifestyle. So invest now
in your health—think about the health decisions
you make and develop habits that will enhance
your physical well being, level of self-esteem,
and ultimately your sense of personal
satisfaction and accomplishment in life.

Speech, Language, and
Hearing Services
The Language, Speech, and Hearing Clinic, a
service program provided for persons with
communication disorders by the Department of
Speech Pathology and Audiology, is located on
the East Campus in the Speech and Hearing
Center. Students and their dependents may
take advantage of diagnostic and therapeutic
services for speech, language, and hearing
problems by contacting the department for an
appointment. Because the services are an
integral part of the department’s clinical
education program, no charges are made for
these services. For WMU students and staff the
usual fee for supplies also is waived.

Student Activities and
Organizations
Classes, professors, and term papers are an
ever present part of one’s college experience,
but the University recognizes that classroom
activities alone do not provide the total
education today’s college students are seeking.
Students can enrich and broaden their
collegiate life by becoming involved in any
number of the more than 200 organizations
coordinated and sanctioned by the Office of
Student Life, located in the Student Services
Building.

To develop leadership skills, acquire valuable
vocational training, gain new friends, get to
know college members and administrators,
serve the campus and the community—a
student need only become involved in the
extracurricular activities on campus.

Organizations are divided into these interest
areas:
Departmental and Professional
Honorary
Publications and Communications
Religious
Student Volunteer Services
Service Organizations
Seventeen Fraternities
Eleven Sororities
Special Interest
Student Government

Testing and Evaluation Services
Testing and Evaluation Services provides many
self-assessment instruments for students
without vocational goals or for those individuals
who are looking for alternatives. Vocational
interest inventories, personality measures, and
achievement tests are administered in helping
students to make a career decision. There is a
minimal charge to cover the test scoring.

Testing and Evaluation Services also offers
assistance in planning research projects and
papers. Scanning sheets are available through
classroom tests. In addition, several computer
printouts for each test can be obtained. They
include lists with scores, percentiles, frequency
distribution, and item analysis.

Testing and Evaluation Services has the most
extensive “Test File” in this area. These files
can be of assistance for class projects or
general information. They are open to both
students and faculty members at no cost and
may be checked out.

Information and registration assistance can be
obtained on most major required admission
tests such as the Graduate Record
Examination, Miller Analogies Test, and the
College Level Examination Program.

Testing and Evaluation Services is located at

University Ombudsman
The University Ombudsman is an intervention
agent and impartial person who helps students,
faculty and staff resolve academic and non-
amademic concerns. The Ombudsman listens
to you and discusses your question or concern;
provides you with information that answers your
question or helps you locate someone who can
assist you, explains the University’s policies and
procedures and how they may affect you;
follows up with you and others at the University
to make sure your concern is resolved; and
suggests changes in the institution that will
make it more responsive to every member of
the community. The basic principles of the
University Ombudsman are independence,
impartiality, and confidentiality. The
Ombudsman is authorized to make thorough
investigations and has access to all University
offices and records, reports and other
documents in the University. No person shall
suffer any penalty because they seek

University Placement
Services
Assistance in total job search planning is
offered free of charge by the University
Placement Services to students of Western
Michigan University. Placement services include:
job counseling, a career information
library, an on-campus interviewing schedule, a
weekly employment opportunities bulletin, job
vacancy postings, direct referrals to employers,
maintenance and distribution of credentials,
assistance with job search correspondence
such as resumes and letters of application,
interviewing videotapes, special career
workshops and seminars, summer job
information, and referral to specialized campus
agencies providing career planning services.

The office is centrally located on the first floor
of Ellsworth Hall, adjacent to the University
Student Center. Telephone 383-1710 for
appointments and additional information.

SERVICES FOR STUDENTS 29
Alumni Affairs and Development

The office of Alumni Affairs and Development seeks to coordinate programs related to its alumni and the fund raising efforts of the University. The areas of alumni and development provide two separate functions which are described below.

Alumni

The Office of Alumni Relations serves the University and all graduates as a liaison between the two, communicating on a regular basis with alumni who have joined the Western Michigan University Alumni Association. The Office of Alumni Relations is responsible each year for Homecoming, for several class reunions, and for many regional activities throughout the state and nation. It is also charged by the University with the maintenance of a detailed and accurate record of the more than 198,000 persons who have obtained degrees from the University. Each year the WMU Alumni Association presents several Teaching Excellence Awards to members of the faculty, and selects several graduates for special recognition for their achievements and the renown which they have brought the University.

An active program of foreign and domestic travel is offered to alumni and friends of the University, and special opportunities in group life insurance are also provided. A link with the current student body is maintained through the Student Alumni Association, which conducts such projects as receptions for new graduates the afternoon before commencement.

Alpha Beta Epsilon is an alumnae sorority which maintains eleven chapters in eight Michigan cities. ABE conducts a scholarship program for prospective teachers. Fifteen alumni are elected to staggered three-year terms on the board of directors of the Alumni Association. The board has a total of twenty-two members when various ex officio members are counted. The Alumni Office is the administrative arm of the board, and the director of alumni relations serves as executive director of the association.

Development

The Development Office seeks to raise private support for academic programs, building projects, loans and scholarships, and a variety of University needs. Support is received from alumni, students, parents, friends, corporations, and foundations. The four major areas of development are: the Development Fund, which through its direct mail, phonathon programs, and personal solicitation, seeks to enlist annual support; Planned Giving Services, which provides consultation on estate and tax planning, including wills, bequests, charitable trusts, gifts of insurance, securities, and other properties; Corporation/Foundation Relations, which seeks support from business, industry, and private foundations; and the Mike Gary Athletic Fund, which solicits gifts for Western's intercollegiate athletics program. The contributions received through these efforts help to ensure financial support for students, and provide the resources essential to the continued high quality of education at the University.

Western Michigan University Foundation

The WMU Foundation is a non-profit, tax-exempt corporation that was formed for the exclusive benefit of the University. The Foundation exists to secure and distribute private gifts to the University for the purpose of improving or creating services and programs that would not otherwise thrive.

The Foundation was created by the University Trustees as a corporate, but University-related, organization. It has a corporate body and a Foundation Board of Directors comprised of twenty-seven prominent alumni and friends of the University.

The Foundation Board, national in scope, attracts, invests, and distributes private donations solely for the benefit of Western Michigan University. All contributions to the WMU Foundation, whether designated for a particular program, college, or department or for unrestricted use, are tax deductible.

Archives

The University Archives and Regional History Collections is located on the ground floor of Waldo Library. Staff collect, preserve, and make accessible records which document the history of the University and of twelve southwestern Michigan counties. Holdings include: books, ephemera, newspapers, microfilm, photographs, oral history tapes, and manuscript collections. In addition, local public records from southwestern Michigan are on deposit from the State Archives.

Athletics (Intercollegiate)

The University is represented by men's teams in football, basketball, baseball, tennis, indoor and outdoor track, cross country, and soccer.

Women's teams represent the University in basketball, cross country, gymnastics, softball, tennis, indoor and outdoor track, and volleyball.

Athletics are governed by the Athletic Board, which adheres to the policies and principles established by the National Collegiate Athletic Association. Western Michigan University is a member of the Mid-American Conference. Other members of the conference are Bowling Green, Central Michigan, Eastern Michigan, Kent State, Miami (Ohio), Toledo, Ball State, and Ohio. The teams winning Mid-American Conference championships in men's and women's basketball, baseball, and volleyball qualify automatically for the annual NCAA playoffs.

Audiovisual Center

The Audiovisual Center is operated by the Media Services Department of the Division of Academic Services to provide faculty, staff, and students of the University with audiovisual materials and equipment. The AV Center includes an educational film and preview videotape library, preview facility, and central office on the ground floor of Waldo Library, and an equipment center in Dunbar Hall. Students are employed in all locations and may be available to operate audiovisual equipment for classroom instruction and other campus activities. Other services of the center include film and videotape scheduling, consultation, a source library for locating media materials nationwide, a 100-seat auditorium, and a fully equipped maintenance facility for audiovisual equipment.

Graphics Services

Graphics Services provides instructional graphics for faculty, staff, and students. Graphics for research and publication are also done, but priority treatment is given to materials for classroom instruction. Graphics Services also provides support material for the activities of its parent department, Media Services, and does occasional promotional work. Graphics Services is located in Room 0480 of Dunbar Hall.

Media Laboratory

The Media Lab, located in Sangren Hall provides students with self-instructional educational programs in the areas of audiovisual equipment operation and graphics production. The lab provides students with facilities for the production of displays, transparencies, dry mounting, laminating, audio/slide programs, and photographic
developing and printing. Under development is also a television production studio which can be configured as a simulation classroom for faculty assisted production. Small format video television production and campus distribution; film library; audiovisual equipment; graphic production; photographic service; media library for all students; and general media consultation (see specific catalog entries for these services).

While primarily serving students through available services, the service also assists non-instructional units of the campus community with media related needs as well as a selected interaction with the community at-large through such activity as the preparation of broadcast cable television programming.

Music
Numerous musical activities and organizations at Western Michigan University are available for the cultural enrichment of the student. Faculty members, students, and guest artists provide a schedule of more than three hundred on-campus recitals every year, to which all University students are invited.

Students may participate actively in musical life on campus by joining one of the many ensembles—the Marching Band, Symphonic Band, Concert Band, Orchestra, University Chorale, Collegiate Singers, Gold Company, Grand Chorus, Jazz Lab Band, Treble Chorus, Pep Band, Musical Theatre productions and Opera Workshop. The School of Music also offers opportunities for participation in small ensembles—groups for voices, strings, woodwinds, brass, jazz, and percussion.

In addition to School of Music performances, productions are presented by Miller Auditorium and the Student Entertainment Committee.

Photographic Services
Photographic Services does photography for faculty, staff, and students, with the emphasis on materials for specific courses. Original photography and copying can be done, but copying of copyrighted materials will only be done with permission from the copyright holder, obtained by the person requesting the copying. Photographic Services is located in Room 1500 of Dunbar Hall.

Police
Located at the corner of West Michigan Ave and Western Ave., the Department of Public Safety is open 24 hours a day, providing a full range of police services through the use of a uniformed patrol division, a detective division, and a crime prevention bureau. The Department of Public Safety is responsible for investigating all crimes and accidents occurring on University property and is committed to providing an environment conducive to the education of the students at Western Michigan University. Towards that goal, the department’s various divisions and bureaus have coordinated their efforts to create and maintain a feeling of security and safety within the University community.

Information can be obtained by visiting the office, telephoning 383-1880 or 123 (on campus) in an emergency. Questions concerning parking permits and parking violations should be directed to the Parking Violations Bureau in the Public Safety Annex located at the corner of West Michigan Ave. and Marion St. Telephone 383-8160 during normal University business hours.

Publications
Western Herald, WMU’s student newspaper, is published Monday, Wednesday, and Thursday during the fall and winter semesters; Monday and Thursday during the spring session, and Wednesday during the summer session. The Western Herald is made available to students partially through support from the general fund of Western Michigan University. All positions on the paper are filled by students with the exception of the general manager/ adviser.

Western News is the official publication for administration, faculty, and staff members. It is published each Thursday by the Office of Public Information, which also produces the Westerner in association with the Office of Alumni Affairs and Development. The Westerner is published six times each year for alumni and other friends of the University.

Reading Horizons, a quarterly journal devoted to the study of reading problems, is published by the Department of Education and Professional Development and the College of Education.

East Lakes Geographer, a professional academic journal covering the entire breadth of geography and concerning on the Great Lakes (Canada and the United States), is edited and published annually through the Department of Geography.

The Department of English publishes a number of journals: Comparative Drama, a scholarly journal, circulated nationwide, edited by members of the English Department; Currents, a student-edited literary journal containing poetry, prose, and the non-fiction writings of students and faculty; Trail Balloon, a faculty-edited literary journal containing work produced in creative writing courses; and Calliope, for high school writers.

Other academic areas that publish scholarly works include Center for Educational Research, Center for Studies, Department of Blind Rehabilitation, Department of Mathematics and Statistics, Evaluation Center, Medieval Institute, and New Issues Press.

Radio
WMUK is Western’s full power stereo public radio broadcasting service, operating at 102.1 on the FM dial with a power of 50,000 watts. WMUK/FM began broadcasting in 1953, with a power of 400 watts. In 1955 a Kellogg Foundation grant made possible a power increase to 39,000 watts. In 1973, through a federal grant, WMUK increased its power to 50,000 watts and moved transmission facilities to a site 10 miles north of campus. WMUK now serves an area 80 miles in radius; this area includes most of the southwestern quarter of the state.

WMUK/FM provides a cultural extension of the University through its broadcasts of campus, community, and area events. Through the satellite-linked National Public Radio network of stations, WMUK provides listeners with outstanding programming in the fine and popular arts, news, and information from around the world. WMUK has built an enviable reputation in classical, blues, and jazz music programming, as well as programming for Spanish speaking audiences. WMUK/WMU is a charter member affiliate of NPR, the National Public Radio network of nearly 300 non-commercial radio stations. WMUK/FM has won many honors for its programming over the years, including the Major Armstrong Award for excellence in community service programming, the Corporation for Public Broadcasting award for extraordinary service to the community through public radio, the Ohio State Award, and the George Foster Peabody Award for meritorious service in broadcasting.

WIDR/FM, a 100-watt station operated by students and broadcasting on frequency 89.1, is located in the E. Dale Faunce Student Services Building.

R.O.T.C.
The Army Reserve Officers’ Training Corps (ROTC) program is designed to prepare students to become commissioned officers in the U.S. Army, U.S. Army Reserve, and the Army National Guard.

The military science program at Western is a four-year program divided into the Basic Course and the Advanced Course. It offers qualified students courses intended to develop leadership and managerial skills, and to broaden their knowledge of the role of the military in society.

The Basic Course is normally completed during the freshman and sophomore years. No military commitment is incurred and students may withdraw at any time. Course content consists of leadership development, management principles, national defense and physical fitness.

After completing the Basic Course, students who have demonstrated officer potential and meet physical and scholastic standards are eligible to enroll in the Advanced Course.

The Advanced Course is normally completed during the junior and senior years of college and students enrolled receive uniforms, military science textbooks, and a tax-free subsistence allowance. Courses consist of further leadership development, Army organization and management, tactics, and administration.

Any student that passes the ROTC Skills Test may take the opportunity to enroll in ROTC during their junior division year, and for those college community graduates and/or transfer students, the Department of Military Science offers a two-year program. Students can take advantage of this program by applying and being accepted for summer Basic Camp at Fort Knox, Kentucky. This camp stresses physical and mental toughness. In addition, the U.S. Army pays for transportation to and from Fort Knox and a small allowance (approximately $675) while you are there. Successful completion of Basic Camp allows you the opportunity to enter the Advanced Course.
ARMY CORPS NURSES

Students pursuing a nursing degree may qualify for appointment in the Army Nurse Corps through ROTC. The major requirement is a baccalaureate degree in nursing. Nursing students may choose to attend ROTC Nursing Advanced Camp in lieu of the normal Advanced Camp.

FACULTY

The department is located in Oakland Gym, with a marksmanship range and classroom facilities in house. Special training is also conducted for instruction and indoctrination.

More information about the ROTC program is available at the ROTC office or by calling (616) 349-1505 or 383-1990.

Servicemembers Opportunity Colleges

Western Michigan University has been designated as an institutional member of Servicemembers Opportunity Colleges (SOC), a group of over 400 colleges and universities providing educational opportunities for members of the military throughout the world. As a SOC member, WMU recognizes the unique nature of military service and has committed itself to easing the transfer of relevant course credits and providing flexible academic residency requirements.

SOC has been developed jointly by educational representatives of each of the Armed Services, the Office of the Secretary of Defense and a consortium of thirteen leading national higher education associations; it is sponsored by the American Association of State Colleges and Universities (AASCU) and the American Association of Community and Junior Colleges (AACJC).

The SOC designation applies only to the Health Studies, Technical Scientific Studies and Applied Liberal Studies programs of the General University Studies curriculum. Each request is considered on an individual basis.

Television

In its role within the multimedia services department of the Division of Instructional Services, the television faculty supports more than 100 courses with televised instructional materials over a closed-circuit network of six channels and eight direct auditorium feeds—reaching 350 classrooms and non-academic viewing areas.

These television lessons are produced in two modern, three-camera television studios as well as in an unlimited variety of remote locations, utilizing state of the art broadcast quality equipment. Students are employed as crew members, operating camera and sound equipment during productions. Television materials may be preserved on videotape using a wide range of recording formats. A staff of media producers, directors, graphic artists, cinematographers and photographers and various other special skills personnel support the faculty.

Television production, operations, and performance courses are taught by faculty members in the Department of Communication using these facilities in addition to their lab in Brown Hall. A third additional production facility is in developmental stages in Sangren Hall utilizing small format ½ inch VHS technology. For more information contact the Media Lab at 383-4085 or TV scheduling at 383-4297.

University Libraries

The University Libraries consist of the Dwight B. Waldo (Main) Library, the Business Library, the Music and Dance Library, the Physical Sciences Library, the Education Library, and the Cistercian Studies Library. The total collection, which numbers well over two million bibliographic items, includes books, bound periodicals, music scores, recordings, maps, documents, and materials in microform. About 10,000 periodical and serial titles are currently received.

The main collection is housed in the Dwight B. Waldo Library, which is named for the first president of the University. Built in 1959, it was enlarged in 1967 to almost double its original size. A new addition is in the planning stage and is expected to be completed by 1990.

The library system is a depository for United States and Michigan government documents and receives microprint editions of United Nations documents and official records. A microform collection of more than 800,000 contains such items as the Human Relations Area File, the American Periodical Series, Early American Newspapers of the 18th and 19th centuries, the U.S. National Archives, Early English Books printed in Great Britain 1475-1700, and ERIC documents (documents in educational research published by the Educational Resources Information Center).

Some special collections are maintained by the library, and holdings have been especially strengthened in some subject areas to support University programs:

1. The Ann Kercher Memorial Collection is an extensive collection of materials on Africa south of the Sahara. Started more than two
The Documents and Maps Department in the University Libraries, and reference the some 8,000 volumes in the library are rare Cistercian Studies and the area of medieval bibliographies, etc., are maintained in each of the University's Medieval Institute.

The Rood Hall Apts. is a collection of books in the areas of monastic history, spirituality, and culture of Black America.

The Regional History Collection is a unique group of items on the thirteen counties of Southwest Michigan. In addition to books, this collection contains manuscripts of early residents of this area.

The Business Library, located in North Hall, has a collection of more than 83,000 items, which include special microform collections, annual reports from businesses and industries, which include special microform collections, and papers of the pioneer American ecologist, Charles C. Adams.

The Music and Dance Library is located in the new Dorothy U. Dalton Center. In addition to more than 28,000 books and scores, and extensive holdings in music periodicals, this branch contains a collection of 10,000 phonodiscs and tapes, and extensive listening facilities.

The Physical Sciences Library contains 67,000 volumes on the fields of mathematics, astronomy, physics, and geology and has subscriptions to about 600 periodical and serial titles. This branch is located on the third floor of Rood Hall.

The Education Library in Sangren Hall has some 455,000 bibliographic items and receives more than 26,000 periodical titles.

The Ostrichian Studies Library located in Hilside Apts. West is a collection of books in the areas of monastic history, spirituality, and general church history which supports the research and programs of the Institute of Ostrichian Studies and the area of medieval studies at the University. The collection includes rare books, manuscripts, and incunabula, most of which are on an indefinite loan to Western from the Abbey of Gethsemani. Over 700 of the some 8,000 volumes in the library are rare items of interest to medieval scholars from all over the world.

Heldings in all of the University Libraries are recorded in the union card catalog in the Main (Waldo) Library; in addition each branch maintains a special card catalog of its own holdings.

General and specialized reference service is provided at the main Reference and Information Desk, at the Science Reference Desk, and in the Documents and Maps Department in Waldo Library. Reference collections of indexes, abstracts, dictionaries, handbooks, bibliographies, etc., are maintained in each of the University Libraries, and reference librarians offer personal assistance in finding the books, information, and other resources you may need for class or research related problems. In addition, the reference staff offers a one credit hour course, Library Resources, in the General Studies curriculum. The course is designed to introduce the student to the use of the library system, especially to the bibliographic tools and methods necessary to find information in the various subject fields.

An on-line automated retrieval system (OARS), offered by the library, accesses data bases in nearly every subject. The computerized operator allows users to significantly shorten time spent on literature searches for research projects. It is available to faculty, staff, and students on a cost retrieval charge basis. Inquiries about this service may be made at Reference Services in the main library and at all branch libraries.

Interlibrary loan service is available to both students and faculty to provide access to materials not owned by the University Libraries. Requests for loans may be initiated at public service desks in all libraries, as well as at the Interlibrary Loan office in Waldo Library.

Students enrolled in off-campus classes are always welcome at the libraries on campus. They are also provided library services through the library at the Continuing Education Center in Muskegon (Fruitport), through the Lake Michigan College Library in Benton Harbor, through the Lansing Community College Library in Lansing, through an arrangement with the Grand Rapids Public Library in Grand Rapids, and by special on-site arrangements for classes taught elsewhere.

Vehicle Registration
Detailed regulations concerning the use of motor vehicles on campus are available from the Parking Violations Bureau of the Department of Public Safety. All students are eligible to park a motor vehicle on University property, however, they must first register their motor vehicle, motorcycle, and/or mopeds with the Parking Violations Bureau (located in the Public Safety Annex) and pay a registration fee. Information concerning parking regulations, parking permits, and parking violations can be obtained by visiting the office, located at the corner of West Michigan Ave. and Marion St., or by telephoning 383-8160 during normal University business hours.

STUDENT SERVICES COUNCIL

Admissions, Financial Aid and Student Services; Budget and Finance; Campus Planning; Graduate Student Advisory Committee. The Councils consist of faculty members elected by the Faculty Senate for three-year terms, certain ex officio members, several members appointed by the President of the University, and students members selected by the Western Student Association and the Graduate Student Advisory Committee. The terms of elected members expire in April in a staggered year sequence. The Councils include: Admissions, Financial Aid, and Student Services; Budget and Finance; Campus Planning; Graduate Studies; Research Policies; and Undergraduate Studies. For names of members and further information, contact the Faculty Senate office. The Faculty Senate President for 1987-88 is Stanley S. Robin and the Senate Vice President is Linda M. Delene.

ADMISIONS, FINANCIAL AID AND STUDENT SERVICES COUNCIL

The Admission, Financial Aid, and Student Services Council is responsible for initiating, reviewing, developing, and recommending policies pertaining to the academic and student services at Western Michigan University.

BUDGET AND FINANCE COUNCIL

The Budget and Finance Council functions to: (1) review the budgetary process; (2) review and make recommendations concerning the funding of new academic programs, both on and off campus; and (3) conduct special studies as requested by the Executive Board of the Faculty Senate.

CAMPUS PLANNING COUNCIL

The Campus Planning Council serves as an advisory body to the administration and Faculty Senate on matters related to the acquisition, design, renovation, maintenance, and general use of all classroom buildings, faculty office structures, residential units, recreational facilities, and lands owned by the University. In this capacity, the Council: (1) develops and recommends policies to provide a framework within which campus agencies may act in making administrative decisions; (2) develops procedures for the evaluation of policy decisions and administrative actions; (3) processes information brought before the Council from the administration, faculty, and students which will guide the Council in making informed recommendations in its areas of concern; and (4) reviews all major planning proposals of the University which call for decisions regarding building sites, space allocation, long-range campus growth and development, or which impair, limit, or have any
major impact on the aesthetic, physical, or socio-ecological environment of the campus, community, or region.

GRADUATE STUDIES COUNCIL
The Graduate Studies Council reviews, develops, and recommends policy regarding graduate education at Western Michigan University. Policy recommendations include, but are not limited to, the admission of applicants to The Graduate College, development of graduate curricula and approval of graduate programs, selection of graduate faculty, awards and fellowships, and graduate student personnel practices. Reviews include, but are not limited to, existing programs, proposed new programs, significant program changes, the academic standards of graduate level programs, and reports related to graduate programs that are submitted to accrediting bodies on behalf of academic units. The work of the Council is accomplished through standing and ad hoc committees which act on behalf of the Council, within the framework of its policies and subject to its review.

RESEARCH POLICIES COUNCIL
The Research Policies Council is responsible for reviewing, developing, and recommending policies dealing with the stimulation and execution of research and creative activity in the University.

UNDERGRADUATE STUDIES COUNCIL
The Undergraduate Studies Council is a policy-making and review body with jurisdiction over any matter related to the undergraduate curriculum at the University. Thus, for example, it is concerned with the establishment of new departmental programs, new interdisciplinary undergraduate programs, apparent duplication between existing programs or courses, and needs for additional or specialized instruction. Also included in the role of the USC is the discretionary review of recommendations from the Undergraduate Curriculum Committee.

The Athletic Board
The Mid-American Conference consists of nine universities associated for the purpose of intercollegiate sports competition. The league is organized and controlled by the Presidents' Council, which appoints a commissioner to oversee league activities.

On campus, policy relating to the conduct of men's and women's intercollegiate sports is recommended to the President by the Athletic Board.

General Regulations

Academic Regulations

Class Attendance
Students are responsible directly to their instructors for class and laboratory attendance, as well as for petitions for excuses for absences.

Class Load
A first semester freshman may not enroll for more than eighteen hours of work except by special permission, which is seldom granted unless the curriculum demands it. This regulation applies to total credit for work taken by extension or in some other institution, in addition to credit desired in residence at Western.

The normal maximum load for the spring and summer sessions is nine hours. Students employed part-time should reduce their class loads proportionately. If a student works full-time, his/her academic load should not exceed eight to ten hours.

No full-time teacher may enroll at any time in more than two courses offered by the Division of Continuing Education.

Classification
Students at Western Michigan University are classified officially as follows:

Freshmen—Students credited with 0-25 hours, inclusive
Sophomores—Students credited with 26-55 hours inclusive
Juniors—Students credited with 56-87 hours, inclusive
Seniors—Students credited with 88 hours or more

Completion of Work—Final Date
All work taken either on or off the campus must be completed by graduation day. Transcripts of completed work earned off the campus will be received after the end of the semester only in cases where there are extenuating circumstances. Courses taken or completed after the summer session will not count toward bachelor's degrees or teaching certificates granted at the close of the summer session. Students who take or complete such courses will receive their degrees and certificates at the close of the fall semester.

Students who fail to meet the standards will be removed from graduation lists automatically. Such students will be placed in the class of the succeeding semester or session only after reapplication for graduation, assuming other requirements can then be met. When a student fails to meet requirements for graduation resulting from failed courses, from incomplete work, or for any reason for which the student accepts responsibility or has control, responsibility rests with the student to reapply for the next regular graduating class following completion of his/her requirements. Under no circumstances will any student be graduated with a class if his/her academic record does not show complete fulfillment of all requirements within thirty days after the established commencement date.

Comprehensive Examinations
Each department shall have the authority, with the approval of its dean, to establish a procedure for granting credit for any course in that department through comprehensive examinations. All comprehensive examinations should be administered by authorized personnel determined by the department. Each department should determine those courses for which the comprehensive examination procedure applies.

All credit by examination is subject to the following requirements:
1. All credit will be posted as credit only, without grade or honor points. Students who do not achieve a sufficient score for credit will have no entry made.
2. Credit by comprehensive examination in courses numbered 300 or higher can be used to meet the requirement that one-half of all academic work must be completed at a four-year degree-granting institution.
3. Credit by comprehensive examination can be used to meet all other University graduation requirements, except the minimum residence requirements.
4. Credit by comprehensive examination can be posted only for admitted students who have either previous or current enrollment.
5. All credit by comprehensive examination is normally considered undergraduate credit.

Examination fees are assessed on a credit hour basis and are the same for all students. The current fee schedule: less than four credit hours, $25.00; four credit hours to eight credit hours, $50.00.

By special arrangement, some course examinations may require higher fees.

Course Numbering System
The course numbering system is limited to three digits. The first digit indicates the level of work. The second digit indicates an area of study within the series or level. The third digit
courses are numbered from 600 through 799. Graduate courses are numbered 600 through 799. Course numbers assigned to courses in the immediate future may be changed within the past three years, the former numbers are shown in parentheses following the current course number.

**Course Numbers Levels**

- 0-69 Non-credit courses
- 90-99 Terminal course credit that may not be applied toward degree programs
- 100-199 Courses primarily for first-year students
- 200-299 Courses primarily for Sophomores
- 300-399 Courses primarily for Juniors and Seniors
- 400-499 Courses primarily for Seniors
- 500-599 Courses for graduate students only
- 600-699 Courses for graduate students only
- 700-799 Graduate seminars, theses, and independent research, etc.

Generally speaking, an even numbered third digit is the first half of the course and an odd numbered third digit is the second half of the course. Courses that terminate at the end of one semester and may not be divided into two courses in the immediate future may be assigned an odd numbered third digit to protect the system from overloading with even numbered third digits.

**Credit/No Credit System**

The regulations of a system supplementing the A, B, C, D, and E grading system, but not replacing it, except as the student wishes, are as follows:

1. The name of the program shall be Credit/No Credit.
2. "Credit" will be posted for each student who earns the grade of "C" or better. "No Credit" will be posted for any grade below a "C". Faculty members will not be notified whether a student is taking a course for a grade or for Credit/No Credit.
3. A student may elect for Credit/No Credit any course approved by the General Education or General Physical Education credit, as well as other courses not counting toward his/her major or specified in his/her curriculum as defined in the University Undergraduate Catalog. Directed Teaching, a required course, is taken on a credit/no credit basis. Acceptance of Credit/No Credit in required courses may be permitted on an individual basis by the head of the department or dean of the college requiring the course.
4. A student may change only during the drop/add period from Credit/No Credit to grade or from grade to Credit/No Credit.
5. All undergraduate students, regardless of classification or probationary status, will be allowed to enroll Credit/No Credit.
6. Credit/No Credit courses, while counting toward a degree, will not be used to determine the overall grade point average (GPA) of the individual student.

**Important:** Students should be fully aware of the implications of this system for acceptance in graduate schools. It has been ascertained that most graduate schools will accept students who have elected to take courses on a Credit/No Credit basis, but that courses taken on this basis are sufficient in number on the transcript, the Graduate Record Examination may be utilized to determine the student's acceptability. Graduate schools, in general, do tend to favor those applicants who have good letter grades on their transcripts.

**Dean's List**

To gain a place on the Dean's List for a semester, a student must:

1. Have completed at least fourteen semester hours of work during the semester for letter grade.
2. Have a grade point average of at least 3.50 for the semester.

Official Dean's Lists are not prepared for the spring or summer sessions.

**Changing Courses (Drop/Add)**

Students may enroll in (add) any course through the first three days of classes of a semester or session. The final date for adding courses is published in the Schedule of Classes.

- Only students who have a class that is not officially scheduled to meet during the three day drop/add period will be given an additional opportunity to drop/add. See the Schedule of Classes for details of this procedure.
- Students may withdraw (drop) from courses without academic penalty through the first Friday mid-term-semester. (Initiate this action at the Records Office.) The final date for dropping is published in the Schedule of Classes.
- Students may not withdraw from one class or from all classes after this date without academic penalty.
- Students who believe they must withdraw after this date without penalty because of genuine hardship must appeal to a Faculty-Student Committee. Documentation of justification must be presented to the Office of the Registrar on appropriate forms to be secured at the Registrar's Office. The student is expected to follow the outlined steps in making this appeal. The action of the Committee will be final. Each student is encouraged to visit with his/her advisor before deciding to withdraw from class. The above policy applies to students who withdraw from any or all of the courses for which they are registered. For additional regulations governing complete withdrawals, see the section under "Withdrawal From the University."

**Examinations**

1. All students enrolled in a course in which a final examination is given must take the examination.
2. Students request for an examination at any other time than that scheduled will not be honored.

**The Family Educational Rights and Privacy Act**

The Family Educational Rights and Privacy Act of 1974 is a Federal law which states that (a) a written institutional policy must be established and (b) a statement of adopted procedures covering the privacy rights of students must be made available. The law provides that the institution will maintain the confidentiality of student education.

Western Michigan University accords all the rights under the law to students who are declared independent. No one outside the institution shall have access to, nor will the institution disclose any information regarding students' educational records without the written consent of the students, except to personnel within the institution, to officials of other institutions in which students seek to enroll, to persons or organizations providing students financial aid, to accrediting agencies carrying out their accreditation function, to persons in compliance with a judicial order, and to persons in an emergency in order to protect the health or safety of students or other persons. All these exceptions are permitted under the Act.

Within the Western Michigan University community, only those members individually or collectively, acting in the students' educational interest are allowed access to student educational records. These members include faculty, administration, clerical and professional employees, and other persons who manage student record information (e.g., Office of the Registrar, Academic Records Office, Controller, Financial Aid, and the Office of Admissions).

At its discretion, the institution may provide Directory Information in accordance with the provisions of the Act to include: student name, address, telephone number, date and place of birth, curriculum and major field of study, the most recent previous educational agency or institution attended by the student, participation in officially recognized activities and sports, and weight and height of members of athletic teams.

Students may withhold Directory Information by notifying the Academic Records Office in writing within the official drop-add period of each semester or session.

The law provides students with the right to inspect and review information contained in their educational records, to challenge the contents of these records, to have a hearing if the outcome of the challenge is unsatisfactory, and to submit explanatory statements for inclusion in their files if they feel the decisions of the hearing panels to be unacceptable. The Registrar at Western Michigan University has been designated by the institution to coordinate the inspection and review of educational records and student educational records, which include admissions, personal, academic, and financial files and academic, cooperative education, and placement records. Students desiring to review their educational records must make written requests to the Registrar. Only records covered by the Act will be made available within forty-five days of the request. Students may have copies made of their records with certain exceptions, (e.g., a transcript of an original or source document which exists elsewhere).

These copies are made at the students' expense, at the prevailing rate of ten cents per page. Educational records do not include the records of instructional, administrative, and educational personnel, which are the sole possession of the maker and are not accessible or revealed to any individual except a temporary substitute, records of the law enforcement unit; student financial aid records; employment records; or alumni records. Health records, however, may be reviewed by physicians of the students’ choosing.

Students may not inspect and review the following, as outlined by the Act: financial information submitted by their parents; confidential letters and recommendations associated with admissions, educational records, or job placement, or honors to which they have waived their rights of inspection and review; or educational records containing information about more than one student, in which case the
Grade Changes
A student who believes that an error has been made in the assignment of a grade must initiate contact with the faculty member involved within ninety days of the end of the semester for which the grade was assigned. Failure to act within the ninety day time period will disqualify the student from further consideration of the matter.

Grade Point Average
A grade point average is obtained by dividing the total number of honor points earned by the total number of semester hours of work for which the student is officially enrolled during any period. For example, a total of thirty-two honor points earned in a semester by a student officially enrolled for sixteen hours of work, gives a grade point average of 2.0 for the semester.

Grading System
The student receives one grade in each course taken. This grade combines the results of course work, tests, and final examinations. Grades are indicated by letters, to each of which is assigned a certain value in honor points per hour of credit, as shown in the table below.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Significance</th>
<th>Honor Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Outstanding, Exceptional</td>
<td>Extraordinary 4.0</td>
</tr>
<tr>
<td>BA</td>
<td>Very Good, High Pass</td>
<td>3.5</td>
</tr>
<tr>
<td>B</td>
<td>Satisfactory, Acceptable, Adequate</td>
<td>2.5</td>
</tr>
<tr>
<td>C</td>
<td>Poor</td>
<td>1.5</td>
</tr>
<tr>
<td>D</td>
<td>Failure</td>
<td>0.0</td>
</tr>
<tr>
<td>X</td>
<td>Unofficial Withdrawal</td>
<td>0.0</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete</td>
<td>0.0</td>
</tr>
<tr>
<td>CR</td>
<td>Credit</td>
<td>1.0</td>
</tr>
<tr>
<td>NC</td>
<td>No Credit</td>
<td>0.0</td>
</tr>
<tr>
<td>AUD</td>
<td>Audit (non-credit enrollment)</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Graduation
Application for graduation must be made no later than seven weeks before the anticipated graduation date. In order to secure a graduation audit statement before registration for the final semester, a student should apply during his junior year. Application for graduation:

Summer Session
Apply by April 1, but not later than July 1.

Fall Semester
Apply by January 1, but not later than November 1.

Winter Semester
Apply by September 1, but not later than March 1.

Spring Session
Apply by January 1, but not later than May 1.

Honor Points
The number of honor points earned in a course is the number of semester hour credits given by the course, multiplied by the number of honor points per hour of credit corresponding to the letter grade received, as shown in the preceding table. For example, a grade of B in a 4-hour course gives 4 x 3, or 12 honor points.

Honors
Honors are conferred upon graduating students who have displayed a high level of performance during their university career. Receipts of honors receive their degrees:

Cum laude—when their grade point average is 3.50 to 3.69, inclusive

Magna cum laude—when their grade point average is 3.70 to 3.89, inclusive

Summa cum laude—when their grade point average is 3.90 to 4.00, inclusive

In computing the grade point average for honors-in-course, the following rules will apply:
1. All credits and honor points earned at Western Michigan University will be counted.
2. Credits and honor points earned in correspondence and extension classes will be counted toward honors.
3. All students must have earned at least sixty semester hours of credits at Western Michigan University, of which fifty must be graded.

The graduation program will list as candidates for honors all students who have earned a point-hour average of 3.50 through the next-to-last semester of residence (based on a minimum of forty-five semester hours of credit earned at Western of which thirty-five hours must be in courses with grades.) Final determination of honors and level of awards will be based upon all work and will appear on the diploma and final transcript.

“I” Incomplete
This is a temporary grade which the instructor may give to an undergraduate student when illness, necessity, absence, or other reasons beyond the control of the student prevent completion of course requirements by the end of the semester or session. This grade may not be given as a substitute for a failing grade.
A grade of “I” must be removed by the instructor who gave it or, in exceptional circumstances, by the department chairperson. If the unfinished work is not completed and the “I” grade remains on the student’s permanent record beyond the end of the next-to-last semester, it shall be transferred to an “E” (failing). Students who receive an incomplete grade in a course must not re-register for the course in order to remove the “I”.

An instructor who assigns a grade of “I” will complete an official Report of Incomplete Work form indicating the remaining requirement for removal of the incomplete grade and indicating the time allowed, if less than one full year. The instructor will retain a copy for his/her own records and submit a copy to the departmental office. The remaining copies will be returned, along with the grade sheets, to the Academic Records Office, which will provide the student with a copy.

I.D. Regulations
Each student on campus is required to have an identification card, which includes photo, name, social security number, student signature, and validating label. Each new student is eligible for an I.D. card free of charge. This card should be
Independent Study

Independent Study refers to enrollment in an appropriately designated, variable-credit course for a specific plan of study, authorized and supervised by a designated, consenting faculty member.

Independent Study is not a substitute for regular courses, but an enrichment opportunity. Normally, it is a project designed to allow students to investigate an area of interest not within the scope of a regular course, to probe in more depth than is possible in a regular course, or to obtain an educational experience outside that normally offered by a regular course. Since individual Independent Study projects are not normally reviewed through the usual departmental and University processes, it is essential that the academic adequacy of such projects be assured by some other means applied consistently throughout the University. The following policy guidelines are intended to serve that function.

PROPOSALS FOR INDEPENDENT STUDY

Independent Study requires an adequate description of the work to be undertaken, which, in turn, requires planning in advance of the registration period. Sufficient time, therefore, must be allowed for such planning and for obtaining the necessary faculty and administrative approvals.

While the Independent Study project is normally student-initiated, early interaction with faculty is essential in the development of a mutually acceptable project description. At minimum, such a description should contain an outline of the study topic, specification of the work to be done and the materials to be read, the credit to be given, the type and frequency of faculty-student contacts, and a statement of the evaluative criteria to be used by the faculty member.

APPROVAL PROCESS

The faculty member must accept and approve the student and the project, and then submit the agreed-upon proposal on the appropriate University form to the department chairperson for approval. If the chairperson approves, information copies of the form must be submitted to the dean and the Registrar. The Registrar will not accept registrations without this information and authorization.

The granting of approval by the department chairperson may involve considerations, such as faculty workload, which go beyond the merits of the project.

FACULTY RESPONSIBILITY

Independent Study is basically a tutorial process, necessarily involving substantial faculty participation. In that respect, it should be distinguished from "credit by examination;" a different opinion in which the role of the faculty member is primarily evaluative.

A student is on his/her own in Independent Study in that it involves no class meetings or formal lectures, but the faculty member is the responsible custodian of the project, obliged to provide guidance, assistance, criticism, suggestion, and evaluation.

Interinstitutional Study

Western Michigan University students may take classes at Davenport College, Kalamazoo College, Kalamazoo Valley Community College, and Nazareth College through a cooperative program. Information and enrollment forms may be obtained from the Director of Records, Room 3210, Seibert Administration Building.

Name Change

Students may maintain academic records under the name used at the time of admission. However, if an active student desires to make an official name change, he/she must report to the Academic Records Office, then to the Registrar in the Administration Building to record the change. Legal proof may be required and the student will be required to swear to the fact the name change is not requested for any fraudulent purposes.

Registration

ADVANCE REGISTRATION

In the interest of providing to as many students as possible their requested schedules, Western offers, through its Registration Office, advance registration. Student fees must be paid on or before two weeks prior to final registration, or the advance registration will be cancelled. A final day for registration is designated for those who did not advance register and for those whose advance registration was cancelled. The procedure for advance registration is set forth in the Schedule of Classes, issued prior to each semester and each session.

LATE REGISTRATION FEE

See Student Fees.

Repeated Courses

Any course in which a student may have been enrolled more than once is considered a repeated course. A grade must be presented for each course. The grade and credit earned the final time in the course will count toward curricular or degree requirements. All courses taken, even if they have been repeated, will be counted in grade point averages. Grade point averages will be adjusted for repeated courses, if necessary, only at the time of graduation. A repeated course is not removed from the student’s record.

Scholarship Standards

A student must earn an overall grade point average of at least 2.0 to satisfy degree requirements. The scholarship policy is intended to encourage satisfactory progress toward that end. The policy operates as follows:

1. Good Standing

A student is in good standing whenever his/her overall grade point average is at least 2.0.

2. Warning

Whenever the grade point average for any enrollment period is less than 2.0, but the overall grade point average is 2.0 or above, the student will be warned.

3. Probation

The student will be placed on probation whenever his/her overall grade point average falls below 2.0.

4. Probation Removed

Whenever the conditions of Good Standing are restored, Probation will be removed.

5. Continued Probation

If the overall grade point average increases .01 or better, although still below 2.0, the student may be continued on Probation for one additional enrollment period.

6. Dismissal

The student who fails to increase his/her overall grade point average to at least 2.0 by the end of an enrollment period of Probation. 01 or better, or whose overall grade point average fails to reach 2.0 at the end of one enrollment period of Continued Probation, will be dismissed from the University. Exceptions may be granted, at the discretion of the Director of Admissions, where the increase has been substantial but still falls fractionally short of the minimum 2.0 requirement. Students who have been dismissed from Western are expected to remain out at least one full fifteen-week semester. The Committee on Readmissions is concerned with the extent to which the dismissed student, who is applying for readmission, has resolved the causes of past academic difficulty. It is required, therefore, that the student include a written statement with the re-entry application.

Standard For Graduation

A student must have an overall grade point average of 2.00 or higher to be graduated in any curriculum.

If a student goes on academic probation or is dismissed as a result of the work taken in his/her final semester, he/she will be required to remove the low scholastic status before being granted a degree or certificate.

Student Cheating

The faculty of Western Michigan University wishes to assert its position that student cheating cannot and will not be tolerated. If it is permitted, the honest student is penalized for the harm done personally and to the rest of the academic community. Most important, cheating clearly subverts the university ideal of independent, original, and individual thinking and learning.

Definition: Cheating shall be defined as any attempt by a student to represent work performed wholly or in part by others as his/her own, or any effort to use unauthorized aids during a formal testing situation.

Procedures: A faculty member who detects cheating should either personally handle the discipline or turn the case over to the Dean of Students for reference to established disciplinary bodies. All actions taken on cheating, whether by the faculty member or by one of the disciplinary bodies, should be reported to the Dean of Students. Student
representatives should have at least a preliminary voice in the disposition of all cases involving cheating that have been referred to disciplinary committee, and in the establishment of fair and reasonable standards for degrees of punishment, including expulsion.

Student Directory
The WMU Faculty/Staff/Student Telephone Directory is published annually by the University. It is distributed during early November, without charge, to all students in residence halls, family housing units, and is available at the Information Center in the Siebert Administration Building.

Individual listings in the WMU Student Directory contain the following information:
1. Name
2. Curriculum, class
3. Local address and telephone number
4. Home address

Students wishing to exclude any or all of the above information from the WMU Student Directory must fill out a Directory Exclusion Form in Room 3210, Siebert Administration Building, during the first three days of classes fall semester. During winter, spring, and summer terms, students may restrict this information to academic use by filling out the Directory Exclusion Form during the first three days of classes.

Transcripts
A student desiring a transcript of his/her record in this University should write to the Office of Academic Records, giving dates of attendance and, if a graduate, the date of graduation. All names under which the student may have been enrolled and a social security number should be provided. All copies are $3.00 each. No transcript will be released except upon written authorization of the student.

Transferring Credit Back To WMU
All transfer regulations governing new transfer students apply equally to WMU students who take work at other institutions that they wish to transfer back to WMU. Before enrolling at another institution, WMU students must receive the approval of both the department and the Undergraduate Admissions Office.

University Tuition Scholarship Waiver
Undergraduate students interested in taking advantage of the University Tuition Scholarship Waiver must report to the Academic Records Office, Siebert Administration Building to pick up the authorization form. Students who meet the following criteria are eligible to participate in this program:
1. Must have previously earned thirty hours of credit from WMU.
2. Must presently be enrolled and have paid for fifteen hours of credit for the semester they are seeking the tuition waiver.
3. Must have an overall G.P.A. of 3.25 at Western Michigan University.
4. Must be an undergraduate student in a degree program.

Undergraduate students who meet the qualifications may select one course per semester outside their major, in underenrolled courses, as determined by the departments, during the drop/add week only.

Once the students have ascertained that they would like to participate in this program and meet all the criteria, they should go to the Academic Records Office for the authorization form. The student then proceeds to the drop/add center during posted days and hours and checks with the department to see if the course they are interested in is available. If the course is available, the department will sign the authorization card and the student will present this card to the assessor when processing their added class.

Unit of Credit
The unit of credit is the semester hour; the number of semester hours credit given for a course generally indicates the number of periods a class meets each week.

Veterans’ Assistance
The Academic Records Office on the third floor of the Administration Building certifies veterans under the G.I. Bill and its extensions. Changes in enrollment or current address must be reported immediately to the Academic Records Office. Proof of a change in dependents should be sent directly to the V.A. Regional Office in Detroit. Forms may be obtained at the Academic Records Office.

In addition to normal scholarship standards, students receiving benefits from the Veterans Administration are advised of their additional rights and responsibilities.

All students have a grade report mailed to them shortly after the close of each semester or session. If the student’s grade-point average falls below 2.00, an explanatory letter accompanies the grade report. Remedial action on the part of the student is recommended in the letter.

A complete record of all classes taken and grades received is maintained in the Academic Records Office. A student copy of this record is available upon personal request, with proper identification. Student copies picked up in person are free; there is a $3.00 charge for mailed copies.

Students who are academically dismissed or on continual probation must be requested to change curricula, to retake specific courses, or to take other remedial action before re-certification. After two semesters on probation, the Veterans Administration is notified. Benefits may be terminated for such students even if allowed to remain in school.

Students are certified on the basis of attendance and academic progress toward degree goals. Serious overpayment problems can be eliminated by prompt notification to the Academic Records Office of changes in these areas.

Each student receiving benefits is required to sign a statement once a year outlining plans for the coming year and declaring personal responsibility for regular attendance during that year.

Withdrawal From Classes After the Official Date to Drop
1. The final date to withdraw officially from classes without academic penalty is the first Friday past midsemester. The specific date is published in the Schedule of Classes each semester or session. (Each student is encouraged to confer with the instructor before withdrawing from class.)
2. Students who wish to officially withdraw from class after the first Friday past midpoint of the semester because of genuine hardship (i.e., illness, death in the immediate family) must file a written appeal on forms which may be secured at the Registrar’s Office.
3. The Appeals Committee may request information from the instructors involved and from other appropriate sources.
4. The Appeals Committee will rule upon the basis of the student’s written application and any additional information received.
5. A committee to review late withdrawals will be appointed by the Vice President for Academic Affairs. Its membership will include the University Registrar as chairperson, five faculty members, and two students.

Student Academic Ethics: A Guide to Academic Honesty
Every situation concerning scholastic conduct cannot be included in this context. Therefore it is important that students maintain close communication with faculty members in order to clarify expectations and standards. At the beginning of each course, it is critical for faculty to clearly state their policies regarding academic honesty.

WHAT IS ACADEMIC DISHONESTY?
Academic dishonesty is intentional cheating, fabrication, or plagiarism. It is also knowingly helping or attempting to help others be dishonest. Academic dishonesty lowers scholastic quality and defrauds those who will eventually depend upon our knowledge and integrity.

Cheating
Definition
Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise.

Clarification
1. Students completing any examination should assume that external aids (for example, books, notes, calculators, conversation with others) are prohibited unless specifically allowed by the instructor.
2. Students may not have others conduct research or prepare work for them without advance authorization from the instructor. This includes, but is not limited to, the services of commercial term paper companies.
3. Major portions of the same academic work may not be submitted more than once for credit or honors, without authorization.

Fabrication
Definition
Intentionally falsifying or inventing any information or citation in any academic exercise.
### Clarification

1. "Invented" information may not be used in any laboratory experiment or academic exercise. It would be improper, for example, to analyze one sample in an experiment and then "invent" data based on that single experiment for several more required analyses.

2. One should acknowledge the actual source from which cited information was obtained. For example, a student should not take a quotation from a book review and then indicate that the quotation was obtained from the book itself.

3. Students must not change and resubmit previous academic work without prior permission from the instructor.

### Plagiarism

**Definition:** Intentionally or knowingly representing the words or ideas of another person as one’s own in any academic exercise.

**Clarification:**

- **1. Direct Quotation**—Every direct quotation must be identified by quotation marks or appropriate indentation, and must be cited in a footnote or endnote.

- **2. Paraphrase**—Prompt acknowledgement is required when material from another source is paraphrased or summarized, in whole or in part, in one’s own words. To acknowledge a paraphrase properly, one might state: "To paraphrase Locke’s comment..." Then conclude with a footnote or endnote identifying the exact reference.

- **3. Borrowed facts**—Information gained in research or research which is not common knowledge among students in the course must be acknowledged. Examples of common knowledge include the names of leaders of prominent nations, basic scientific laws, etc. Materials which add only to a general understanding of the subject may be acknowledged in the bibliography and need not be footnoted or endnoted.

One footnote or endnote is usually enough to acknowledge indebtedness when a number of connected sentences are drawn from one source. When direct quotations are used, however, quotation marks must be inserted and acknowledgement made. Similarly, when a passage is paraphrased, acknowledgement is required.

Please consult with the instructor for further information about plagiarism.

### Facilitating Academic Dishonesty

**Definition:** Intentionally or knowingly helping or attempting to help another commit an act of academic dishonesty.

**Clarification:** A student must not knowingly allow another student to copy from his or her work during any academic exercise. This includes, among other things, examinations, videotapes, audiotapes, laboratory experiments, and term papers.

### COMPUTER MISUSAGE DEFINITION

**Definition:** Disruptive or illegal use of computer resources.

**Clarification:**

- **1. No student shall access, copy, examine, modify, utilize, or destroy any computer equipment, hardware, software, or file that is not specifically intended for his/her own personal use, without written permission.**

- **2. Disruptive or illegal use of computer resources includes, but is not limited to:**
  - Violation of copyrights held on software or programs; tampering with computer equipment or hardware or with the operation of any computer system or function; execution, plagiarism or cheating in any form; any act which is unduly disruptive to other users, or operators; and any invasion of personal or institutional privacy with the use or aid of any computer equipment.

### WHAT ARE THE POSSIBLE CONSEQUENCES OF ACADEMIC DISHONESTY?

When academic rules are broken, procedures may vary according to circumstances. Actions that could be taken include (but are not limited to):

- **(a) Failing grade:** for the work involved, failure in the course, or the failure to fulfill analyses.

- **(b) Personal placement:** in the course, and/or removal from the University of Maryland was the source of material for this statement. It was prepared by a WMU Student Services committee.

### Student Academic Rights: Policies and Procedures

#### A. INTRODUCTION

The University endorses, as a guideline for policy, the following section from the University Statement on Rights and Freedoms of Students.

In the Classroom

The professor in the classroom and in conference should encourage full discussion, inquiry, and expression. Student performance should be evaluated solely on an academic basis, not on opinions or conduct in matters unrelated to academic standards.

Protection Against Improper Academic Evaluation

Students should have protection, through orderly procedures, against prejudiced or capricious academic evaluation. At the same time, they are responsible for maintaining the standards of academic performance established for each course in which they are enrolled.

Protection of Freedom of Expression

Students should be free to take reasonable exception to the data or views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.

### B. POLICIES AND PROCEDURES

1. **Students** should be fully informed by the faculty about course requirements, evaluation procedures, and the academic criteria to be used in each class. This information should be provided at the beginning of the semester or sufficiently in advance of actual evaluation.

2. **Procedures for Reviewing Student Grievances Related to Grading**

- Students have the right to have all their examinations and other written graded material made available to them with an explanation of the grading criteria. Faculty should retain all such material not returned to the student for at least one full semester after the course was given. Faculty are not required to return such material to the student, but must provide reasonable access to it.

- Whenever a student believes he/she has a grievance regarding a grade, he/she should first arrange a meeting with the instructor, who may be able to explain the reasons for the grade or recommend a change, if warranted.

- If the student believes that he/she has not received a satisfactory resolution of the grievance from the instructor, he/she should then go to the department chairperson or head, who may effect a satisfactory resolution.

- If the student is still dissatisfied after seeing the department chairperson or head, the student should next see the University Ombudsman. The function of the Ombudsman in this situation is to collect information from both the student and the faculty member and then make a decision that (a) the student's grievance is unwarranted and should not be considered further, or (b) there is sufficient evidence that the situation be considered by the Undergraduate Committee on Academic Fairness.

- The Undergraduate Committee on Academic Fairness consists of three faculty and three undergraduate students.

- When a case is presented to the Committee, the Committee shall investigate it, making sure that all interested parties have a full opportunity to present their position. The Committee will be able to recommend (a) no grade change, (b) a change of letter grade, (c) credit/no credit, or (d) any other grade used by the Records Office.

- If the Committee decides there should be no change of the grade, they will so inform the student, the faculty member, the department chairperson or heads, and the Ombudsman. If the Committee decides to recommend a change of grade, the Committee will first inform the faculty member of its intent so that he/she may initiate the change. If the faculty member prefers not to initiate the change, the Committee will do so by notifying the University Registrar.

- To protect all parties involved in any case, the strictest privacy consistent with the Committee's task will be maintained.

- Occasions do occur when a faculty member or an administrative official may wish to question a grade or a grade change. In such instances, these procedures, beginning with the Ombudsman, shall be available to them.

3. **Policies and Procedures Regarding Requirements**

- All students who seek advice on academic requirements will be provided written copies of their academic adviser's recommendations, and students will not be held responsible for errors made by their advisers. This section is not to be interpreted to mean that the student is relieved of responsibility for meeting the total graduation requirements stated in the catalog in force at the time he/she was admitted, or in a later catalog if he/she chooses to meet its graduation requirements.

- The student shall not be held responsible for meeting curricular requirements that are not listed or not applicable under the catalog governing the work he/she is taking.

- Every department shall provide systematic procedures for students to express their views on matters of program and curriculum.
• University policy and implementation of such policy should not be determined and enforced according to the needs of computer programming or records. Special care should be taken to insure that no individual is treated unfairly because of computer problems.
• The University Ombudsman will have the authority to investigate complaints, and recommend or negotiate fair solutions on behalf of the student.

Conduct and Discipline

Rules and regulations covering student conduct are developed by the Student Services Council, composed of faculty administration and students. The policies, when approved, are published in The Code of Student Life. Rules and regulations appearing in this Code are developed under the philosophy reflected in this statement.

"It is the intention of Western Michigan University that the individual student help develop a responsible, intelligent University community by maintaining his or her own integrity through self-discipline and a sense of responsibility to the community."

The Dean of Students has overall responsibility for student conduct and discipline. It is implemented by the Office of University Judiciaries. When infractions of rules and regulations occur, violators will be referred to the Office of University Judiciaries for disposition.
Bachelor's Degrees

The Board of Trustees, on recommendation of the President and faculty of Western Michigan University, confers degrees as follows:

BACHELOR OF ARTS

The student who completes a curriculum conforming to the requirements of this degree, with at least seventy hours of General Education, Language and Literature, Science, Social Science, and designated Fine Arts courses, including at least eight hours in one foreign language, is eligible for the degree of Bachelor of Arts. If two or more years of high school preparation in one foreign language are presented for entrance, the requirements for foreign language may be waived.

BACHELOR OF BUSINESS ADMINISTRATION

BACHELOR OF FINE ARTS

BACHELOR OF MUSIC

BACHELOR OF SCIENCE

The student who completes a curriculum conforming to the requirements of this degree, with a minimum of forty hours taken from the General Education program, and courses in the Language and Literature, Science, or Social Science areas, is eligible for the degree of Bachelor of Science.

BACHELOR OF SCIENCE IN ENGINEERING

Aircraft, Automotive, Computer Systems, Electrical, Environmental, Industrial, Mechanical, and Paper

BACHELOR OF SCIENCE IN MEDICINE

Physician Assistant

BACHELOR OF SOCIAL WORK

SECOND BACHELOR'S DEGREE

A student may earn a second bachelor’s degree at Western Michigan University. In order to qualify, a student must meet all Western Michigan University bachelor degree requirements and earn a minimum of thirty semester hours of residence credit beyond those required for the first degree. Students who are interested in a second degree must receive written approval for their program of study from the appropriate academic adviser and subsequently from the Director of Academic Records before beginning their course work.

Graduate Degrees

MASTER OF ARTS

MASTER OF BUSINESS ADMINISTRATION

MASTER OF DEVELOPMENTAL ADMINISTRATION

MASTER OF FINE ARTS

MASTER OF MUSIC

MASTER OF PUBLIC ADMINISTRATION

MASTER OF SCIENCE

MASTER OF SCIENCE IN ACCOUNTANCY

MASTER OF SOCIAL WORK

SPECIALIST IN EDUCATION

Sixth-year programs are offered in Educational Leadership and School Psychology.

DOCTOR OF EDUCATION

Three doctoral degree programs are offered by the College of Education: Counseling and Personnel Education, Leadership, and Special Education.

DOCTOR OF PHILOSOPHY

Programs leading to the Ph.D. degree are offered in Mathematics, Psychology, Science Education, and Sociology.

DOCTOR OF PUBLIC ADMINISTRATION

Degree Requirements

Any curriculum leading to a bachelor’s degree consists of at least 122 hours of credit. The student must meet the following requirements or their equivalent.

University Requirements

1. Courses must be selected so that the requirements in at least one of the curricula are fulfilled before graduation.

2. The student must complete a major with a minimum of twenty-four hours and a minor with a minimum of fifteen hours. A thirty-hour subject major or thirty-six-hour group major is required of students in Elementary and Secondary Education, with a minor or minors of at least twenty semester hours. For further details see Curricula for Teachers. In Elementary Education the student may complete two minors or group minors of twenty or twenty-four hours each; or one major or group major of thirty or thirty-six hours; in addition to the major or two minors, a minor in Elementary Education is required. Some students may be excused from the requirement of declaring a regular major and/or minor field if they satisfy the requirements of their curriculum as set forth in the catalog, or that curriculum as modified by substitutions approved through normal channels.

3. Each student must complete thirty-five hours of work in approved General Education courses. Beginning with the Fall Semester, 1973, students graduating with an Associate of Science degree from Michigan two-year colleges, which are signatory to the Michigan Association of Collegiate Registrars and Admissions Officers General Education Agreement, will automatically have fulfilled the first and second year General Education requirements. General Education requirements of two courses at the junior and senior levels will continue to be required.

4. A minimum grade point average of 2.0 must be attained in any major or minor(s) presented for graduation.

5. Each student will fulfill all the requirements of the Intellectual Skills Development Program, as outlined in this section.

6. Each student must satisfy the University computer literacy requirement, as outlined in this section.

7. Each student must complete two semester hours of general physical education activities classes. First-year students are urged to arrange their schedules so that they complete their two-hour physical education requirement no later than their sophomore year. Persons thirty years of age or older at the time of graduation are not bound by this requirement. Such a waiver applies only to general physical education and not to specific curricular requirements nor to total hours required for graduation.

Veterans of military service (minimum of one year continuous active duty) shall, upon request, be granted two hours of general physical education credit. A student limited in physical activity may receive counseling for courses suited to his/her limitation through the Medical Recommendation Procedure. (See “General Physical Education.”)

Exceptions. (#5) A maximum of eight hours of general physical education may be counted toward graduation.

8. Minimum residence requirements: All candidates must present a minimum of thirty hours through Western Michigan University. Ten of the last thirty hours must be taken through Western Michigan University. Correspondence credit and credit by examination may not be used to satisfy any of the minimum requirements. Individual colleges and departments may have additional residency requirements.
9. A maximum of fifteen semester hours of credit in correspondence (self-instructional) courses may be applied to a degree. Students in the General University Studies curriculum should refer to the Division of Continuing Education section of this catalog for further information.

10. Students transferring from a two-year community or junior college must complete a minimum of one-half of the academic work required in their curriculum at an accredited four-year, degree-granting institution (exclusive of the general physical education requirement).

11. A student may graduate under the WMU catalog in effect at the time of the initial registration at WMU or any succeeding catalog, except that no student may graduate under the requirements of a catalog which is more than ten years old. (For exception see “Special Policy” under “Graduate Requirements for a Bachelor of Science in Engineering” listed in the College of Engineering and Applied Sciences.)

12. In cooperation with two-year institutions of higher education in the State of Michigan, a student who transfers directly to Western Michigan University from a two-year Michigan institution may elect to graduate under the WMU catalog in effect at the time of the initial registration at the two-year institution. The student must, however, meet the requirements of the above ten-year rule.

### Intellectual Skills Requirements

The Baccalaureate degree at Western Michigan University includes proficiency in the intellectual skills of reading, writing, and quantification. In order to insure development of students’ abilities in these skills, the University maintains an Intellectual Skills Development Program. New students entering WMU under the 1983-84 and subsequent catalogs will participate in the program.

The first phase of the program occurs upon entry to the University, typically at Orientation, when student competencies are assessed via ACT scores and/or local tests. Skills requirements for each student are determined at this time.

#### WRITING

All WMU students are required to pass a college-level writing course. Students whose test results indicate weak writing skills will be placed into a remedial course, which must be passed before proceeding to the required college-level writing course. Students who demonstrate superior writing skills may be exempted from the college-level writing course requirement.

- **College Reading.** This course is designed to improve comprehension, vocabulary, and study skills, and thus prepare students for further college work.

- **QUANTIFICATION**
  - **On the basis of scores on a test of computational skills, certain students are required to pass MATH 109. Students who wish to proceed to other mathematics courses must earn a C or better in MATH 109.**
  - **ENGL 100, BIS 100, ED 104, and MATH 109 carry academic credit and grades earned are included in calculating the student’s grade point average. The credits for these courses, however, constitute an additional graduation requirement beyond the total number of credit hours required for a student’s curriculum. Students who are placed into any of these courses must pass the course(s) before registering for their thirty-third credit hour at Western.**
  - **Students who fail to demonstrate competency by test or by course by the time of enrollment in the thirty-third credit will be permitted to enroll only in the above named skill building course.**
  - **Students may resume regular course enrollment only after all entry-level competencies are demonstrated.**
  - **All college-level writing course must be completed before a student registers for the sixty-second credit hour at Western.**

- **ACADEMIC ASSISTANCE**
  - Academic support programs are available to all students free of charge at the Academic Skills Center. Certain academic departments also offer tutorial services.

### Intellectual Skills Development Program—International Students

**WRITING**

Beginning undergraduate International Students are placed into, or exempted from, Linguistics 111 based on the results of either the MTEL (Michigan Test of English Language Proficiency) or the TOEFL (Test of English as a Foreign Language). Scores of 75-84 on the MTEL or 500-549 on the TOEFL warrant placement into Linguistics 111.

The Office of International Students Services requires completion of Linguistics 111 during the student’s first enrollment period at WMU. This course must be passed before a student may proceed to fulfill the college-level writing requirement.

International students who are not required to take Linguistics 111 will proceed to fulfill all Intellectual Skills requirements in writing, beginning with the college-level writing course.

**QUANTIFICATION**

International students will fulfill all Intellectual Skills requirements in quantification.

**READING**

Beginning International Students are placed into a course in reading skill development (ED 106) based on the results of either the MTEL or the TOEFL. Scores of 75-84 on the MTEL or 500-549 on the TOEFL warrant placement into ED 106. This course must be passed before a student registers for the thirty-third credit.

### International Transfer Students

International transfer students will abide by the Intellectual Skills Development Program requirements for transfer students.

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**Failure to Enroll in the Intellectual Skills Program as outlined above will result in cancellation of admission.**

### Intellectual Skills Development Program—Transfer Students

Transfer students entering under the 1983-84 and subsequent catalogs will participate in the program.

**WRITING**

Students who transfer a college-level writing course of 2.7 or more semester hours credit (or a sequence of courses that satisfies the college-level writing requirement at the transfer institution), will be exempted from the writing assessment upon entry. These students will be considered to have met the Intellectual Skills Program college-level writing course requirement. All other transfer students will be placed into a remedial or college-level writing course according to assessment results.

**READING**

Students who transfer thirty semester hours or more of credit with a GPA of 2.0 or better, or who transfer the equivalent of ED 104, are exempted from the reading assessment upon entry. All other transfer students will be placed into a remedial or college-level reading course according to assessment results.

**QUANTIFICATION**

Students who transfer a mathematics course at the level of MATH 110 or higher are considered to have entry-level computation skills and need not take the computational skills assessment test upon entry. Further coursework in mathematics is not, at this time, required to fulfill Intellectual Skills Development Program requirements. All other transfer students will place into or be exempted from MATH 109 according to assessment results.

### Computer Literacy Requirement

Computer and information technology and concepts pervade our culture, our jobs, and our lives. The modern computer constitutes one of the most significant changes for this century. In the near future, an individual lacking computer literacy will be at a career disadvantage comparable to that of not understanding or communicating by the written word.

In response to this challenge, Western requires that every student demonstrate minimum competency in computer literacy, including at least the following:

1. The ability to use computer software as appropriate in his or her own discipline.
2. The ability to write, enter, and run a simple program in a general purpose computer language. This knowledge includes the ability to write programs with input and output features, processing of data, loops, and decision making.
3. Knowledge of computer terminology, and the current capabilities, limitations, and potential of computers, in general or specifically targeted to the student’s own field of specialty.

It is also desirable that a computer literate student have an awareness of some of the
ethical, moral, and legal implications of the impact of computer technology on today’s society. Students can fulfill this requirement in one of three ways:

1. By successfully completing an approved course. Approved courses include Computer Science 105, Business Information Systems 102, and Sociology/Computer Science 182. Students wishing further information on courses or programs that satisfy the requirement should consult their curriculum advisers. Transfer students who wish to determine whether work taken elsewhere meets the requirement should also consult their advisers.

2. By completing a major or minor program approved as satisfying the requirement. Students wishing further information on courses or programs that satisfy the requirement should consult their curriculum advisers. Transfer students who wish to determine whether work taken elsewhere meets the requirement should also consult their advisers.

3. By certification of computer literacy by examination. This requirement applies to all students who enter WMU under the 1983-85 catalog or any subsequent catalog.

General Education Requirements

Western Michigan University requires a minimum of thirty-five semester hours of General Education courses in order for a student to graduate. These requirements are applied to all students in the University and are substantially the same for all curricula. Nonvocational in nature, these attempts to ensure some degree of breadth for every student at WMU, and to provide coursework in each of the following areas: (1) Humanities and Fine Arts, (2) Social and Behavioral Sciences, (3) Natural Sciences and Mathematics, and (4) The Non-Western World.

The General Education requirement is met by completing the Distribution Program. Honors College students may satisfy their General Education requirements through the Honors College General Education program. Additional information may be obtained from your curriculum adviser.

THE DISTRIBUTION PROGRAM

This program includes a large number of courses offered for General Education by numerous departments throughout the University. These courses offer a variety of approaches to introduce the student to the Humanities and Fine Arts, the Social Sciences, the Sciences, and the Non-Western World. There are introductory courses for students wishing to explore new areas of knowledge and there are more advanced courses for students wishing to develop in specialized areas. Many special topic courses (for example, courses on the environment) are offered. In addition, interdisciplinary courses are offered that use skills and techniques of study from several fields. The essential goal of the Distribution Program is to extend the undergraduate experience beyond the student’s area of concentration and provide students with the data necessary for synthesizing their experience into an understanding of themselves and their world.

Within the guidelines below, students can take classes in a number of departments. Quite a few of these courses can count toward a student’s major or minor as well as for General Education credit. Curriculum advisers will be glad to assist students in selecting and planning their Distribution Program.

All courses listed in italics in this catalog have been listed for General Education purposes.

Requirements for the Distribution Program

There are five stipulations:

1. Coursework must total a minimum of thirty-five semester hours.

2. At least six hours of appropriate course work in each of the three Areas (I, II, III), and at least one approved course in Area IV, must be taken.

3. Only one course from any one department can be applied toward an Area requirement, with the exception of courses from the College of General Studies.

4. At least two courses (minimum of six hours) must be taken from 300-400 level approved General Education course work.

5. No more than two courses from any one department (except General Studies courses) count toward the total of thirty-five hours.

General Education Distribution Program

**AREA I**

**Humanities and Fine Arts**

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**AREA II**

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**AREA III**

**Natural Sciences and Mathematics**

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<td>102, 105, 107, 234</td>
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Requirements for Transfer Students

1. Students who have fulfilled the requirement of the MACRAO Articulation Agreement and are transferring from participating Michigan Community Colleges.

   The Michigan Community Colleges listed below have signed the MACRAO Articulation Agreement and transfer students whose records have been appropriately identified and certified as having fulfilled the requirements of the MACRAO agreement by their respective community college will receive thirty hours of General Education credit. The distribution of this credit is as follows: eight (8) hours in each of Area I, II, and III and six (6) hours in Area V. Such students need only satisfy Western’s requirement of six hours of 300-400 level General Education coursework, including one course from Area IV unless a substitute was transferred.

   Students who transfer from these community colleges and who have not fulfilled the requirements of the MACRAO Articulation Agreement will have their General Education coursework evaluated according to the General Education Distribution Program Transfer Guides prepared by Western for each community college. In order to determine remaining General Education requirements, students should consult their curriculum adviser.

   MACRAO Agreement Signators

   - Alpena Community College
   - Bay De Noc Community College
   - Delta College
   - Glen Oaks Community College
   - Gogebic Community College
   - Grand Rapids Junior College
   - Highland Park Junior College
   - Jackson Community College
   - Kellogg Community College

**BMD** 112, 230
**CHEM** 101, 102, 103, 107
**GEOG** 100, 105, 204, 306, 350
**GEOG** 100, 130, 300
**GSCI** 130, 131, 132, 133, 134, 432, 433, 434
**MATH** 116, 122, 190, 200, 366
**PHYS** 102, 104, 106, 110, 210, 211

**AREA IV Non-Western World**

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**AREA V Optional Electives**

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Kirtland Community College  
Lake Michigan College  
Lansing Community College  
Macomb Community College  
Mid Michigan Community College  
Monroe County Community College  
Montcalm Community College  
Mott Community College  
Muskegon Community College  
North Central Michigan College  
Northwestern Michigan College  
Oakland Community College  
St. Clair County Community College  
Schoolcraft College  
Southwestern Michigan College  
Washtenaw Community College  
Wayne County Community College  
West Shore Community College  

2. Transfer students from other Michigan community colleges.  
Students from these colleges will satisfy the General Education requirement by completion of the Distribution Program. Transfer work will be evaluated according to the General Education Distribution Program Transfer Guides prepared by Western for each community college. In order to determine remaining General Education requirements, students should consult their curriculum adviser.  

3. Transfer students from an out-of-state two-year college or from any four-year college.  
Students from these colleges will satisfy the General Education requirement by completion of the Distribution Program. Transfer work will be evaluated according to the guidelines outlined above. In order to determine remaining General Education requirements, students should consult their curriculum adviser.  

4. Waiver of junior-senior requirement for transfer students with advanced standing. A student transferring ninety or more semester hours may be eligible to have the junior-senior General Education requirement waived, provided that a minimum of thirty semester hours are from a four-year college or university. Such students should contact their curriculum adviser for further information.  

General Education Equivalents for Transfer Students  
In determining the extent to which the General Education requirements of Western Michigan University have been met by credits earned at other colleges, the following rules shall apply:  
1. Students from a Michigan community college, which has signed the MACRAO Articulation Agreement and whose records have been appropriately identified and certified as having fulfilled the requirements of the MACRAO agreement, will satisfy the remaining requirements by successfully completing two 300-400 level approved General Education courses. A course in Area IV (Non-Western World) must be included in the coursework unless a substitute was transferred.  

2. Students not covered by 1 above must meet the following WMU requirements:  
A. Humanities and Fine Arts—A minimum of six semester credits from the following fields:  
- Art Appreciation or Art History  
- Theatre (Introduction or History)  
- Film (Introduction or History)  
- Literature (English or English translation)  
- General Humanities  
- Foreign Language (1st year only)  
- Philosophy (and Logic)  
- Religion (non-doctrinal)  

B. Social and Behavioral Sciences—This area may be satisfied by a minimum of six semester hours drawn from any of the following:  
- Anthropology (Cultural and Ethnology)  
- Economics (Principles, problems, and consumer education)  
- History  
- General Social Science  
- Geography (Regional, Human)  
- Political Science (Introduction, principles, international relations, foreign and comparative political systems, general government)  
- Psychology (general)  
- Sociology (Introduction, principles, social problems)  
- Social Work (Introduction only)  
- Environmental Studies (general)  
- General Business (courses relating to social issues or consumer education)  
- Minority Studies (general)  

C. Natural Sciences and Mathematics—A minimum of six semester credits from the following fields:  
- Anthropology (physical)  
- Biology (general, non-major course, outdoor science)  
- Chemistry (general)  
- Geography (excluding Regional or Human geography)  
- Geology (Physical, Historical, or Oceanography)  
- Math (introductory level algebra, analysis, or statistics; survey of mathematical ideas; calculus)  
- Physics (general, non-major course, Astronomy)  
- General Physical Science  
- General Biological Science  
- General Earth Science  
- Environmental Science (emphasis on Chemistry, Physics, Biology, Geology, or Geography)  
- Philosophy or Methodology of Science  

D. Non-Western World—in order to satisfy this requirement a student must complete a minimum of three semester credits in a course emphasizing contemporary aspects of non-western regions and societies.  

E. Students with less than the required coursework in any of the above areas (A, B, C, or D) must make up deficient hours by selecting from appropriate WMU General Education courses.  

F. All students must meet the minimum requirement of thirty-five semester hours in General Education, and this must include at least two courses at the 300-400 level.  

Student Planned Curriculum  
The Student Planned Curriculum is intended for students whose educational goals can be accommodated within the framework of other University curricula. It provides such students with the opportunity to plan an individualized program of study without the usual restrictions imposed by departments or college boundaries. The traditional major and minor, for example, are not required in the Student Planned Curriculum.  

Any undergraduate student is eligible to enter the Student Planned Program, now (general) written statement outlining educational goals and the proposed course of study has been completed prior to the completion of seventy-five semester hours of credit.  

Degree requirements in the Student Planned Curriculum consist of (1) the University’s General Education Program and (2) electives sufficient to meet graduation requirements. In order to meet the student’s educational objectives, these electives are selected in consultation with a counselor and/or the faculty advisor(s). Further information concerning the Student Planned Curriculum may be obtained from the University Counseling Center, 2510 Faunce Students Services Building (383-1850).  

Preprofessional Curricula  
Every professional school has prescribed the nature and amount of academic work to be completed as a prerequisite to the professional training for a particular vocation. Four years of higher education are generally required by most professional schools for entrance. Western Michigan University is able to offer its students courses of study that meet the requirements for this preprofessional training. It should be noted, however, that the courses outlined are only suggested plans to illustrate in general the kinds of programs that preprofessional students should follow. In every case students should plan their courses of study according to the requirements of the school to which they plan to transfer for professional training. It cannot be emphasized too strongly that the student should exercise care to make certain that the specific requirements of a particular school will have been met.  

Dentistry  
Medical Sciences Adviser  
2060 Friedmann Hall  
383-6122  
Most dental schools require three years of academic study and prefer baccalaureate degree candidates. They expect students to have good basic training in chemistry, biology, and physics, good communication skills, and some background in the humanities and social sciences. In general, dental schools require two semesters each of English, Physics, Biology, Inorganic Chemistry, and Organic Chemistry. Since minimum course requirements vary among dental schools, you should find out specific requirements by consulting the publication, Admission Requirements of U.S. and Canadian Dental Schools, which is on reserve in Waldo Library and is also available in 2060 Friedmann Hall. The Dental Admission Test (DAT) is required by all dental schools, and is offered at Western Michigan University each spring and fall.  

Most predental students at Western Michigan University major in either Biology, Biomedical Sciences, or Chemistry. However, dental schools look with equal favor on other majors, as long as students complete the preprofessional requirements. It is important that predental students see the preprofessional
adviser on a regular basis for curriculum guidance. The adviser is located in 2060 Friedmann Hall. Also available through the advising office are Preprofessional Advisory Booklets, Dental Admission Test application forms, centralized application service forms, and Preprofessional Evaluation Committee Services. Preprofessional students are encouraged to join the Medical Sciences Association, which is composed of students interested in health science careers. Students should complete the minimal requirements by the end of their junior year or before they take the Dental Admission Test. The sequence of courses will depend on the student's major and minor, as well as appropriate prerequisites. Western Michigan University courses which fulfill minimum dental school requirements, and also provide a good foundation for the Dental Admission Test, are listed below:

1. CHEM 101 or 102, 120, 360, and 361
2. BIOL 101, and 102
3. BMECO 213, 250, and 350
4. PHYS 110 and 111 or 210 and 211 (Physics is not required for the Dental Admission Test)
5. ENGL 105 plus a literature course.

Law
Advisers: College of Business
W. Morrison, N. Batch, T. Gossman, F. W. McCarty, S. Scharnin, L. Stevenson
260 North Hall
383-6249
Advisers: College of Arts and Sciences
G. H. Demestakopoulos
William S. Fox
2060 Friedmann Hall
383-6122
P. G. Rensstrom
3029 Friedmann Hall
383-0483

No special college program is required or recommended by most law schools. In general, law schools urge a solid four-year program leading to a bachelor's degree. Although it is relatively unimportant what the prospective law student uses for a major, it is most important that a high level of academic achievement be maintained. It is also important that the prospective lawyer's education be as broad as possible.

The first-year student is urged to concentrate on satisfying first year General Education requirements, and on improving his/her writing and speaking skills by taking courses in English and communications.

A first-year student should see a prelaw adviser during the first semester for assistance in selecting a curriculum. A transfer student should see a prelaw adviser as soon as possible.

Medicine and Osteopathic Medicine
Medical Sciences Adviser
2060 Friedmann Hall
383-6122

Medical schools increasingly want students with diverse backgrounds and a wide variety of skills and interests. They expect good basic training in chemistry, biology, physics, and mathematics, but also want students to have well-developed communication skills and long-term interests in the humanities and social sciences. In general, medical schools require two semesters each of English, Physics, Biology, Inorganic Chemistry, and Organic Chemistry. Since minimum course requirements vary among medical schools, you should find out specific requirements by consulting the publications, Medical School Admission Requirements, which is on reserve in Waldo Library (card catalog No. R745.4H8) and is also available in 2060 Friedmann Hall. The Medical College Admission Test (MCAT) is required by nearly all medical schools, and is offered at Western Michigan University each spring and fall.

Most premedical or preosteopathic students at Western Michigan University major in either Biology, Biomedical Sciences, or Chemistry. However, medical schools look with equal favor on other majors, as long as students complete the minimal premedical requirements. It is important that premedical and preosteopathic students see the preprofessional adviser on a regular basis for curriculum guidance. The adviser is located in the College of Arts and Sciences Advising Office, 2060 Friedmann Hall. Also available through the advising office are Preprofessional Advisory Booklets, Medical College Admission Test application forms, centralized application service forms, and Preprofessional Evaluation Committee Services. Premedical and preosteopathic students are encouraged to join the Medical Sciences Association, which is composed of students interested in health science careers.

Students should complete the minimal requirements by the end of their junior year or before they take the Medical College Admission Test. In addition, courses in cell biology, genetics, and physiology are required. The sequence of courses will depend on the student's major and minor, as well as appropriate prerequisites. Western Michigan University courses which fulfill minimum medical school requirements, and also provide a good foundation for the Medical College Admission Test, are listed below:

1. CHEM 101 or 102, 120, 360, and 361
2. BIOL 101, and 102
3. BMECO 213, 250, and 350
4. PHYS 110 and 111 or 210, 211, and 212
5. ENGL 105 plus a literature course.

6. MATH 118 and 122 or 122 and 123

Pre-Architecture
Charles L. Sanford, Adviser
A preprofessional curriculum in architecture is outlined in this catalog in the College of Engineering and Applied Sciences section.

Certificates
Validity Level of Michigan Certificates
The two basic levels of Michigan teaching certificates are:

1. Elementary This certificate is valid for teaching all subjects in grades kindergarten through eight and major and minor subjects in grade nine. A certificate which is issued after September 1, 1968, is valid for teaching all subjects in grade kindergarten to and including grade five, for teaching subject areas in grade six to and including grade eight in which the applicant has completed a major or minor, and for teaching all subjects in grade kindergarten to and including grade eight when those subjects are taught in a self-contained classroom in which a majority of the instruction is provided by one teacher.

2. Secondary This certificate is valid for teaching all subjects in grades seven and eight and major and minor subjects in grades nine through twelve. A certificate which is issued after September 1, 1968, is valid for teaching in subject areas in grade seven to and including grade twelve in which the applicant has completed a major or minor.

Types of Michigan Certificates
There are two basic types of Michigan certificates: the initial certificate, called the Provisional, and the subsequent certificate, called the Continuing.

PROVISIONAL CERTIFICATE REQUIREMENTS
A Provisional certificate is issued upon satisfactory completion of an approved program, including a bachelor's degree, offered by a teacher preparation institution. An overall grade point of 2.5 is required at Western Michigan University for a Provisional certificate.

CONTINUING CERTIFICATE REQUIREMENTS
The requirements for the Continuing certificate are:

1. EXPERIENCE. The candidate must have taught successfully for the equivalent of three years following the issuance of and within the grade level and subject area validity of the Provisional certificate.

The success of the teaching experience is determined by the State Board of Education upon recommendation of the University and of the local school district(s) in which the candidate taught.

Experience can be accumulated through part-time (including substitute teaching) under the following pro-rating formula: one half or more of a teaching day (2.5 or more clock hours) is the equivalent of one day, and 150 accumulated clock hours is the equivalent of one year. There is no requirement that such experience be under contract in consecutive years, be completed in Michigan, nor be completed before expiration of the Provisional certificate. All experience stays forever cumulative toward the Continuing certificate.

2. PLANNED PROGRAM. The candidate must earn eighteen semester hours after the issuance of the Provisional certificate in a course of study established and/or approved as a "planned program" by an approved teacher education institution. A person with an approved master's or higher degree (regardless of when earned) is not required to complete the eighteen semester hour program.

A "planned program" is a master's degree program, an additional subject endorsement (a major or minor program), an additional grade level program, or an eighteen hour professional development program signed by the Certifying Officer.

Graduates of WMU who wish to be recommended for the Continuing certificate by WMU must earn at least twelve semester hours of the eighteen semester hour program from WMU.

DEGREES AND CURRICULA
Major and Minor Requirements

A major is a sequence of related courses totaling a minimum of twenty-four hours (thirty hours in elementary or secondary education), or thirty-six hours in a major in elementary or secondary education; a minor is a sequence of related courses totaling a minimum of fifteen hours (twenty hours in elementary or secondary education or twenty-four hours in a group minor in elementary or secondary education).

1. The students major and minors will be the subject specialization, such as: mathematics, accounting, biology, or chemistry.
2. The curriculum may be general or specific to prepare for a specialized career or profession such as business, medicine, law, transportation technology, or engineering.
3. Departmental requirements for a number of majors and minors are listed elsewhere in this catalog. Where requirements are not specified, students should consult the departmental advisers for approval of a major or minor program as soon as possible but not later than the junior year.
4. The candidate for a degree must complete a major and a minor. A candidate for the Elementary Provisional Certificate may elect instead a major of at least thirty semester hours (group major of thirty-six semester hours) or two minors of twenty-seven semester hours (group minors, twenty-four semester hours). In addition to the major or two minors, the elementary education minor is required.
5. In certain cases “group” majors totaling a minimum of thirty hours and “group” minors totaling a minimum of twenty hours are permitted. (Note: Students in elementary and secondary education must have thirty-six hour “group” majors and twenty-four hour “group” minors.) They usually consist of courses selected from related departments, in the case of social science and science.
6. Under certain conditions General Education courses may be counted toward major and minor requirements. (See departmental requirements.)
7. Minors may be related to majors, so as to recognize naturally or closely related fields: for example, mathematics and physics, history and geography, literature and history.
8. It is not permissible to use education as a major or minor in any undergraduate curriculum with the exception of the elementary education curriculum. In the elementary education curriculum it is a required minor in addition to a major or two minors. (See elementary education curriculum.)
9. The following courses are not to be counted as satisfying major and minor requirements:
   a. Required professional courses in education
   b. Required courses in general physical education
   c. A combination of foreign languages, or of English or American Literature with a foreign language, is not permissible.
10. Mathematics may not be combined with science (physics, geography, chemistry, or biology) for any major or minor sequence, but may be required to satisfy requirements of certain curricula.

Provisional Renewal Requirements

When the Provisional certificate expires before the holder is able to fulfill all requirements for the Continuing certificate, such holder can, at any time thereafter, qualify in the following manner for a renewal of the Provisional certificate:

The first three-year renewal is available any time after actual completion of the first ten semester hours of the eighteen semester hour “planned program”. After expiration of the first three-year renewal, if the holder has not completed the experience requirements for the Continuing certificate, a second three-year renewal is available any time after actual completion of the entire eighteen semester hour “planned program.”

Validity of Michigan Certificates

All Provisional certificates expire on June 30 of the sixth year after issuance. All Provisional Renewal certificates expire on June 30 of the third year after the date of issuance. Continuing certificates automatically remain valid as long as the holder serves in an “educational capacity” for a minimum of 100 days (need not be consecutive days) in any given five-year period. Continuing certificates automatically lapse on any given day that the holder has failed to serve in an educational capacity for a minimum of 100 days in the immediately preceding five years.

Beginning September 1, 1988, persons receiving a Continuing certificate will be required to report that certificate every five years on the basis of six semester hours of academic credit from an approved teacher preparation institution or the equivalent in State Board approved professional development programs or activities that will award credits obtained as Continuing Education Units (CEU’s).
CURR: PED Pre-Education
Major: Must elect major from BAD Curriculum

CURR: BAD Business Administration
Major: ACT Accountancy
ADS Administrative Systems
ADV Advertising
AGB Agr Business
BCC Business Communication
BED Business Education
CIS Computer Information Systems
ECO Economics
FIN Finance
GBS General Business
IDM Industrial Marketing
MGT Management
MKT Marketing (General)
PAB Public Administration
REA Real Estate
RET Retaining
STB Statistics

College of Education: EDU
Students selecting teacher certification programs will be placed in the "PRE-EDUCATION" (PED) CURRICULUM until requirements have been met. See College of Education: EOU Students selecting teacher certification programs will be placed in the "PRE-EDUCATION" (PED) CURRICULUM until requirements have been met. See the College of Education and Applied Sciences section for complete information on admission requirements.

CURR: SDC Special Education—Emotionally Impaired
Major: SBE Special Education—Visually Impaired

CURR: RUL Rural Life
Major: SBE Special Education—Visually Impaired

College of Engineering and Applied Sciences: AAS
(1) Students selecting engineering programs will be placed in the "PRE-ENGINEERING" (PE) CURRICULUM until requirements have been met. See College of Engineering and Applied Sciences section for complete information on admission requirements.

CURR: EGR Engineering Graphics
Major: EE Electrical Engineering

CURR: JHS Middle School and Junior High
Major: COM Communication

CURR: EEE Elementary Music
Major: AGM Agriculture

CURR: PAH Pre-Architecture

CURR: PAS Paper Science

CURR: MTL Engineering Metallurgical

CURR: ME Mechanical Engineering

CURR: CSE Computer Systems Engineering

CURR: CGS Construction Supervision and Management

CURR: CSM Construction Supervision and Management

CURR: CRD Construction Drafting

CURR: CMS Construction Supervision and Management

CURR: CGS Construction Supervision and Management

CURR: CSE Computer Systems Engineering

CURR: JHS Middle School and Junior High
Major: COM Communication

CURR: MTE Technical and Scientific Studies

CURR: GUS General University Studies

CURR: HNC Honors College

CURR: HHS College of Health and Human Services HHS

CURR: REA Real Estate

CURR: PED Pre-Education
Major: Select major approved for certification

CURR: RUL Rural Life
Major: Select major approved for certification

CURR: SCH Special Education—Orthopedically Impaired
Major: SCH Special Education—Orthopedically Impaired

CURR: SMH Special Education—Mentally Impaired

Division of Continuing Education: DCE
CURR: GUS General University Studies

CURR: HNC Honors College

CURR: STH Theatre

College of Fine Arts: FAR
CURR: ART Art

CURR: BUS Business Administration

CURR: PBA Pre-Business Administration

CURR: PAH Pre-Architecture

CURR: MTL Engineering Metallurgical

CURR: ME Mechanical Engineering

CURR: CSE Computer Systems Engineering

CURR: CGS Construction Supervision and Management

CURR: CSM Construction Supervision and Management

CURR: CRD Construction Drafting

CURR: CMS Construction Supervision and Management

CURR: CSE Computer Systems Engineering

CURR: JHS Middle School and Junior High
Major: COM Communication

CURR: MTE Technical and Scientific Studies

CURR: GUS General University Studies

CURR: HNC Honors College

CURR: HHS College of Health and Human Services HHS

CURR: REA Real Estate

CURR: PED Pre-Education
Major: Select major approved for certification

CURR: RUL Rural Life
Major: Select major approved for certification

CURR: SCH Special Education—Orthopedically Impaired
Major: SCH Special Education—Orthopedically Impaired

CURR: SMH Special Education—Mentally Impaired

Major: Select specific engineering major
## Programs Requiring Major and Minor Slips

(In All Cases Check Catalog Requirements)

**Note:** "No" means that a slip is not required for the major, curriculum, or minor. "None" means that a major, curriculum, or minor is not offered.

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<th>MINOR SLIP REQUIRED</th>
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<th>DESCRIPTION</th>
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THE UNIVERSITY CURRICULUM

Dr. Lynne McCauley, Coordinator
Ms. Marilyn Duke, Assistant
201 Moore Hall

A Freshman Year Program For Students Who Choose To Explore Academic and Career Options

University Curriculum provides beginning and transfer students who wish to explore academic and career options with advising, assessment, and referral services designed to help them select a curriculum. The program is designed with a sensitivity to students' developmental as well as academic needs.

Students in the University Curriculum are assigned advisers and counselors who are specialists in academic planning, human development, and career planning. Help is provided for interpreting skills and interest assessments, exploring academic and career alternatives, and establishing goals.

In addition to academic advising and career counseling, opportunities available for University Curriculum students include:
- University 101: Expanding Perceptual Boundaries, 1-3 hours
- Arts and Sciences 100: Career Exploration and Development, 1 hour
- Academic Skills Center Programs and Workshops
- Career Exploration and Media Center
- Skills and Interest Assessment
- Specially designed freshman curriculum options suited to skills and interests

Course Options

University (UNV)

UNV 101 Expanding Perceptual Boundaries
1-3 hrs.

This course is designed to assist students to encounter experientially, intellectually, and emotionally the various avenues of learning, and to foster the academic, personal, social, and career development of each student. The activities and assignments of the course will aid students in the development of an intellectual awareness and provide the skills and self-management required for a successful transition from high school to the University. The course is intended to excite students about learning and living in the new and challenging, sometimes anxiety-provoking and frustrating, world of Western Michigan University. For freshmen only.

Arts and Sciences (A-S)

A-S 100 Career Exploration and Development
1 hr.

This course is designed to help the undecided student assess and develop skills in self-awareness, career awareness, decision-making, and planning. It will include activities to identify and explore the following areas: values, interests, career information, decision-making, and University resources. Homework assignments will involve written exercises and research in the Career Media Center. Credit/No Credit.
THE HONORS COLLEGE

Faith Gabelnick
Director

Michael Seuss
Assistant Director

Jeanne Bartholomew
Adviser

The mission of the Honors College is to design and foster curricular and co-curricular programs for the academically talented student. These programs allow students to pursue their major areas of study and to join with other bright students in Honors courses, internships, research projects, community work, and social activities. Faculty who teach through the Honors College are recognized by the University as individuals who are fine teacher/scholars and who enjoy working with students. The Honors College strives to create an environment for critical thinking and active learning. Bringing together students in small classes allows for a variety of educational approaches which depart from the traditional lecture/note taking format. Teachers are encouraged to broaden the arenas for learning without compromising educational rigor. A variety of programs and activities are available to members of the Honors College.

Independent study, interdepartmental major concentrations, special Honors seminars, interuniversity enrollment at local colleges, and undergraduate internships in the community may be arranged by Honors College students. The Russell H. Seibert Fund, administered by the Honors College, provides modest financial support for a variety of undergraduate endeavors: teaching and research assistantships, research projects, and other creative activities. In addition, the Honors College sponsors a variety of cultural and social activities. These include film and lecture programs, travel seminars, special weekend workshops, and outdoor activities.

The Honors College admits students at all stages of their university education including incoming freshmen, transfer students, and on-campus students. Students are admitted to the College based on high school or university GPA, American College Test (ACT) scores, co-curricular activities, and academic recommendations. Students may request information on application procedures by calling or writing the Director of the Honors College.

During 1987-89, the academic programs of the Honors College will undergo revision and change. Students currently enrolled in the Honors College, the General Education Honors program, or a departmental Honors program will be encouraged to complete their programs. Students entering the Honors College in September 1988 or later will have available somewhat differently designed programs. The culminating activity leading to graduation will be a senior thesis, project, product, or performance, generally related to the student's major. Students graduating from the Honors College will be recognized at graduation ceremonies and in commencement publications.

Student involvement is an important aspect of Honors education. Students become involved with the College not only through courses but through the Honors Student Association and Honors housing. Students sponsor trips, speakers, a newsletter, and fund-raising activities for the College. Through these activities they enhance their affiliation with the University and prepare themselves for leadership positions in their professional lives.

The Honors College is a member of the National Collegiate Honors Council, the Upper Midwest Regional Honors Council, and the Midwest Honors Association. Honors students and administrators of the College have held office in these organizations and regularly participate on regional and national committees, making presentations to other Honors colleagues.

For further information on specific aspects of the Honors College, call or write: Dr. Faith Gabelnick, Director, The Honors College, Hillside Building, West, Western Michigan University, Kalamazoo, MI 49008, (616) 383-1787.

Honors Courses (HNRS)

Each semester a variety of honors courses and seminars and departmental honors courses is offered. Many of these are applicable to General Education Honors requirements, and other curriculum requirements. These courses and seminars are described in Honors College material printed each semester.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit Hours</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>HNRS 100</td>
<td>Civilization of the West I</td>
<td>4 hrs.</td>
<td>A survey of the human experience from the ancient civilizations of the Near East, Greece, and Rome, through Medieval Europe to the eras of the Renaissance and Reformation, with emphasis on the unique achievements of each culture.</td>
</tr>
</tbody>
</table>

The following variable topic/variable credit courses enable the Honors College to offer a wide range of seminar and experiential learning opportunities. Information and descriptions for specific semester offerings are available at The Honors College.

HNRS 299 Independent Study
Variable Credit
An opportunity to explore individually, under the guidance of a member of the faculty, a topic or problem in almost any area.

HNRS 399 Field Experience (Community Participation)
Variable Credit
An organized association with a person or institution involving work and learning activities related to a significant academic interest of the student.

HNRS 490 Honors Seminar
Variable Credit
An undergraduate seminar for upper level honors students. The content of these seminars varies and will be announced in advance. Admission by permission.

HNRS 492 Visiting Scholars
Variable Credit
A seminar involving visiting scholars from other institutions and countries. The content of these seminars varies and will be announced in advance. Admission by permission.

HNRS 498 Individual Studies
Variable Credit
Students in the Honors College may enroll in this course for one or several semesters upon approval of the Director of Honors. The course is an administrative facility for individual study outside the usual course structure.

The above list of courses is not exhaustive. A variety of Honors courses is offered by departments under the auspices of the Honors College. In the transitional period, 1987-89, covered by this catalog interested persons are urged to contact the Honors College for complete course listings and descriptions.
Students in most majors can find an opportunity for a study abroad experience, both in general programs in the liberal arts and more specific curricula programs. WMU programs include semester abroad as well as travel study programs, and programs offered in English and several foreign languages.

**SEMIESTER AND ACADEMIC YEAR PROGRAMS**

**Study in the People’s Republic of China:** Nankai University. WMU has a linkage agreement including student exchange arrangements with this university in northeast China.

**Study in the People’s Republic of China:** Guangxi University. WMU has a linkage arrangement with Guangxi University, Nanning, enabling WMU students to study Chinese language and culture in southern China.

**Study in the People’s Republic of China:** Xibei University. WMU has a linkage arrangement with Xibei (Northwest) University, Xian, enabling WMU students to study Chinese language and culture in the ancient city of Xian.

**Reciprocal Scholarship Program with Keio University.** WMU has a reciprocal scholarship program for a full academic year of studies at Keio University, Tokyo, Japan.

**Study in Japan: Rikkyo University, Tokyo.** WMU has a student exchange agreement with this Japanese university.

**Mexican Honors Semester at the University of the Americas.** “Mapping Cultures.” is offered in association with the National Collegiate Honors Council on the campus of the University of the Americas, Puebla, Mexico.

**Study in Israel at Tel Aviv University.** WMU has an arrangement with Tel Aviv University, Ramat Aviv, Israel through which WMU students enroll in TAU’s Overseas Student Program and receive credit at WMU.

**Student Exchange with Free University, West Berlin.** Reciprocal student scholarship exchange program with the Free University, West Berlin, Germany.

**Student Exchange with the University of Passau.** Reciprocal student exchange scholarship with the University of Passau in the city of Passau (Bavaria), West Germany.

**French Language and Culture in Britain.** WMU is a participating member of the Council on International Educational Exchange (CIEE) consortium which sponsors this semester or year-long program at the University of Haute-Bretagne, Rennes, France.

**Spanish Language and Culture at Seville.** WMU is a participating member of the Council on International Educational Exchange (CIEE) consortium which sponsors this one or two semester program at the University of Seville, Seville, Spain.

**SPRING AND SUMMER PROGRAMS**

**International Business Seminars in Western Europe and Asia.** Focus on management, marketing, and finance in an international context. Includes visits to multinational corporations and government agencies. Three academic credits in courses taught by WMU and other American faculty. June-July.

“Victims and the Criminal Justice System”. Spring seminar held at the Inter-University Centre of Postgraduate Studies, Dubrovnik, Yugoslavia. Certificates of attendance. Courses taught by WMU and international faculty.

**Tropical Biology and Ecology.** Field course held annually in varying locations during three weeks in May. Belize or Puerto Rico. Four academic credits. Course taught by WMU faculty with visiting lecturers.

**Oxford Seminar.** Summer study in residence at Oxford University, Oxford, England. Four weeks in July, with optional tour following for two weeks on the Continent. Six hours credit in courses taught by WMU and British faculty.


**Summer Institute on the Mediterranean World.** Includes Mediterranean cruise to archaeological sites in Italy, Southern France, Greece, Turkey, Egypt and Israel. Three to four weeks in July. Three to four hours credit in courses taught by WMU faculty.

**Medieval Studies and Archaeology in Austria and Germany.** Courses are offered through The Medieval Institute in cooperation with the Consortium for Austro-Bavarian Studies on location in Austria and Bavaria. Variable credit in courses taught by Consortium faculty, including archaeological “digs.” June-July.

In addition to these programs, Western Michigan University sponsors a variety of Summer Seminars created for a particular term designed for students, teachers, alumni and friends of the University. Past Summer Seminars have included study-tours to the People’s Republic of China, Japan, India, the Soviet Union, and locations in Africa. Short field trips are also offered between semesters to England, Mexico and Guatemala.

Since Western Michigan University’s foreign study offerings are subject to change, interested students are urged to contact the Office of International Education and Programs for current information.
International and Area Studies

Norman C. Greenberg, Director
2090 Friedmann Hall
(616)383-0944

African Studies Program
Sisay Asefa, Chair
Asian Studies Program
C.J. Eugene Kim, Chair
European Studies Program
William Ritchie, Chair
Latin American Studies Program
David Chaplin, Chair

The Center for Korean Studies, established in 1972, promotes study and research in Korean culture and politics. In cooperation with the Asian Studies Program, it sponsors course offerings in Korean language, history, arts and government by appropriate departments. The Center publishes books on Korea, holds conferences and seminars on Korea, and organizes summer institutes in Korean studies and study tours to Korea.

Center for Korean Studies

Andrew Nahm, Director
4063 Friedmann Hall
(616)383-1678

The Canadian Studies Committee promotes teaching and research in Canadian history, culture, and contemporary affairs. It sponsors course offerings in Canadian subjects, organizes an annual Canada Week on campus with lectures and cultural events, and organizes summer study tours to Canada.

Canadian Studies Committee

Graham Hawks, Chairperson
4043 Friedmann Hall
(616)383-0029

The Foreign Study Office, a unit of International Education and Programs, provides an advisory and referral service for students and faculty interested in study, work, or travel in foreign countries. The following services are provided:

FOREIGN STUDY OPPORTUNITIES

Students at Western Michigan University have opportunities to study abroad for a semester or a year earning credit toward graduation. The Foreign Study Office provides information about such opportunities and counsels with students on fitting these experiences into their programs.

There are two principal methods by which students at Western Michigan University may earn credit through a period of foreign study:

1. A student may enroll in one of the University's study abroad programs, e.g. the Oxford Seminar or the Mediterranean Institute. Information on these programs and their procedures for enrollment can be obtained by contacting the Office of the Dean of International Education and Programs.

2. A student may enroll directly in a foreign university or participate in foreign study programs sponsored by other American colleges and universities. Information about the opportunities and procedural requirements of this option is provided by the Foreign Study Office, which maintains up-to-date listings, brochures, and application forms for more than 1,500 study programs in other countries. Material and advice on evaluation of foreign study programs is available.

FINANCIAL AID INFORMATION

The office provides information on sources of financial aid for undergraduate, graduate, and post-graduate study abroad.

TRAVEL SERVICES AND INFORMATION

Students may purchase the International Student Identity Card, Youth Hostel Pass, Eurail Pass, Eural Youthpass, and France Vacances pass at the Foreign Study Office. Information on all aspects of foreign travel is provided, including passport application procedures, visa information, consulate addresses, currencies and rates, health regulations, and customs information. The office is especially interested in providing information on low-cost opportunities—youth hosteling, bicycling and hiking, low cost accommodations, car rental possibilities, the most reasonable flights for students and faculty, etc.

EMPLOYMENT ABROAD

A collection of source material on employment in various countries is maintained. The office is specifically concerned with short-term employment that is of interest to students, but there is also some information on teaching, internships, and other job possibilities abroad.

FOREIGN STUDY RESOURCE CENTER

The office houses a growing library of books, pamphlets, newspaper and magazine clippings, maps, posters, pictures, etc., on travel and study abroad. Students, faculty, and staff are invited to use the library materials in the office at any time during regular working hours. Some travel posters are available for purchase.

SPECIAL PROGRAMS

The Foreign Study Office coordinates the annual International Study/Travel Night in March and workshops and smaller presentations on study, work, and travel abroad throughout the year. Students and faculty wishing to participate are urged to contact the office.

LIASON

The Foreign Study Office maintains contact with study abroad advisers and administrators at other universities, embassies and consulates, travel bureaus, and consultants on international education, and maintains affiliation with appropriate national and state organizations such as the American Association of Collegiate Registrars and Admissions Officers, Council on International Educational Exchange, the Institute of International Education, the SECUSSA section of the National Association for Foreign Study Affairs, and other organizations and agencies specializing in program and credit evaluation.
The College of Arts and Sciences Western Michigan University offers undergraduate courses and programs in the humanities, the social and behavioral sciences, and the physical, biological, and mathematical sciences. The goals of the college for the undergraduate student can be seen as liberal, professional, pre-professional or vocational, depending on the student’s motivation for enrolling in a particular course or program. In addition to providing specialization in its many disciplines, the college contributes to the basic knowledge and the general education of students throughout the University.

The College of Arts and Sciences expects that its students will develop self-confidence through what they learn, as well as a proper awareness of the extent of the knowledge they do not yet possess. It provides students with the tools to explore and master knowledge in areas beyond their present grasp. Thus, it hopes to encourage the growth of persons who are competent, humane, and sensitive to the human condition, and who therefore will make effective and substantial contributions to society.

Curricula and Majors

For a list of College of Arts and Sciences curricula, see “Undergraduate Curricula and Approved Majors” in the Degrees and Curricula section of this catalog.

Admission to Majors

In order to be admitted to any major in the College of Arts and Sciences, students should apply to the department or program before they have completed 35 semester hours. Transfer students with more than 35 hours should apply before matriculation. Failure to do this may mean that a student will not be permitted to enroll in major core courses. Change of curricula during the junior or senior year will be accommodated where possible. Students should consult the catalog for other specific requirements for their major and minor.

The Arts and Sciences Curriculum

Bachelor of Arts or Bachelor of Science Degree

The Arts and Sciences Curriculum requires:
1. A major in the College of Arts and Sciences.
2. A minor in any of the colleges of the University.
3. Eight (8) semester hours of a foreign language or two (2) years of a foreign language in high school (B.A. degree only).
4. General Education requirement, see General Information section of this catalog.
5. Two (2) hours of physical education.
6. University Intellectual Skills, College Writing, and Computer Literacy requirements.
7. Electives and/or additional cognates required by major or minor to make a total of 122 hours.

Liberal Arts Curriculum

Bachelor of Arts or Bachelor of Science Degree

1. Seventy (70) hours in the College of Arts and Sciences.
2. One course in Science or Mathematics
3. One course in the Humanities (excluding language courses)
4. One course in the Fine Arts (These requirements are in addition to the General Education requirements.)
5. Major and Minor in the College of Arts and Sciences.
6. A minimum of fifty (50) hours of 300, 400, or 500 level courses.
7. Sixteen (16) hours of a foreign language or proficiency by exam.
8. General Education requirement thirty-five (35) hours. Consult the curriculum adviser.
9. Two (2) hours of Physical Education.
10. University Intellectual Skills, College Writing, and Computer Literacy requirements.
11. Electives and/or cognates required by major or minor to make a total of 122 hours.

Other Curricula

For the other curricula offered by the College of Arts and Sciences, see the respective programs on the following pages. Advice regarding these programs may be obtained from the appropriate curriculum adviser listed with each program.

The Academic Advising Office

George H. Demetrakopoulos
William S. Fox
Stephen B. Friedman
John E. Martell
2060 Friedmann Hall
383-6122

Students in the Arts and Sciences Curriculum and the Liberal Arts Curriculum should see a college adviser to plan their degree program. The staff of the College of Arts and Sciences Advising Office also advises students.
concerning General Education requirements, and helps students set up their General Education program. An appointment with an adviser should be scheduled early in a student’s academic career in order to obtain information regarding requirements.

Transfer students in the Arts and Sciences and Liberal Arts Curricula, after they have received their credit evaluation forms from the Admissions Office, should have their transfer courses evaluated for credit toward the University General Education requirements.

The staff of the Academic Advising Office will provide introductory information about the programs, majors, and minors available within the College of Arts and Sciences, and will make referrals to other advising facilities, such as departmental advisers, etc. Students seeking exploratory information about the programs and curricula of the college are encouraged to visit this office.

Students may stop by, or call 383-6122 for an appointment.

**Arts and Science College Courses (A-S)**

**A-S 100 Career Exploration and Development.**

1 hr. (Credit/No Credit)

This course is designed to help the undecided student assess and develop skills in self-awareness, career awareness, decision-making, and planning. It will include activities to identify and explore the following areas: values, interests, career information, decision-making, and University resources. Homework assignments will involve written exercises and research in the Career Media Center.

**A-S 399 Field Experience (Community Participation)**

2-8 hrs.

A program of independent study combining academic work with social, environmental, civic, or political field work. May be used as elective credit only. Prerequisites: A written outline of the student’s project, approved by a faculty supervisor, with approval from the office of the Dean.

**A-S 501 Studies in American Culture**

1-3 hrs.

An interdisciplinary study of perennial issues in American life. The materials for this course are drawn from literature, the arts, the social sciences, philosophy, and religion. This course must be approved by the American Studies Program Adviser.

**Foreign Studies Seminars**

Students may receive up to six hours credit in any combination of departments as described provided the seminar is planned with that combination in mind. No student will receive credit under any of the course plans indicated here for work done in seminars planned and conducted by other institutions, or for work done independent of seminars planned by the College of Arts and Sciences.

**A-S 504 Foreign Studies Seminar**

1-8 hrs.

Seminars in the Social Sciences conducted outside the U.S. Students who complete such a seminar may receive credit in the departments of Anthropology, Economics, Geography, History, Political Science or Sociology, if the credit is approved by the chairperson of the department prior to registering for the seminar. May be repeated for credit.

**A-S 505 Foreign Studies Seminar**

1-6 hrs.

Seminars in the Humanities conducted outside the U.S. Students completing such a seminar may receive credit in the departments of Communication, English, Languages and Linguistics, Philosophy, Religion and the departments of the College of Fine Arts, if the credit is approved by the chairperson of the department prior to registering for the seminar. May be repeated for credit.

**INTERDISCIPLINARY PROGRAMS**

1. American Studies Program
2. Black Americana Studies
3. Criminal Justice Program
4. Environmental Studies Program
5. Integrated Language Arts Minor
7. Medieval Institute Program
8. Science (Group) Major and Minor
9. Science and Mathematics Teaching Minor
10. Social Science Major and Minor
11. Women’s Studies Minor
12. World Literature Minor

**American Studies Program**

Lewis Carlson, Director and Adviser
216 Moore Hall (383-1843)
James M. Ferrante, Adviser
205 Moore Hall (383-0046)

Students in American studies follow an interdepartmental program bringing to bear the insights of art, music, drama, literature, and the social sciences on the problems of American life. A broad-ranging study of American culture can provide an excellent background for students preparing for careers in education, advertising, journalism, research organizations and publishing houses, politics, public relations work in government and industry, the foreign service, mass communications, law, or library work. American studies also offers perceptive students an opportunity to evaluate the forces shaping their own culture and to assess their personal role in a complex society.

A 3.0 grade point average is generally considered a prerequisite.

**Major in American Studies**

Students majoring in American Studies are expected to complete:

1. At least 36 hours in five approved fields.
2. At least 18 hours in courses numbered 300 or above.
3. At least 12 hours in one participating department.
4. An interdisciplinary course dealing with basic issues in American culture.

A list of approved courses is available in 216 Moore Hall.

**Minor in American Studies**

The Minor requires 20 hours from four approved fields of American Studies and one two-hour interdisciplinary independent study (Arts and Sciences 501). Approval of the adviser is required for entry into the program. Minor slip is required.

**Black Americana Studies**

LeRoi R. Ray, Jr., Director and Adviser
815 Spraw Tower
(616) 383-8015

Leander C. Jones
Benjamin C. Wilson

This interdisciplinary program has a corrective and supportive function to the curricula and services of the University. Its broad design is to penetrate, permeate, and pervade the life of the University. Its more specific aims are to provide every student who comes to the University knowledge and understanding of the role that people of African descent (Black Americans) have played and play in making America what it is. It is retelling the American story.

A minor will consist of four undergraduate courses (BAS 200, 300, 500, and 314 or 320) and at least 8 hours of departmental courses. A teaching minor will require at least 12 hours of departmental courses. The student will select both the general minor and a teaching (or group) minor in consultation with the Director of Black Americana Studies and an adviser in the student’s major. BAS core courses 200 Black Presence and 300 Black Experience have been approved for General Education credit.
Black Americana Studies Courses (BAS)

(Courses described in italics are approved for General Education)

**BAS 200 Black Presence**
3 hrs.
A survey of the impact of the physical presence of people of African ancestry and descent in the European colonies of the Western Hemisphere from the earliest days of the age of exploration to the present. Historically oriented, the course is designed to be interpretive rather than chronological, to deal with Black presence as party to the expansion of Western Europe in the New World, as active participation in settling and developing the colonies; as a people apart or of contrast. How did the presence of Africans influence the development of the life and institutions of the country in Colonial, National and later years?

**BAS 210 Black Nationalism in America**
3 hrs.
An interdisciplinary study of Black Nationalism as an important, persistent and substantive ideology of Black America. This course analyzes and explores ideas and programs of Black leaders.

**BAS 300 Black Experience**
3 hrs.
This course will examine the myriad patterns of adaptation and adjustment made by slaves, free people of color, freedmen and their descendants, to the continuing oppressive character of American society. Slave narratives reveal much about the Africans' interpretation of their presence in the New World. Black presence created a commonality of experience, the characteristics of which become and remain a distinctive American subculture. It aims to examine how Black presence altered the idea of race and how this alteration became a function of the institutional forms that Black Americans have shaped to survive in a hostile environment.

**BAS 310 The Black Woman: Historical Perspective and Contemporary Status**
3 hrs.
This course is an examination of the historical perspective and contemporary status of the Black woman, paying critical attention to her image as reflected in her role in the American society. The central thrust of this course will be an in-depth treatment of the problems, issues and concerns surrounding images of the Black woman.

**BAS 314 The Black Community**
3 hrs.
An investigation of the social forms and structures within the Black community from the unique Black perspective. The course will focus on the sociological, political, economic, psychological, and physical aspects of community building by a subordinated group.

**BAS 320 Ecology and the Black Community**
3 hrs.
Ecology and the Black Community will be an investigation of the relationships between human beings (local residents) and their social and physical environments. The course will focus on the determination of the individual's status in the community by an examination of the social, political, economic and physical aspects of the environments as influenced by the social order of the American society and philosophy.

**BAS 350 Blacks in Michigan**
3 hrs.
A survey of the significance of Blacks in the making of Michigan history. We will trace the movement of Blacks into Michigan, investigate patterns of settlement, reactions to the images, and the development of the Black families and church as principal forces in the Black community. We will study the political, social, and economic implications of being Black in Michigan, both in urban and rural areas from 1790 to the present. The student will be introduced to the varieties of historical sources available for such study.

**BAS 360 Black Woman-Black Man Relationships**
3 hrs.
This is a study of the dynamics of the Black Woman-Black Man Relationships in a variety of contemporary settings. Special attention will be given to family settings as the Black man and Black woman conduct their lives and respond to the various stimuli and pressures of contemporary society. An attempt will be made to examine some positive ways to improve Black man/Black woman relationships in the future. Prerequisites: BAS 310 or consent of instructor

**BAS 500 Black Humanism**
3 hrs.
An examination of the creative dimension of the Black Experience, isolated and set apart in an enemy environment, Americans of African descent have been very creative in a wide range of human undertakings. The fact has been acknowledged and accepted, but this creativity has not had free range. One of the outcomes of the Black Revolution has been the emergence of "soul" as a concept to label the artistry and artfulness of Black American life. The creative dimension has also included science and technology. Black humanism is a way of getting at the life styles of Black communities and individuals and the availability of the Black Presence and Experience. What universal elements can be identified in "soul?" What are the unique qualities of "soul?" What would American life and culture be like without this elusive quality?

**BAS 510 Multicultural Education**
3 hrs.
This course is designed to prepare teachers and administrators who will work in a multicultural setting. The course is primarily aimed at helping teachers at any level who teach a social studies component, but teachers of all other subjects, e.g., physical and biological sciences and special education and school administrators will find the course useful. Students will learn how to compile data on the ethnic makeup and resources of the local community, developing instructional packages for use in multicultural courses and for evaluation materials prepared.

**DEPARTMENTAL COURSES**

The following courses are related to Black Americana Studies. Students may elect the additional hours necessary to satisfy requirements for a minor or a teaching minor from the following departmental courses. (Please note: Black Americana Studies is interdisciplinary in approach, and students are encouraged to select courses from several fields of study rather than concentrating in one area to satisfy departmental course requirements.)

**Anthropology**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>220 Cultural Anthropology</td>
<td>3</td>
</tr>
<tr>
<td>332 Topics in World Culture Areas: Cultures of Africa</td>
<td>3</td>
</tr>
</tbody>
</table>

**Economics**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
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</thead>
<tbody>
<tr>
<td>201 Principles of Economics</td>
<td>3</td>
</tr>
<tr>
<td>202 Principles of Economics</td>
<td>3</td>
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</tbody>
</table>

**410 Labor Problems**

**English**

<table>
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<tr>
<th>Course</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>223 Black American Literature</td>
<td>4</td>
</tr>
</tbody>
</table>

**History**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
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</thead>
<tbody>
<tr>
<td>314 Black American History</td>
<td>3</td>
</tr>
<tr>
<td>386 Introduction to African History and Civilization</td>
<td>3</td>
</tr>
</tbody>
</table>

**Political Science**

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<tr>
<th>Course</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>341 African Political Systems</td>
<td>4</td>
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</tbody>
</table>

**Religion**

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<tr>
<th>Course</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>304 African Religions</td>
<td>4</td>
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<tr>
<td>311 Myth and Ritual</td>
<td>4</td>
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</tbody>
</table>

**Sociology**

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<tr>
<th>Course</th>
<th>Hrs.</th>
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</thead>
<tbody>
<tr>
<td>200 Principles of Sociology</td>
<td>3</td>
</tr>
<tr>
<td>314 Ethnic Relations</td>
<td>3</td>
</tr>
</tbody>
</table>

**Criminal Justice Program**

Paul C. Friday, Director
2409 Sangren Hall
(616) 383-1733/1736

Carole J. Rogers, Adviser
2407 Sangren Hall
(616) 383-1733/1736

Criminal Justice is an interdisciplinary curriculum designed to provide perspective on the entire criminal justice system. The program is designed to provide a well-rounded, theoretical, and practical education necessary for careers in criminal justice and/or graduate work in law, criminology, or other areas.

The Criminal Justice Major requires thirty-six hours of core and specialized classes including Criminology, Criminal Justice Process, Sociology of Law Enforcement, Juvenile Delinquency, Correctional Process, Advanced Criminology, and Criminal Law. Specialized work in juvenile justice, courts, probation, and corrections is available as well as certification as a Michigan police officer. Curriculum and program details may be found under Sociology/Criminal Justice.

**Environmental Studies**

John Cooley, Director
119 Moore Hall
Phone: (616) 383-3984

The Environmental Studies Program focuses on the deterioration of the earth's environment, emphasizes the quality of life, and encourages action aimed at bringing about an ecologically sound way of life. An interdisciplinary program, it provides students with a variety of intellectual and practical experiences that provoke thought about humanity, our relationship to society, and our relationship to the natural environment.

Environmental Studies encourages students to devise creative solutions to environmental problems. It offers them the opportunity to prepare for a professional role in an environmentally oriented field, to become an environmental educator, to assume a position of leadership in the area of environmental advocacy, or to develop the attitudes and skills commensurate with a personally fulfilling, environmentally responsible way of living.

Students in the ENVIS program are encouraged to become involved in community environmental affairs by designing an independent project, or by participating in an internship with a local organization or
The Environmental Studies Program offers a single major package that the student may elect to take either as a curriculum (EVT) major or as a coordinate (EVT) major. In either case the student must fulfill the following program requirements:

1. Successful completion of a minimum of 32 semester hours of approved course work at least 15 hours of which must be taken at the 300, 400, or 500 level.
2. Successful completion of program component requirements as outlined below under the heading of program components.
3. Selection of a second, disciplinary major, the choice of which is left to the student’s discretion.

The EVT Coordinate Major

This option is offered for those who desire to graduate with a Bachelor of Science or Bachelor of Arts degree in Environmental Studies. Since the Environmental Studies Program itself is broadly interdisciplinary in scope and is not focused on the training of specialists for any specific environmental field, students electing this option are required to take a second major, chosen from any college of the University at the student’s discretion, to provide requisite depth in a particular discipline. In addition to the program requirements listed above, those enrolled as EVT curriculum majors must fulfill the following University requirements:

1. Eight hours of a foreign language or two years of a foreign language in high school (for a B.A. degree only).
2. General Education requirements as described in this bulletin.
3. At least two hours of physical education.
4. Electives and/or additional cognates not required by the disciplinary major to total no less than 122 semester hours.

Program Components

The Environmental Studies Program is divided into five components, each of which addresses itself to a major facet of a comprehensive educational environment.

1. Program Introduction Component

   - ENVS 110—Fundamentals of Environmental Studies

2. The Concepts Component

   - All majors must choose one course from each topic area or be certified as competent in that area. Those obtaining certification in one or more topic areas can elect additional courses from the Implementation Skills Component of the program to satisfy the 32 hour minimum requirement for the program. All minors must choose one course each from at least three of the four topic areas. The topic areas chosen must be approved by the program adviser so as to balance or complement the student’s major and/or additional minors.

   - INTRODUCTION TO BIOLOGICAL SYSTEMS
     - BIOL 105—Environmental Biology
   - INTRODUCTION TO PHYSICAL SYSTEMS
     - GEOG 100—Earth Studies
   - INTRODUCTION TO HUMAN SYSTEMS
     - GSSC 123—Human Society

3. The Values/Ethics Component

   - All majors and minors must choose two courses from this area:
     - ENGL 311C—Perspectives Through Literature
     - REL 333—Religion and Ecological Awareness
     - GEOG 350—Principles of Conservation and Environmental Management
     - ENVS 300—Introduction to Appropriate Technology
     - GSCI 436—The Search for an Ecological Conscience

4. The Implementation Skills Component

   - All majors must take a minimum of two courses from the approved list of electives below. These courses are to be chosen in consultation with and must have the written approval of the Program Adviser. Non-Teaching minors are not required to take any courses from this component.

   - ENVS 301—Environmental Internship
   - PEPR 276
   - SOC 171, 250, 353, 501, 523, 553
   - TRAN 270

5. The Integrating Capstone Experience

   - ENVS 400—Senior Seminar

Advising

Given the interdisciplinary nature of the program, it is very important that students work with one of the program advisers. Once a decision is made to major in Environmental Studies, students should come to the advising office, so that a program can be designed to meet requirements and fit individual interests. Information about internships, summer jobs, and career opportunities is also available in the advising office. Students are urged to consider an environmental internship, for which academic credit is usually available.

Environmental Studies Courses

ENVS 110 Fundamentals of Environmental Studies

3 hrs.

Fundamentals of Environmental Studies is an interdisciplinary introduction to the study of environmental concerns. It is particularly designed for students majoring or minoring in Environmental Studies, but is equally valuable for anyone desiring a conceptual foundation on which to build an independent study of these concerns. Attention is focused on the structure and behavior of systems—biological, physical and social—which both create and are influenced by environmental problems. Particular attention is given to the role of energy in the definition and maintenance of these systems.

ENVS 111 Fundamentals of Environmental Studies—Discussion

1 hr.

A discussion section to accompany ENVS 110. Weekly meetings will explore the political, social, economic and ecological ramifications of problems discussed in lectures.
Integrated Language Arts Minor (ILAM)

June Cottrill, Adviser
323 Sprau Tower
(616) 383-4080

An interdisciplinary program of:
COLLEGE OF ARTS AND SCIENCES
Communication
English
Languages and Linguistics
COLLEGE OF EDUCATION
Education and Professional Development
COLLEGE OF HEALTH AND HUMAN SERVICES
Speech Pathology and Audiology

This 24-hour interdepartmental program for preservice elementary school teachers emphasizes the integrated nature of language learning. This program satisfies the guidelines of the Michigan Department of Education for competency-based programs and provides opportunities for a wide variety of individual interests and alternative learning styles. The critical importance of fieldwork in the learning of preservice teachers is recognized in the program and is an integral part of each course. Students in the program are encouraged to develop and implement innovative instructional materials and practices based on sound theory.

Each course is taught by a faculty member with interdisciplinary expertise from one of the departments participating in the minor. Each course focuses on a particular aspect of language development which will be presented through a balance of lectures, discussions, and workshops together with opportunities for student-initiated learning.

Students can enter the program in their sophomore year. Program bulletin and application form are available in the Education and Professional Development Department and from the Integrated Language Arts (ILAM) Adviser, June Cottrill, 323 Sprau Tower, 383-4080. A minor slip is required. Students must see an adviser before they begin the minor. A 2.75 GPA is required for entrance.

Program

This 24-hour interdepartmental minor for elementary education students consists of the following:

Entry Courses—must be taken concurrently:
ILAM/SPPA 260 Linguistic Development of the Child ...................................................... 2 hrs.

Intermediate Courses:
ILAM/COM 365 Oral Communication and the Early Elementary Child ................................................. 4 hrs.
ILAM/ENGL 375 Acquisition of Literacy and the Early Elementary Child ........................................... 4 hrs.
ILAM/ENGL 376 Acquisition of Literacy and the Later Elementary Child ........................................... 4 hrs.

Capstone—to be taken after at least 16 hours of the minor are completed:
ILAM/ED 460 Integrated Language Arts Seminar ........................................................................ 4 hrs.

For individual course descriptions see catalog listings under the participating department.

International and Area Studies

Norman C. Greenberg
Dean, International Education and Programs
Director, International and Area Studies
Dean, College of General Studies

AFRICAN STUDIES PROGRAM
Stasy Asela, Chair

ASIAN STUDIES PROGRAM
C.I. Eugene Kim, Chair

EUROPEAN STUDIES PROGRAM
William Ritchie, Chair

LATIN AMERICAN STUDIES PROGRAM
David Chaplin, Chair

The International and Area Studies Programs were established by the Trustees and Administration of Western Michigan University as interdisciplinary programs devoted to the study of cultures located geographically outside the continental United States. Coordination of the International and Area Studies Programs is provided by the Office of the Dean of International Education and Programs.

There are numerous programs that should be of great interest to undergraduate students, a detailed description of each will be found on the following pages of this catalog. In broad outline, these programs fall within two categories: (1) undergraduate co-ordinate majors of twenty-four semester hours, and (2) undergraduate minors of fifteen semester hours, including minors approved for the elementary and secondary education curricula. Students who enroll in any of these co-ordinate majors must also enroll in a standard major in any college in the University.

The International and Area Studies Programs are a joint endeavor by faculty and students designed to provide a curricular framework within which to examine, analyze, and—hopefully—understand the peoples and institutions of the world in cross-disciplinary perspective.

The programs seek to provide students with a broad variety of intellectual and experiential stimuli designed to promote an understanding of areas—their history, literature and fine arts, social institutions, political processes, major intellectual currents, geography, economic problems, linguistic heritage—and the relationship of these factors to the role of these nations in the world community. Students enroll in relevant departmental courses including readings and independent courses.

The International and Area Studies Programs are designed for those undergraduate students who plan to pursue careers in education, industry, government, or the professions in which success would be enhanced by an understanding of peoples whose values, traditions, customs and institutions differ markedly from those with whom most of us are familiar.

These programs seek to promote the following educational objectives:

1. To assist Western Michigan University students achieve a better understanding of other peoples and institutions.
2. To explore, analyze, and evaluate the impact of specific areas on the course of world events.
3. To stimulate acquisition of foreign language skills by Western Michigan University students.
4. To provide a forum for the exchange of views between students and faculty concerned with contemporary world affairs.
5. To encourage cross/disciplinary research and study by both students and faculty of issues affecting the contemporary world.

A language is required in some majors. However, any student planning the study of an area at the graduate level or the pursuit of a foreign-related career should obtain as much fluency in a language as possible as an undergraduate. To avoid studying a language only makes the successful pursuit of a related career more difficult.

The International and Area Studies Programs develop and promote opportunities for students enrolled in these programs to study and travel in foreign countries—thereby acquiring a firsthand understanding of contemporary conditions while further developing facility in one or more foreign languages. Academic credit earned as a result of study or research undertaken abroad may be accepted toward completion of requirements for the coordinate major or minor.

Students should consult the appropriate adviser for the development of a program of study and for each registration if necessary.

AFRICAN STUDIES PROGRAM

Coordinate Major

Sissay Asefa (Economics), Adviser
5026 Friedman Hall
383-1426

The African Studies Program is an interdisciplinary program of concentrated study leading to a coordinated major or ordinary regular minor in African studies as part of the student's overall bachelor's degree program. Its specific aims are to develop a greater appreciation of the rich variety of African cultures and their achievements; to stimulate acquisition of languages spoken in Africa and knowledge about contemporary African affairs; and to provide a forum for the exchange, analysis, and evaluation of information and ideas concerning the importance of Africa in the world.

This program is ideally organized for the student who wishes to take advantage of the Student Planned Curriculum available at Western. A student who enrolls for the coordinate major in African studies must also have a disciplinary major in any college of the University. The program requires 24 semester hours of courses for the major and 15 semester hours for the minor (24 hours for students enrolled in any curriculum in the College of Education). In the planning of the major and minor, students must consult with the adviser in African studies.

ASIAN STUDIES PROGRAM

C. I. Eugene Kim (Political Science), Adviser
3028 Friedman Hall
383-0483

This is a program for the study of Asia, which is a large area in terms of geography and population and is an important area because of the position it has in world affairs. This area stretches from Micronesia in the East to Afghanistan in the West and from Mongolia and China in the North to India in the South. It has about fifty-seven percent of the world population. It is going through adjustments of urbanization, industrialization, modernization, and technological change. It is an area of different political, social and economic systems and institutions. This program is to help the students to gain an understanding of Asia and prepare them for careers in that part of the world.

Coordinate Major

Undergraduates interested in Asian affairs and culture or who hope to pursue an Asian-related career may choose an interdisciplinary coordinate major in Asian studies. This is a double major program. In addition to fulfilling the requirements for a disciplinary major in any college of the University, the student is required to take 24 credit hours of approved Asian studies courses. An Asian language is not required for this major, however, it is strongly recommended for any student planning an Asian-related career or Asian studies at the graduate level.

Minor

Undergraduates in any college of the University may choose an interdisciplinary minor in Asian studies. Fifteen semester hours (24 for students enrolled in education curriculum) of approved Asian studies courses are required. The minor in Asian studies has been approved by the State Board of Education for teacher certification at the secondary education level.

EUROPEAN STUDIES PROGRAM

Coordinate Major

William Ritchie (Political Science), Adviser
3025 Friedman Hall
383-8002

The courses for this program concentrate on the European area. They are drawn from sixteen departments of the University which offer subject matter focused on the European area. The program is designed to appeal to those students who have an interest in Europe and wish to transcend the disciplinary boundaries of any one field of study. The European Major may be undertaken in conjunction with a disciplinary major and is designed to broaden the student outlook on the European area in general. Students are encouraged to concentrate on one of the major cultural-linguistic regions of Europe. For those students who have a broad interest in European culture and its institutions, and who do not wish to specialize in one of the major area complexes, there is the general option.

1. A minimum of 24 hours will be required for the completion of the coordinate major in European studies. The European studies coordinate major will be offered in the following options concerning these specific areas:
   • British Studies—Professor Dale Patterson (Department of History)
   • Germanic Studies—Professor Peter Krawutschke (Department of Languages and Linguistics)
   • Romance Studies—Professor Joseph G. Resch (Department of Languages and Linguistics)
   • Slavic Studies—Professor William Ritchie (Department of Political Science)
   • General Option—See William Ritchie, General Adviser

2. The student is encouraged to consult the area advisers in the field of their interest. Tentative program worked out by the area advisers should be brought to the European Studies Program adviser for audit and final signature. Interested students can also approach the adviser for European studies directly.

3. Each regional option will require 8 hours of an appropriate language. Language study can be undertaken in the Department of Languages and Linguistics. Students with the knowledge of an appropriate language may have this requirement waived.

4. Candidates for coordinate major degree must select three courses appropriate to their area of interest from an approved list with the assistance of their adviser.

5. The remaining hours are elective with the requirement that they have relevance to the European area and are to be selected in conjunction with the student's adviser. Students who elect the general option of the coordinate major must select an advisory committee. The committee shall consist of the European studies adviser, or an adviser pertinent to the student's general option, and a third member to be jointly agreed upon by the student and the European studies adviser.

Minor

Fifteen semester hours (24 hour Slavic minor for students enrolled in education curriculum) taken from the list of European studies courses are required for completion of a minor concentration in European studies. Eight hours of language and one course, drawn from each of two disciplines listed in the core, will be part of the requirements. The language requirement can be waived only by written approval of the European studies adviser. In case the student obtains permission to waive language, the required hours will be drawn from an appropriate list of core courses by the European studies adviser.

LATIN AMERICAN STUDIES PROGRAM

Coordinate Major

David Chaplin (Sociology), Adviser
2408 Sangren
383-1725

Students enrolled in this coordinate major must select at least 24 hours from core and cognate courses available from the program or approved courses. Students must demonstrate intermediate-level proficiency in Spanish or Portuguese. Students wishing to enroll in the Latin American studies coordinate major are required to make this intention known to the Latin American studies adviser by no later than the first semester of their junior year—and preferably earlier.

Honors Certificate Program A Certificate in Latin American Studies will be awarded from Western Michigan University on graduation to those who have completed the 24 hour coordinate major requirements as well as an oral and written examination by three members chosen from the Latin American Studies Committee. A grade point average of 3.50 and intermediate level proficiency in Spanish is a prerequisite in this program. The certificate is designed for students whose interest in Latin America goes beyond the usual academic programs. The program is flexible involving independent studies, seminars, and travel. It is above all, tailored to each individual's interest.
Minor

Fifteen semester hours (24 for students enrolled in education curricula) taken from the list of Latin American studies core and cognate courses are required for completion of a minor concentration in Latin American studies, a minimum of 12 semester hours must be selected from the list of core courses. Students enrolled in this minor are strongly urged to acquire a proficiency in Spanish. Students wishing to enroll in this minor concentration are required to make this desire known to the Latin American studies adviser before courses are employed to satisfy this program. Records of the minor are maintained and verified by the Latin American studies adviser.

Goals

The Latin American studies program offers students a combination of area specialized courses in geography, political science, economics, sociology, history, and anthropology to be linked to Spanish and Portuguese and complemented by coordinate majors in other fields. Especially appropriate choices would be international business, tourism, or economics. In addition, secondary education certification would be especially relevant. Beyond study by students, especially on Latin America, students should also select cognate courses covering developmental problems of all third world regions. Individual directed studies courses are also available on Latin American topics from a wide range of faculty. A special feature of this program is the opportunity to participate in field seminars in Guatemala or Mexico, as well as spending a year abroad in approved schools in Latin America or Spain or Portugal. Such experiences are very valuable aid to linguistic fluency.

The Medieval Institute

Otto Gründler, Director and Advisor

Knowledge of Medieval and Renaissance culture is being increasingly recognized as essential to an understanding of modern culture. The Medieval Institute was established by the University to develop and coordinate interdisciplinary programs in medieval and Renaissance studies. In addition to an undergraduate minor, the Institute offers a graduate program leading to an M.A. in Medieval Studies.

Western Michigan University has library resources and faculty to provide a good academic environment for the study of the Middle Ages and Renaissance. The Institute organizes and hosts the annual International Congress on Medieval Studies which has brought the University wide recognition throughout the United States, Canada, and Europe. The Institute’s publications, Medieval Institute Publications, publishes significant current research in all areas of medieval studies.

The headquarters of the Medieval Institute is in the Hilsdale West Building.

MINOR PROGRAM

Students with an undergraduate minor must elect twenty hours, to include the following:

1. One course chosen from the approved list
2. One literature course chosen from the approved list
3. One course in intellectual history, philosophy, or religion chosen from the approved list.

Electives from the approved list with the approval of the adviser.

APPROVED COURSES

Art

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>220</td>
<td>History of Art (to the Renaissance)</td>
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<tr>
<td>520</td>
<td>Independent Study in Art History</td>
</tr>
<tr>
<td>583</td>
<td>History of Medieval Art</td>
</tr>
<tr>
<td>585</td>
<td>History of Renaissance Art</td>
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Arts and Sciences

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<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>504</td>
<td>Foreign Studies Seminar: Social Sciences</td>
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<tr>
<td>505</td>
<td>Foreign Studies Seminar: Humanities</td>
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English

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<tbody>
<tr>
<td>252</td>
<td>Shakespeare</td>
</tr>
<tr>
<td>372</td>
<td>Development of Modern English</td>
</tr>
<tr>
<td>452</td>
<td>Shakespeare Seminar</td>
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</tbody>
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510 Special Topics: Norse Literature and Mythology

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<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>530</td>
<td>Medieval Literature</td>
</tr>
<tr>
<td>532</td>
<td>English Renaissance Literature</td>
</tr>
<tr>
<td>555</td>
<td>Studies in Major Writers (Dante, Chaucer)</td>
</tr>
<tr>
<td>598</td>
<td>Reading in English</td>
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History

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<thead>
<tr>
<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>354</td>
<td>Medieval History</td>
</tr>
<tr>
<td>550</td>
<td>Topics in Medieval History</td>
</tr>
<tr>
<td>554</td>
<td>Renaissance and Reformation</td>
</tr>
<tr>
<td>598</td>
<td>Independent Study in History</td>
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Languages and Linguistics

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<tbody>
<tr>
<td>550</td>
<td>Independent Study in French</td>
</tr>
<tr>
<td>560</td>
<td>Studies in French Literature (Medieval)</td>
</tr>
<tr>
<td>560</td>
<td>Studies in French Literature (Renaissance)</td>
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German

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<th>Course</th>
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<tbody>
<tr>
<td>528</td>
<td>Survey of German literature</td>
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<tr>
<td>550</td>
<td>Independent Study in German</td>
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Latin

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<th>Course</th>
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<tr>
<td>550</td>
<td>Independent Study in Latin</td>
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<td>592</td>
<td>Medieval Latin</td>
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Spanish

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<tbody>
<tr>
<td>322</td>
<td>Life and Culture of Spain</td>
</tr>
<tr>
<td>550</td>
<td>Independent Study in Spanish</td>
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<tr>
<td>560</td>
<td>Studies in Spanish Literature</td>
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Linguistics

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<tr>
<td>421</td>
<td>The Development of Language: History and Dialects</td>
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<td>Readings in Linguistics</td>
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Medieval Studies

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<th>Course</th>
<th>Hours</th>
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<tr>
<td>145</td>
<td>Heroes and Villains of the Middle Ages</td>
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<tr>
<td>500</td>
<td>Interdisciplinary Studies in Medieval Culture</td>
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Music

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<tr>
<td>270</td>
<td>Music History and Literature</td>
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<tr>
<td>498</td>
<td>Readings in Music</td>
</tr>
<tr>
<td>517</td>
<td>Collegium Musicum</td>
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<td>582</td>
<td>Western Music before 1600</td>
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Philosophy

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<th>Course</th>
<th>Hours</th>
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<td>300</td>
<td>Ancient and Medieval Philosophy</td>
</tr>
<tr>
<td>498</td>
<td>Independent Study</td>
</tr>
<tr>
<td>598</td>
<td>Readings in Philosophy</td>
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Political Science

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<th>Course</th>
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<tbody>
<tr>
<td>360</td>
<td>Introduction to the History of Political Theory I</td>
</tr>
<tr>
<td>598</td>
<td>Studies in Political Science</td>
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Religion

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<td>The Christian Tradition</td>
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<tr>
<td>520</td>
<td>The Jewish Tradition</td>
</tr>
<tr>
<td>525</td>
<td>The Islamic Tradition</td>
</tr>
<tr>
<td>500</td>
<td>Historical Studies in Religion (Christian Theology to 1500)</td>
</tr>
<tr>
<td>500</td>
<td>Historical Studies in Religion (Renaissance and Reformation Theology)</td>
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</table>

510 Morphological and Phenomenological Studies in Religion (Great Islamic Thinkers)

510 Morphological and Phenomenological Studies in Religion (Millennium, Utopia, and Revolution)

Theatre

<table>
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<th>Course</th>
<th>Hours</th>
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<tbody>
<tr>
<td>370</td>
<td>Theatre History</td>
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</tbody>
</table>

Medieval Courses (MDVL)

(Course described in italics is approved for General Education.)

MDVL 145 Heroes and Villains of the Middle Ages

3 hrs.

An interdisciplinary course designed to introduce beginning students to the medieval roots of the individual, social, and institutional ideals and values of modern Western culture as they are expressed and exemplified in the images of medieval heroes and their counterparts. Faculty from different departments will deal with the topic of the course by examining and interpreting the evidence in light of their respective fields of study such as art, history, literature, music, religion, and sociology.

MDVL 500 Interdisciplinary Studies in Medieval Culture

3 hrs.

An interdisciplinary course organized around selected topics in medieval and Renaissance studies. The focus may be in a specific period (The Twelfth Century), a religious movement (Monasticism), or a social structure (Venice-A Renaissance city-state), or the social fabric (Medieval Man: Image and Reality). In each case faculty from several departments will approach the semester’s topic from the perspective and with the methodological tools of their respective disciplines, such as art, history, literature, music, philosophy, political science, and religion.

The overall aim of the course is to demonstrate to students why one needs to acquire a variety of disciplines to understand a single complex problem and how to put traditional building blocks together in new ways. The course may be repeated for credit with a different topic.

MDVL 597 Directed Study

1-3 hrs.

Research on a selected topic in the field of Medieval Studies directed and supervised by a faculty member. Registration requires at least junior standing and approval by the Director of the Medieval Institute. May be repeated for credit. Prerequisite: Approval application required.

Group Science Majors and Minors

Departmental major and minor requirements are listed under the individual science departments (biology, chemistry, geography, geology, mathematics, physics, and psychology) and students must consult departmental advisers concerning them. Group majors and minors are intended for students in the middle school and junior high school curricula. Group science majors are also available for students in special education. Group science minors are not available for students in other curricula, except in rare cases with special permission of the group science adviser. For information contact the College of Arts and Sciences Advising Office.
The group science major in the Middle School and Junior High School Curriculum will include 12-13 hours of Biological Science, 11-12 hours of Earth Science, and 12 hours of Physical Science. A total of 36 hours is required. The following courses are recommended:

**Biological Science**
- BIOL 101 Animal Biology 3
- BIOL 102 Plant Biology 3

**Earth Science**
- GEOL 105 Physical Geography 4
- Two of the following:
  - CHEM 140 Intro. Environmental Chemistry 4
  - CHEM 101 General Chemistry I 4
  - CHEM 102 General Chemistry II 4

**Physical Science**
- PHYS 105 Astronomy 3
- One of:
  - PHYS 111 General Physics II 4
  - PHYS 106 Elementary Physics 4

**Group Social Science Minor (elementary education and middle school/junior high school curricula)**

1. At least 36 hours of credit in the College of Arts and Sciences from the departments of anthropology, economics, history, political science, and sociology.

2. The following basic courses must be completed. They may be applied toward either the social science major or a minor in one of the departments.
   - ANTH 110, 501; HIST 100, 101
   - HIST 210, 211, 310, 315, 505
   - SOC 200, 300, 320, 320, 390
   - BAS 200, 300, SOC 200, 320, 390
   - ANTH 220, ECON 480, 589, HIST 313, 371, 389, PSCI 250, 343, 350
   - GEOG 102, 105, 205, 311

3. The minor must include the same basic courses at the 300-level or above.

4. No more than 16 hours of credit can be applied towards the required total of 36 hours.

**Science and Mathematics Teaching Minor**

Adviser: Science and Mathematics Education
Office of Admission, Advising, and Certification
2504 Sangren Hall

This minor is open to students enrolled in the elementary education curriculum. Transfer students will need to have their previous coursework in sciences and mathematics evaluated by a College of Education adviser prior to enrolling in this minor. This minor results in an endorsement in science. To obtain information about an additional mathematics endorsement contact the Department of Mathematics and Statistics.

Because of the interdisciplinary nature of this minor, one course must be selected from each of the three science areas. Mathematics courses must be taken in sequence. Practice and seminars are taken concurrently. Courses approved for general education are marked with an "*".

**Required Courses:**

**A. REQUIRED SCIENCE**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tr>
<td>BIOL 107</td>
<td>Biological Science</td>
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</tr>
<tr>
<td>BIOL 234</td>
<td>Outdoor Science</td>
<td>4</td>
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</tbody>
</table>

**Earth Science**
- GSCI 105 Physical Geology 4

**Physical Science**
- CHEM 200 Chemical Science in Elementary Education 4
- GSCI 231 Physical Science in Elementary Education II 4

**B. REQUIRED MATHEMATICS**

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>MATH 151</td>
<td>Probability and Statistics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 265</td>
<td>Probability and Statistics for Elementary Teachers</td>
<td>3</td>
</tr>
</tbody>
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**C. REQUIRED PRACTICA AND SEMINAR**

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>ED 401</td>
<td>Teaching Elementary School Science</td>
<td>3</td>
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<tr>
<td>ED 402</td>
<td>Seminar in Elementary Science and Mathematics</td>
<td>2</td>
</tr>
<tr>
<td>MATH 552</td>
<td>Teaching of Elementary Mathematics</td>
<td>3</td>
</tr>
</tbody>
</table>

**Group Social Science Major and Minors**

William Fox, Adviser
2060 Friedemann Hall

This minor provides an interdisciplinary experience in the social sciences. It is not open to students in education curricula.

Requirements include:

1. At least 36 hours credit in the departments of anthropology, economics, history, political science, and sociology.
2. The following basic courses must be completed. They may be applied towards either the social science major or a minor in one of the departments.
3. A total of 9 hours credit in 300 to 500 level courses.
4. No more than 16 hours credit in any one social science department may be used to apply to the required total of 36 hours.

**Group Social Science Minor (non-teaching curricula)**

Requirements include:

1. At least 24 hours of credit in anthropology, economics, history, political science, or sociology, including at least six (6) hours in courses at the 300 level or above.
2. The minor must include the same basic course selection as the group social science major listed above.

**Additional Social Science Programs**

Two additional interdisciplinary social science programs are available through the Division of Continuing Education listed under General University Studies Curriculum. The first is a social science studies—interdisciplinary, the second is criminal justice. The latter program is designed for students possessing an Associates Degree in Criminal Justice, Law Enforcement, or Police Science from a community college who desire the bachelor's degree in this field.

For more detailed information see a description of these programs in the Undergraduate Catalog under the heading “Division of Continuing Education” (or contact one of the Western Michigan University Regional Centers in Battle Creek, Benton Harbor, Grand Rapids, Lansing, or Muskegon).

**Social Science Courses (SSCI)**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>SSCI 300</td>
<td>Teaching of Social Studies in Secondary Schools</td>
<td>3 hrs.</td>
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</tbody>
</table>

**Definition of objectives: selection, organization, and use of materials, procedures and problems of effective teaching in this area. Prerequisite: Junior standing.**

**SSCI 500 Data Processing for Behavioral Scientist**

3 hrs. An introduction to data processing for students of the behavioral sciences. Emphasis is to be placed upon computer programming in one general purpose computer language and individual projects involving a behavioral problem selected by each student. In addition, **INTERDISCIPLINARY PROGRAMS**

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there will be a survey of a number of computer techniques which show promise for research in the behavioral sciences. Intended solely for persons in the behavioral sciences. No special mathematical background required. Prerequisite: consent of instructor.

Women's Studies Minor
Ruth Ann Meyer, Adviser
3326 Everett Tower. 383-6165

Change in the role of women is a significant element in our current period of social change. The women's studies minor is designed to aid students in the area of personal growth by fostering the development of their capacity to make intelligent choices in considering their own adjustments to life and its demands. The program seeks to provide students an expanded view of their cultural heritage, enhancing their capacity for objective and critical thinking through the examination of previously unexamined assumptions and knowledge about themselves and their past history. In so doing, the student is better prepared to deal in a creative fashion with the content and methodology of the various disciplines.

In addition, the women's studies minor is designed to enhance career preparation by preparing students to deal with others in non-stereotypic fashion in their future professions. The women's studies minor may be used in all curricula other than education. Students must select courses to be used in the minor in consultation with the adviser. Exceptions, such as the inclusion of independent studies through departmental reading courses, may be made with the approval of the adviser. For specific descriptions of the courses consult the departmental sections of the catalog.

The minor consists of 20 hours.

Required:
GSSC 222 Status of Women .................. 4

Electives to total 16 hrs. selected from the following:

*Check with adviser if the topic announced in the Class Schedule will be applicable towards the minor.

100 Level
ENGL 111 Topics: Man and Woman In Literature .......................... 3
GSCI 133 Issues in Social Biology .................. 4
SOC 190 Men and Women in Contemporary Society ................. 3

200 Level
CRT 210 Introduction to Human Sexuality .................................. 3
PSCI 270 Topics: Women in Politics .................................. 3

300 Level
HIST 303 Women in the Western World ................................ 3
GENL 305 Non-Western World: Role and Status of Women .......... 4
PHIL 314 Philosophy and Public Affairs* 4
ANTH 345 Topics: Women in Other Cultures .................. 3

400 Level
GUMB 409 Women: Past, Present and Future ................. 4
ENGL 416 Women in Literature .................................. 4
GSCC 444 Female and Male in Psychological Perspective ........ 4
SOC 495 Topics: Women* 3

500 Level
REL 510 Morphological and Phenomenological Studies in Religion* .......... 4

SOC 510 Studies in Social Problems* .......................... 3
MGMT 512 Women in Management .................................. 3
PSY 524 Human Sexuality .................................. 3
COM 579 Female/Male Interaction (cross listed with Sociology) .. 3
SWRK 564 Special Studies in Social Welfare Practice ................. 1-4

World Literature Minor
William Combs, English Department, Adviser
Joseph Reith, Department of Languages and Linguistics, Adviser

This is an interdisciplinary program administered jointly by the English Department and the Department of Languages and Linguistics.

Studying the literature of other peoples of the world is one of the best ways to begin to know them. A great body of the world's literature is available for study in English translation in a variety of courses and departments at Western Michigan University. The world literature minor grows out of and is based on these courses.

This minor should be of value to students who have a general interest in literature and are curious about the world, especially that major part which does not have English as its literary language.

Any student, including those majoring or minoring in English or Languages and Linguistics, may elect the world literature minor. The minor should be of obvious value to students preparing to teach humanities or literature (at any of several levels), but education curricula students should understand that this minor is not yet a teaching minor.

The world literature minor can provide useful background to students interested in foreign affairs, law, politics, journalism, mass communication, and theatre. It should also be of interest to students in business, scientific, and engineering curricula who wish to do a minor outside their main field.

The minor should interest students who, whatever their career plans or major, wish to have a varied view and mixture of experiences of an interdepartmental program.

Requirements
Twenty hours, with the following distribution:

1. ENGL 312 Western World Literature or
   313 Asian Literature, if not used under Requirement (1) .......... 4

2. Two courses selected from the following list:
   ENGL 110 Literary Interpretation .................................. 4
   ENGL 210 Film Interpretation .................................. 4
   ENGL 252 Shakespeare .................................. 4
   ENGL 312 Western World Literature, if not used under Requirement (1) 4

Permissible Substitutions For Required Courses
With the approval of a minor adviser, students may:

1. Substitute one of the following courses for one course listed above in either Requirement 2 or Requirement 3:
   THEA 370, 371, Theatre Backgrounds, II .................................. 3
   or
   THEA 570 Devol. of Theatre Arts .................................. 3

2. Substitute an advanced literature course in a foreign language for one of the courses listed above in either Requirement 2 or Requirement 3.

3. Substitute a course or courses (maximum of 4 hours), not presently listed in the catalog, which may be offered as a special or temporary course and which is deemed by the advisers appropriate to the World Literature Minor.

AMERICAN STUDIES PROGRAM
See "Interdisciplinary Programs" in the College of Arts and Sciences.
ANTHROPOLOGY

Robert Jack Smith, Chair
William Cremn, Chair
Elizabeth Garland
William Garland
Norman Greenberg
Alan Jacobs
Erika Loeffler
Robert Sundick

Major and Minor

Courses are designed to (1) give students a better understanding of humanity; (2) broaden familiarity with the diverse ways of human past and present; (3) increase understanding of the contemporary world; (4) meet the needs of students preparing to teach in the social science fields; (5) assist students to prepare for employment in a variety of applied fields in the public and private sectors; and (6) prepare students for graduate work in anthropology. All major and minor programs must be approved by one of the department’s undergraduate advisers.

A major in anthropology consists of a minimum of 30 hours of anthropology courses and must include ANTH 210, 240, and 250. Only one course at the 100 level may be counted toward the major.

A minor in anthropology consists of a minimum of 20 hours of anthropology courses and must include ANTH 210, 240, and 250. Only one course at the 100 level may be counted toward the minor.

Though not required, it is recommended that at least 6 additional hours of elective work be taken in appropriately related fields, such as Black Americana studies, biology and biomedical sciences, economics, environmental studies, geography, geology, history, linguistics, philosophy, political science, religion, psychology, social work, or sociology. A combined major in anthropology and sociology consists of a minimum of 30 hours with at least 12 hours in each department.

Group Social Science

Students in the secondary education curriculum who major in Anthropology must also complete a minor in group social science. Refer to the “Interdisciplinary Program” section of this catalog for a description of the minor requirements.

Anthropology Courses (ANTH)

(Courses described in italics are approved for General Education.)

ANTH 100 Man in Evolutionary Perspective 3 hrs.

The nature, causes and prospects of being human as seen through an examination of the events and processes of biocultural evolution.

ANTH 110 Lost Worlds and Archaeology 3 hrs.

An introduction to the archaeological record relating to the development of culture from its stone age origins through the development of village agriculture and the beginnings of urban life.

ANTH 120 Peoples of the World 3 hrs.

A general survey of the rich variety and types of traditional and contemporary societies in the culture areas of the world, such as hunting and gathering peoples, nomads, small-scale versus large-scale societies, and Non-Western kingdom states. Intended as a general introduction to the field of ethnography, with emphasis on detailed descriptions of representative societies.

ANTH 210 Introduction to Archaeology 3 hrs. Fall, Winter

The science of archaeology is explored in terms of the methods and concepts used to discover and interpret past human behavior. Select portions of the Old and New World prehistoric cultural sequences provide the frame of reference.

ANTH 220 Cultural Anthropology 3 hrs. Fall, Winter

A survey of the role and relevance of “culture” in various societies throughout the world, with emphasis on the nature and function of particular cultures and their interrelationship with environment, society and the individual. (Does not count for anthropology major/minor program.)

ANTH 240 Principles of Cultural Anthropology 3 hrs. Fall, Winter

An introduction to the basic concepts, theoretical approaches, and methodological strategies employed in the study of traditional and contemporary cultural systems throughout the world. Attention given to research techniques and the insights derived from detailed case studies and cross-cultural comparisons. Course intended as a general introduction to the field for anthropology majors and minors, combined sociology/anthropology majors, social science and Honors College students.

ANTH 250 Introduction to Physical Anthropology 4 hrs. Fall, Winter

A survey of physical anthropology, hominid and primate evolution; the living primates; human osteology, human genetics and population variation.

ANTH 300 The Prehistory of North America 3 hrs.

A survey of the major prehistoric cultures of North America north of Mexico, including American Indian origins, early big-game hunters of the Great Plains, ecological adaptations of the Archaic stage, the complex burial mound and temple mound cultures of the East, and prehistoric Pueblo cultures of the Southwest.

ANTH 310 Method and Interpretation in Archaeology 3 hrs.

An introduction to formal archaeological research design and an examination of the interpretive processes used in the analysis and synthesis of material culture. Topics to be discussed include fieldwork strategy, survey and excavation techniques, classification, systems theory, model building and the reconstruction of prehistoric social organizations. Prerequisite: ANTH 210 or consent of instructor.

ANTH 325 Social Structure 3 hrs.

A study of the various social groups and institutions by which diverse societies and cultures throughout the world are organized, with emphasis on the nature and role of kinship, territoriality, ethnicity and other principles in the development of social groups and societies, with particular attention given to the various analytic concepts and theoretical approaches that are relevant to such studies. Prerequisite: ANTH 240, 220 or consent of instructor.

ANTH 332 Topics in World Culture Areas 3 hrs.

Studies of the major non-Western traditions of the world, such as those of North Africa and the Middle East, Sub Saharan Africa, and Asia. Each offering covers major cultural configurations, e.g. rural-urban, peasant-nomad, great civilizations-institutions organizations. Emphasis will be on the unity and diversity, tradition, and changes of peoples and cultures in the developing world. Topics will be announced each semester. May be repeated for credit with different topics.

ANTH 333 Cultures of Europe 3 hrs.

A study of cultural characteristics of the various peoples of Europe, both East and West, with special emphasis placed on the importance of world views, life styles and problems of cultural change among peoples of divergent historical and political backgrounds.

ANTH 339 Native Cultures of North America 3 hrs.

A survey of the rich heritage of American Indian cultures north of Mexico. Ethnographic, ethnobiological, and archaeological materials will be utilized to examine regional differences in cultural patterns.

ANTH 345 Topics in Anthropology 3 hrs.

An intensive study of selected topics or emerging fields in anthropology, such as visual anthropology, museology, voluntary associations, population genetics, women and culture, socialization, and occult or utopian movements. Topics will vary and be announced each semester. (May be repeated for credit with different topics.)

ANTH 346 Microcomputers in Anthropology 3 hrs.

The use and application of microcomputer programs in anthropological and social science research, with practical instruction and experience in utilizing a number of software packages specific to portable, disk-based microcomputers, such as word processing, statistical and multi-variate analysis, data base management, and communication with other computers and network systems via a modem. Emphasis given to learning program commands for purposes of customizing software packages for specific research tasks. Students will be expected to implement one or more software packages as part of their current research activities. Prerequisite: Computer literacy or consent.

ANTH 350 Human Evolution 3 hrs.

Study of both the indirect evidence and the fossil evidence concerning human evolution, including comparison with other primates, living and extinct, and a consideration of the present-day human variation. Prerequisite: ANTH 250 or consent of instructor.

ANTH 370 Culture and Communication 3 hrs.

A consideration of the nature and role of various symbolic systems of communication, especially non-verbal, such as food, dress, art forms, use of space, mythology and folklore. Intended as a general introduction to such fields as sociology, proverbs, aesthetics, folklore analysis, structuralism, ethnographic techniques, and modern linguistic theories of communication as they relate to cultural systems of cognition and social organization.

ANTH 490 Undergraduate Seminar in General Anthropology 2-4 hrs.

An informal seminar oriented to the integrative and synthesizing dimensions of anthropology.
64 COLLEGE OF ARTS AND SCIENCES

Through classroom discussions of readings, papers, and talks on various current concepts and topics in anthropology, students and faculty explore the relevance of the anthropological perspective for an understanding of both the general human situation and their professional development. Variable credit depending upon extent of oral and written presentations by student. Prerequisite: consent of instructor.

ANTH 498 Honors Study
2 hrs.
A program of independent study (reading or research) to provide the honors student with the opportunity to explore a topic or problem of interest, under the guidance of one of the faculty of the Department. May be repeated once. Permission to register must be obtained from the Department Chair.

ANTH 500 Topics in Archaeology
3 hrs.
A consideration of the prehistory of a particular geographic area (e.g. the southwestern United States, the Circumpolar) or of selected theoretical problems (e.g. artifact typology, prehistoric ecology). The topic to be studied will be announced each semester. (May be repeated for credit). Prerequisite: Varies with topic.

ANTH 501 The Rise of Civilization
3 hrs.
The archaeological sequence in one or more of the nuclear centers of prehistoric civilization will be considered in some detail. The course may focus intensively upon one area (e.g. the Near East or Meso-America), or it may give equal emphasis to two or more areas in a comparative framework. Topic will be announced each semester. Prerequisite: ANTH 210 or consent of instructor.

ANTH 502 The Origins of Agriculture
3 hrs.
An intensive study of the human transition from hunting-gathering to cultivation during the post-Pleistocene period. Topics to be treated include: both archaeological and botanical models to explain these processes; the comparison of agricultural systems in various parts of the world; the geographic distribution and biosystematics of selected cultivars, and the cultural systems which have arisen from the economic foundations of plant domestication. Prerequisite: ANTH 210 or consent of instructor.

ANTH 510 Field Methods in Archaeology I
3 hrs. Spring
Instruction in the archaeology of a particular area (e.g. the Great Lakes, Midwest Riverine area) with emphasis on cultural processes and ecological relationships as these emerge during the course of field work on the specific problems chosen for investigation in a given field season. (May be repeated for credit.) Prerequisite: consent of instructor.

ANTH 511 Field Methods in Archaeology II
3 hrs. Spring
Implementation of the field research strategy. Instruction in the basic skills of site excavation, mapping and retrieval and recording of data; also laboratory analysis, including classification and cataloguing of artifacts. Depending upon the problem orientation in a given field season, instruction may include site location survey, site mapping techniques, and paleoenvironmental reconstruction. To be taken concurrently with 510. (May be repeated for credit.) Prerequisite: consent of instructor.

ANTH 520 History of Ethnological Theory
3 hrs.
A systematic examination of the evolution of the significant theoretical problems and contributions in anthropology over the last two centuries. Developments are examined in relation to the prominent figures in the discipline and their times. Prerequisite: ANTH 240, 220, or consent of instructor.

ANTH 522 Methodology in Ethnographic Research
3 hrs.
Emphasis is on quantitative and qualitative research materials as the basis for successful description and hypothesis testing in cultural anthropology. Considers the importance of research design and operations in generating more accurate observations on which theory building and testing rest. Includes introduction to ethnographic research techniques, e.g., participant-observation, structured and semi-structured interviews, questionnaires, sampling, technical equipment, etc. Prerequisite: ANTH 240, 220 or consent of instructor.

ANTH 523 Ethnographic Field Session
3-6 hrs. Summer
Supervised field examination of human communities in respect to specific ethnographic questions, analysis of field data, and report writing. (May be repeated for credit up to a total of six hours.) Prerequisite: consent of instructor.

ANTH 531 Medical Anthropology
3 hrs.
An examination of anthropological research relating to cross-cultural beliefs and practices about health and illness; and the relationship between folk and scientific medical care systems. Included is an analysis of public health programs in Western and developing societies, the effect of institutional/bureaucratic social structure on the adequacy of health care systems, and patients' rights in this age of extraordinary medical technology. Prerequisites: ANTH 240, 220, or consent of instructor.

ANTH 532 Culture and Personality
3 hrs.
An investigation of the interaction of culture and personality with particular attention to the role of culture as a force in the development of the individual. Prerequisite: ANTH 240, 220, or consent of instructor.

ANTH 536 Cultural Evolution
3 hrs.
An inquiry into the dynamics of culture through a study of selected theories of culture change and their application to concrete situations such as the rise of complex civilizations and the reactions of non-Western societies to contact with the West. Prerequisite: ANTH 240, 220 or consent of instructor.

ANTH 538 Law and Culture
3 hrs.
A study of law through the theory and method of comparative legal dynamics. The relation of law to the whole of culture; the function of law as it is revealed in the comparative study of societies ranging from simple to complex. Prerequisite: ANTH 240, 220 or consent of instructor.

ANTH 540 Social Impact Assessment
3 hrs.
The application of anthropological knowledge to assess and evaluate the socio-cultural effects of proposed developmental policy, programs or projects as they relate to environmental impact assessment while in the planning stage, to improve project design and mitigate undesired secondary effects.

ANTH 542 Development Anthropology
3 hrs.
An examination of the role of social science when applied to the solution of specific development problems, particularly in the Non-Western World. Explores a wide range of applied or adaptive research techniques designed to ensure that directed social change actually benefits those for whom it is intended. Also surveys numerous research strategies, methods, and constraints involved in conducting research for national or international development agencies. Prerequisites: ANTH 240, 220, or consent of instructor.

ANTH 545 Topics in Ethnology
3 hrs. Fall
An intensive study of the cultures of an area of the world (e.g. Japan, Philippines, Caribbean, East Africa) or selected problems (e.g. kinship systems, millenarian movements.). Topic will be announced each semester. (May be repeated for credit.) Prerequisite: ANTH 240, 220 or consent of instructor.

ANTH 551 Human Osteology
3 hrs.
A study of the human skeleton. Emphasis will be on morphological and metrical variation, odontology, palaeopathology, and reconstruction of the individual and the population. Prerequisite: ANTH 250 or consent of instructor.

ANTH 555 Topics in Physical Anthropology
3 hrs.
A consideration of the biological relationships of specific populations or general problems in human biology (e.g. human growth and constitution, dental anthropology). Topic will be announced each semester. May be repeated for credit with different topics. Prerequisite: ANTH 250.

ANTH 558 Readings in Anthropology
1-4 hrs.
Independent study arranged in consultation with an instructor. Intended for advanced students with good academic records. One to 2 hours credit per semester, cumulative to 4 hours. Prerequisite: consent of instructor.
An understanding of the biological sciences is essential if we are to solve the pressing social, environmental, and economic problems of our times. The Department of Biology and Biomedical Sciences offers major and minor programs designed to provide today’s student with effective knowledge and training in various areas of the Life Sciences.

The Biology Major explores the broad spectrum of the life sciences with opportunities to concentrate in aquatic biology, botany, ecology, evolutionary biology, physiology, zoology, or sample a number of areas. Students completing this major should be prepared for one or more of the following goals: (1) graduate study toward an advanced degree in the Biological Sciences, i.e., M.S. or Ph.D.; (2) employment in state and federal government service, industry, laboratory or technical work; (3) advanced study at the professional level, i.e., M.D., D.D.S., D.V.M., D.O.M., D.P.M., or Pharmacy.

The Biomedical Sciences Major is designed to prepare students for biomedical careers by providing (1) a core of basic biological sciences courses required of all department majors, (2) biomedical sciences courses in human anatomy, general microbiology and human physiology, and (3) advanced laboratory techniques available in several elective courses. Three options are available: the general and preprofessional option, the medical service representative option, and the medical technology option.

The specific objectives of the General and Preprofessional Option include: (1) providing technical training for employment in hospitals, clinics and basic research laboratories, industrial laboratories, and state and federal agencies, and (2) producing highly qualified students for advanced training at the graduate-professional level, i.e., M.S., Ph.D., M.D., D.D.S., D.O.M., D.P.M., or D.V.M.

The specific objective of the Medical Service Representative Option is to produce students with a sound understanding of the biomedical sciences, who are also knowledgeable in law, accounting, economics, psychology, marketing, and interpersonal communication. Such students would be employable as technical representatives in the pharmaceutical or biomedical-industrial field.

The Medical Technology Option leads to a B.S. degree and is designed to prepare the student for entrance into the twelve-month clinical practicum in a hospital school of medical technology, which is required for certification by the American Society of Clinical Pathologists (ASCP). The resulting medical technologist is an important member of the health care team. He/she is the one who performs specialized tests that assist the physician in the diagnosis and treatment of various diseases. The medical technologist must, therefore, be precise and accurate in the performance of these tests and possess a keen awareness for the importance of quality control within the laboratory. This option assures the necessary strong background in biomedical sciences, physics, chemistry, mathematics, as well as clinical laboratory training.

Students interested in pursuing a teaching career in the biological sciences should follow the special guidelines for the Biology Major—Secondary Education Curriculum section below.

Minors are available in Biology, Biomedical Sciences, Botany, or Zoology. It is possible to major in Biology or Biomedical Sciences and also minor in Botany or Zoology.

An honors program in Biology and Biomedical Sciences is available to students who demonstrate superior abilities during their first or second year of college work. Students are invited to contact the department offices (Biology, Room 100 Wood Hall, 616-383-1674; or Biomedical Sciences, Room 5360 McCracken Hall, 616-383-1544) for information concerning the Biomedical Sciences majors and minors or the honors program.

All major and minor programs are to be pursued under the direction of and with the approval of a departmental adviser. Students who want to major or minor in Biology or Biomedical Sciences should consult with the appropriate departmental adviser during freshman or transfer student orientation and regularly thereafter.

Only departmental courses (Biol. and BMED) in which a grade of “C” or better is obtained may be counted towards a major or minor in Biology and Biomedical Sciences.

Biology Major—Arts and Sciences, Liberal Arts, and Preprofessional Curricula

A major in biology (BIO) consists of a minimum of thirty-six hours of coursework in BIOL and BMED courses, including the core courses and electives. Electives chosen to complete the three-six-hour major should reflect the student’s interests and educational objectives. A minimum of six hours of BIOL electives must be taken at the 500 level.

Core Course Requirements
BIOL 101, 102, 307, BMED 213, 250, and one of the following: BIOL 317, or 319 or BMED 350.

Cognate Requirements
Arts and Sciences (ASC) and Liberal Arts (LA) curricula.

CHEM 101 (or 102) and 120, and a course in organic chemistry. Any two of the following courses in MATH 118, 122, 123, 200, 266; PHYS 110 (or 210) and 111 (or 211); GEOL 130 may be substituted for PHYS 111 (or 211).

Preprofessional (PD, PM, etc.) curricula. In addition to the cognates required for the ASC and LA curricula, the following cognates are needed for admission to most medical and dental schools: CHEM 360 and 361; GEOL 130 may not be substituted for PHYS 111 (or 211).

We urge you to consult with the preprofessional curriculum adviser at an early stage, to determine any special requirements or variations from the above that may pertain to your major or your choice of medical or dental schools that you are planning to apply to for admission.

Preparation for graduate school in Biology, Botany and Zoology (especially in the areas of ecology and field biology).

In addition to the cognates required for the above curricula, the following cognates are needed for admission to most graduate schools: GEOI 130 (in addition to PHYS 111 or 211), a course in statistics (MATH 260, 364, or 366); a course in computer programming (CS 105 or 306).

Transfer students must complete a minimum of nine hours of biology coursework at Western.

Biology Major—Secondary Education Curriculum

The SED curriculum consists of core course requirements in Biology, BIOL 102 (Plant Biology), BIOL 301 (Ecology), BMED 211 (Human Anatomy), BMED 213 (Cell Biology), BMED 250 (a microbiology course (BMED 232 or 312), a physiology course (one of the following: BIOL 317, BIOL 319, BMED 240, BMED 350) and BIOL 404 (Problems in Teaching Biology) and BMED 518, 520, 531, 534, 570, or 574 and BMED courses (excluding 598 and 599) are required.

In addition, the following Group Science Major is required: CHEM 101 or 102, 120 and 365 (or 360 and 361), PHYS 110 (or 210) and 111 (or 211) and 4 hours of physical geology.

Cognate requirements include MATH, any two of the following, 118, 122, 123, 200, or 260.

Biomedical Sciences Major—General and Preprofessional Option

Biomedical Sciences Requirements
A major in Biomedical Sciences (BMED) consists of a minimum of thirty-six credit hours including the basic core curriculum and electives. The electives must include at least eight credit hours at the 500 level. A student may be eligible for equivalency and transfer credit toward the major. (See Transfer Students.)

Core Curriculum
BIOL 101, 102. BMED 211, 213, 250, 312 and 350.

Cognate Requirements
Twenty-one hours of college mathematics which must include one of the following options: MATH 118 and 122 or 200; MATH 122 and 123; MATH 122 or 200 and 260 or 366. Eight hours of general physics are also required.

Biomedical Sciences Major—Medical Service Representative Option

Biomedical Sciences Requirements
A major in Biomedical Sciences with Medical Service Representative Option consists of a minimum of thirty-six credit hours including the basic core curriculum and two of the following: BIOL 518, 520, 531, 534, 570, or 574.

Core Curriculum
BIOL 101, 102. BMED 211, 213, 250, 312, 350 and 366.
Cognate Requirements
Twenty-one hours of college chemistry including organic chemistry, biochemistry and biochemistry laboratory. Eight hours of college mathematics which must include one of the following options: MATH 118 and 122 or 200; MATH 122 and 260 or 200 or 366. Eight hours of general physics are also required. In addition, the following specific courses must be taken: PSY 194 or 344, ECON 201 and 202, AUD 201, MKTG 270, FCL 340, GSCI 434, and at least six hours from the following COM courses: 104, 170, 331, and 370.

Biomedical Sciences Major—Medical Technology Option
The student takes courses on the Western campus for four years obtaining a Bachelor of Science degree with a Biomedical Sciences major and a Chemistry minor. The fifth year is a clinical practicum served in an accredited hospital school of medical technology. This twelve month internship is taken independently of the University in fulfillment of the requirements of the American Society of Clinical Pathologists (ASCP).

Biology and Biomedical Sciences Requirements
A Biomedical Sciences major, Medical Technology Option, consists of a minimum of thirty-six credit hours of selected BIOL and BMED courses. These are BIOL 101, BIOL 102, BMED 211, 213, 250, 320, 350, 430, 534 and 536. BIOL 558 is highly recommended. Only BIOL and BMED courses in which a “C” or better is obtained may be counted toward a major in the Medical Technology Option.

Cognate Requirements
At least twenty-one credit hours of college chemistry are required including general chemistry, CHEM 101 or 102, and CHEM 120, quantitative analysis, CHEM 222, organic chemistry, CHEM 365 or CHEM 360 and 361, biochemistry, CHEM 450 and 456. At least eight credit hours of college mathematics, including MATH 122 or 118 or 200 and MATH 260 or 366, and Physics 110 and 111 are required. In addition, the student must take an education elective and a management elective.

Biological Sciences, Botany, Zoology Minors
Arts and Sciences, Liberal Arts, and Preprofessional Curricula
A student in the ASC, LA, PD, and PM curricula may elect a minor in Biology, Botany, or Zoology, which consists of minimum of twenty hours of coursework in biology, botany, or zoology, including at least four courses selected from the core courses for a biology major and electives. Appropriate Biomedical Sciences courses may be used toward these minors. Cognate requirements for the minors include: CHEM 101 or 102 and MATH 118 or 122, or 200. A student majoring in biology may elect a minor in either botany or zoology. In such a case, no courses taken toward the major may be applied toward the minor. Transfer students must complete a minimum of six hours of biology coursework at Western. Only BIOL and BMED courses in which a grade of “C” or better is obtained may be counted toward the minor.

Science and Mathematics Teaching Minor
The Department of Biology and Biomedical Sciences participates in the science and mathematics teaching minor for students in elementary education curriculum (EED). For a full description of the program consult its listing under the “Interdisciplinary Programs” section in the College of Arts and Sciences.

Transfer Students
A minimum of nine hours of coursework in the Biology Major and fifteen hours in the Biomedical Sciences Major and Medical Technology Major must be earned at Western Michigan University. At least six hours in any of the departmental minors must be earned at Western Michigan University. Transfer students should consult with a departmental adviser before registering for classes.

Suggested Sequence of Coursework
For Biology Majors

<table>
<thead>
<tr>
<th>Fall (16-17 hours)</th>
<th>Hours</th>
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<tbody>
<tr>
<td>BIOL 101 or 102</td>
<td>4</td>
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<tr>
<td>CHEM 101 or 102</td>
<td>4</td>
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<tr>
<td>Mathematics*—One of five courses specified, or a prerequisite for one of these, according to placement test</td>
<td>3-4</td>
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</table>

General Education elective—English 105, Writing and Science recommended 3-4
Physical Education 1

Winter (16-17 hours)

| BIOL 102 or 101   | 4 |
| CHEM 102         | 4 |
| Mathematics—one of five courses specified | 4 |
| General Education elective | 3-4 |
| Physical Education   | 1 |

Sophomore Year

<table>
<thead>
<tr>
<th>Fall (14-15 hours)</th>
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<tbody>
<tr>
<td>BIOL 213</td>
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<tr>
<td>CHEM 360 or 365</td>
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<tr>
<td>PHYS 110 or 210</td>
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<td>General Education elective</td>
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Winter (13-15 hours)

| BMED 250       | 3 |
| Biology elective | 3-4 |
| PHYS 111 or 211 | 4 |
| General Education elective | 3-4 |

Senior Year

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<tr>
<th>Fall (13-16 hours)</th>
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<tr>
<td>BIOL 301</td>
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<td>Requirements for a minor (or second major)</td>
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</tr>
<tr>
<td>General Education elective</td>
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</table>

Winter (12-21 hours)

| BIOL 317 or 319 or BMED 350 | 3-5 |
| Biology electives | 3-4 |
| Requirements for a minor (or second major) | 3-6 |
| General Education electives | 3-6 |

Fall (14-15 hours)

| BIOL 101      | 4 |
| CHEM 101 or 102 | 4 |
| Mathematics*   | 4 |
| General Education elective | 3-4 |
| Physical Education | 1 |

Sophomore Year

<table>
<thead>
<tr>
<th>Fall (15-17 hours)</th>
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<tr>
<td>BMED 250</td>
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<td>CHEM 360 or 222</td>
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<tr>
<td>PHYS 110 or 210</td>
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<tr>
<td>General Education elective</td>
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Freshman year

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<th>Fall (16-17 hours)</th>
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<tr>
<td>CHEM 101 or 102</td>
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<td>General Education elective</td>
<td>3-4</td>
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<tr>
<td>Physical Education</td>
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</table>

Winter (16-17 hours)

| BIOL 102        | 4 |
| CHEM 120        | 4 |
| Mathematics*    | 4 |
| General Education elective | 3-4 |
| Physical Education | 1 |

For the Biomedical Sciences Major—General and Preprofessional Option
### Junior Year

**Fall (16-17 hours)**
- BIOL 101 ............................................. 4
- CHEM 101 or 102 .............................. 4
- General Education elective .................. 3-4

**Winter (16-18 hours)**
- BIOL 312 ............................................. 5
- CHEM 450 and 456 .............................. 5
- General Education electives ............... 3-4

**Senior Year**
- BMED Sciences electives to complete thirty-six hours, which must include a minimum of eight credit hours at 500 level (excluding 598 and 599).
- Complete General Education requirements, major, and at least 122 total credit hours for graduation requirements.

### For the Biomedical Sciences Major, Medical Service Representative Option

#### Freshman Year

<table>
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<th>Hours</th>
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<td>Fall (16-17 hours)</td>
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<tr>
<td></td>
<td>BIOL 101</td>
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<td>Physical Education</td>
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<td>Winter (16-17 hours)</td>
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<td>BIOL 211</td>
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<td>CHEM 120</td>
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<td>Mathematics</td>
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<td>General Education elective</td>
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<td>Physical Education</td>
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#### Sophomore Year

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<td>Stat 260-366</td>
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<td>Winter (15-17 hours)</td>
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<td>BMED 350</td>
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<td></td>
<td>CHEM 450 and 456</td>
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#### Junior Year

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<td>Fall (15-16 hours)</td>
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<td>BIOL 536</td>
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<td>BMED 430</td>
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<td>Management elective</td>
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<td>BIOL 102</td>
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<td>Winter (15-16 hours)</td>
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<td>BMED 330</td>
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<td>BMED 534</td>
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<td>BIOL 559 recommended</td>
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<td></td>
<td>Electives</td>
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</table>

### Biology and Biomedical Sciences Courses

(Courses described in italics are approved for General Education.)

### Biology (BIOL)

#### BIOL 101 Animal Biology
4 hrs.
An introductory course in biology in which animals are used to illustrate basic biological principles. The relationships between the structure, function, and habitat of representative animals are emphasized. Surveys of the major animal systems and the major animal phyla are included. This course may be taken concurrently with BIOL 102, Plant Biology.

#### BIOL 102 Plant Biology
4 hrs.
An introductory course in biology in which plants are used to illustrate basic biological principles. The interaction of structure, function, and environmental factors is emphasized. A survey of monera, fungi, algae, and higher plants. This course may be taken concurrently with BIOL 101, Animal Biology.

#### BIOL 105 Environmental Biology
3 hrs.
Designed to present basic biological principles, and to give the student an understanding of the operation of the world of life. (Credit does not apply toward a major or minor in biology, botany, or zoology.)

#### BIOL 202 Heredity in Plants and Animals
3 hrs.
A beginning course in genetics covering patterns of heredity, DNA as the genetic material, induction of genetic changes, the genetic basis of evolution, developmental genetics, behavioral genetics, and the role of the environment in genetic expression.

#### BIOL 220 Applied Botany
4 hrs.
Lectures, discussions, field trips and greenhouse experience are used to develop an understanding of the practical applications of botany. Principles and practices in indoor and outdoor gardening, landscaping, plant propagation, and the care and identification of cultivated plants are emphasized.

#### BIOL 234 Outdoor Science
4 hrs.
A course designed to increase the student’s awareness and appreciation of the biological environment. Lectures provide introductions to basic ecological principles. Weekly field trips to a variety of environments involve identification and ecology of local aquatic and terrestrial plants and animals.

#### BIOL 301 Ecology
4 hrs.
An introduction to the relationships of organisms to their environment and to one another. Interrelationships of individuals and the physical environment, dynamics of populations, and structure and function in the community and ecosystem are considered. Prerequisite: 8 hours of biology.

#### BIOL 317 Animal Physiology
4 hrs.
The field of comparative animal physiology is reviewed. Organs are compared and considered in their function of maintenance of homeostasis (healthful state). The structure and physiology study are combined in lecture and coordinated laboratory experiences. Emphasis
is placed on the experimental investigations of physiological processes, laboratory instrumentation and scientific writing. Prerequisites: organic chemistry, introductory physics, and one year of biology or consent of instructor.

**BIOL 319 Plant Physiology**
3 hrs.
Investigations into plant functions. Basic principles are examined intensively; advantage is taken of the discoveries and unifying principles of modern biochemistry. Prerequisites: BIOL 102 and CHEM 101 or consent of instructor.

**BIOL 342 Comparative Vertebrate Anatomy**
4 hrs.
A study of the major structural and functional transformations that have occurred in the vertebrate systems. Lectures and laboratory work will provide a comprehensive view of the various groups of vertebrates. Prerequisite: 8 hours of biology, including BIOL 101.

**BIOL 404 Problems in the Teaching of Biology**
3 hrs.
Class discussions, laboratory experiences, and fieldwork concerned with the teaching of biology in high school. Required of all students who are following a secondary education curriculum and list biology as a major or minor. This course assumes a working knowledge of plants, animals, and body chemistry, and of ecology, physiology, as well as ecology and genetics. Limited to majors and minors enrolled in a secondary education curriculum.

**BIOL 501 Ecological Adaptations of Organisms**
3 hrs.
An investigation of the many environmental factors (light, temperature, time, magnetism, and others) that influence the life and behavior of organisms. A study will be made of the strategies used by organisms to adapt to these factors. Adaptation will be considered as adjustments in both behavior and physiology. Ecological interactions between the environment and the organisms at the molecular, cellular, and organ levels will be studied. Plants, animals, and microorganisms will be used as examples. Prerequisite: consent of instructor.

**BIOL 502 Human Ecology**
3 hrs.
A study of the various aspects of the ecology of humans, including pollution, population, land use, and nutrition. One student project and required field trips. Prerequisite: 8 hours of biology or consent of instructor.

**BIOL 505 Quantitative Biology**
3 hrs.
The use of the computer and statistics to perform analyses of biological concern. Emphasis will be placed on ecological and physiological analyses. Lectures and regularly assigned homework exercises. Previous computer programming experience is desirable. Prerequisites: BIOL 201 and a basic statistics course, or consent of instructor.

**BIOL 507 The Biology of Addictive Drugs**
3 hrs.
The principles of pharmacology (modes of action and effects of drugs) as related to abuse drugs, such as marijuana, alcohol, heroin, methadone, LSD, amphetamines (Speed), and cocaine. The course is designed primarily for non-science majors to give them an understanding of the objective and subjective effects of drug use. Legal and social implications of illegal drug use are discussed. No prerequisites.

**BIOL 509 Evolution**
3 hrs.
A consideration of the theory of evolution by natural selection, including discussions of the mechanisms of evolution and predictions generated by the theory. Prerequisites: BIOL 520 and BIOL 301 or consent of instructor.

**BIOL 512 Environment and Health Problems**
3 hrs.
The impact of the environment on the health of the individual and of populations, the resulting physiological and anatomical difficulties, and the various means employed in meeting these challenges. Prerequisite: 8 hours of biology.

**BIOL 515 Plants for Food and Industry**
3 hrs.
Representative cereal, fiber, and industrial plants of primary economic importance will be examined, such as wheat, rice, wood, and its uses, soybeans, and grapes. Following discussion of plant composition and some of the important processes involved in plant growth, we will look into the botanical characteristics of each plant, the areas where it is grown and the economic aspects of its composition and growth habits that account for its economic prominence, its value in human nutrition, and some of its special problems. The course is enriched with several demonstrations and lab experiences that include diverse practical applications. Prerequisites: BIOL 102, CHEM 101, or equivalent courses.

**BIOL 517 Cell Physiology**
3 hrs.
Concerned with the details of structure and functioning of cells, both animal and plant. The current status of major problems in the field is considered. Prerequisite: A course in physiology or consent of department.

**BIOL 520 Systematic Botany**
3 hrs.
Principles and techniques of plant classification, nomenclature, and biosystematics are presented in lectures in the field, and laboratory experiences using vascular plants as examples. Evolutionary trends, family characteristics and experimental systematics of vascular plants are emphasized. Students will be expected to learn to recognize 100-150 plant species by common and scientific name. Prerequisite: BIOL 102 or equivalent.

**BIOL 523 Heredity and Plant Breeding**
3 hrs.
Principles of plant breeding quantitative genetics, population genetics, systems of mating, heterosis, and the genetics of pathogenic organisms are discussed. The basic unity of methods used in breeding self-pollinated and cross-pollinated species is considered. Prerequisite: 8 hours of biology.

**BIOL 525 Biological Constituents**
3 hrs.
The chemical elements in plants and animals, as well as the synthesis, characterization, and degradation products of the more important compounds. Prerequisites: 12 hours of biology and one year of chemistry or consent of instructor.

**BIOL 526 Plant Diseases**
3 hrs.
Considers plant diseases as a set of phenomena within the much larger complex of the biological sciences. Rather than being a catalog of diseases, their causes, characteristics and control, it portrays plant pathology in general terms. Prerequisite: 8 hours of biology.

**BIOL 528 Biology of Non-Vascular Plants**
3 hrs.
A detailed comparative study of the morphology, life cycles, and ecology of the algae, fungi, and bryophytes. Laboratory study will be complemented by field investigations. An independent project may be required. Prerequisite: BIOL 102.

**BIOL 529 Biology of Vascular Plants**
3 hrs.
A detailed comparative study of the morphology, life cycles, and physiology of the vascular plants. Laboratory study will be complemented by field trips. An independent project may be required. Prerequisite: BIOL 102.

**BIOL 533 Neuroendocrinology**
3 hrs.
Neuroendocrinology is designed to acquaint the student with the interrelationships of the environment and the organisms as mediated by the neuroendocrine system. The physiology and morphology of the neuroendocrine system will be studied, as well as the chemical structure of the neurohormones. Regulator of cellular chemistry by the neuroendocrine products will be emphasized. Prerequisites: a course in physiology, organic chemistry or consent of instructor.

**BIOL 535 Plant Nutrition**
3 hrs.
The elements essential for plant growth and development, their uptake, and their main functions in the plant are examined. Some important relationships of plant nutrition to human nutrition will be pointed out. Throughout the course a balance between theory and application will be maintained. The cycling of elements in nature provides insights into ecological aspects of plant nutrition. Several demonstrations and lab experiences serve to enrich the course: for example, the students make up nutrient solutions, grow various plants in them, and observe the effects of nutrient deficiencies. Prerequisites: BIOL 102, CHEM 101, and a course in physiology.

**BIOL 538 Field Natural History**
3 hrs.
A study of biological communities, with particular emphasis on those accessible for use by public schools, e.g., school grounds, vacant lots, roadsides, parks, and undeveloped areas. Primarily for teachers.

**BIOL 539 Animal Behavior**
3 hrs.
Animal behavior with emphasis on evolution and ecology. Includes an introduction to the ethological point of view. One student project. Prerequisite: 8 hours of biology or consent of instructor.

**BIOL 541 Invertebrate Zoology**
3 hrs.
A study of the anatomy, physiology, embryology, and life history of representatives of the major groups of invertebrates. Prerequisite: 12 hours of biology, including BIOL 101.

**BIOL 542 Entomology**
3 hrs.
A general study of insects, their structure, classification, life histories, ecological relationships and economic importance. Collection and identification of local species is included. Prerequisite: 8 hours of biology, including BIOL 101.
BIOLOGY AND BIOMEDICAL SCIENCES

BIOL 547 Ornithology
3 hrs.
An introductory course that explores both scientific and popular aspects of bird study. Life history, behavior, ecology and identification are emphasized.

BIOL 548 Animal Ecology
3 hrs.
Principles of animal populations and communities, with emphasis on the interrelations of life history features (such as habitat selection and reproductive patterns and population traits; competition and predation and their role in the evolution of community structure, and the roles of animals in the functioning of ecosystems. Methods of determining abundance are studied. Prerequisite: BIOL 201 or equivalent.

BIOL 549 Field Ecology
3 hrs.
Field studies of forest, native grassland, wetlands, and riverine to estuarine ecosystems. Plant and animal composition, geological history, human effects, succession, and other aspects of the structure and working of ecosystems are integrated. Field ecological methods are emphasized. Prerequisite: A course in ecology.

BIOL 550 Plant Anatomy
3 hrs.
An embryological and histological approach to the study of morphogenesis in seed-bearing plants. Primary emphasis will be placed on monocots and dicots. Prerequisite: BIOL 102.

BIOL 551 Parasitology
3 hrs.
A study of parasites and host-parasite relationships, illustrated by representatives of the major parasite groups. Special attention is given to the parasites of humans. Prerequisite: 12 hours or biology, including BIOL 101.

BIOL 552 Plant Ecology
3 hrs.
A detailed study of the growth, distribution, survival, and environmental interactions of plants. Ecological plant analysis methods will be given strong emphasis. There will be laboratory and field investigations. An independent project may be required. Prerequisites: BIOL 102 and 201.

BIOL 553 Limnology
3 hrs.
Biological, chemical, and physical aspects of lakes, ponds, and streams. Ecological relationships of invertebrate animals and lower plants are emphasized. Prerequisites: BIOL 101 and 102. CHEM 101 recommended.

BIOL 554 Water Pollution Biology
3 hrs.
A comparison of organisms which live in clean waters as contrasted with those in polluted waters. Streams, lakes and ponds will be studied. Water conditions will be analyzed, and the use of biological indicators will be studied. The course will include field trips, laboratory work, and lecture presentations. Prerequisites: BIOL 101 and 102.

BIOL 555 Marine Biology
3 hrs.
A survey of marine biology topics including: the physical marine environment and general principles of marine ecology; marine plants and animals, with emphasis on their special roles and adaptations; major marine communities; and marine biotic resource conservation and utilization. Selected topics of current research are included. Prerequisite: 8 hours of biology or consent of instructor.

BIOL 559, Radiation Biology
3 hrs.
Study of the nature of radiation and radioactive decay, the uses of radiotopes in biological investigation and the effects of radiation on living systems. Prerequisites: 20 hours of mathematics or science or consent of instructor.

BIOL 560 Ichthyology
3 hrs.
A general survey of fishes that considers their anatomy, physiology, behavior and phylogeny. Field and laboratory work emphasizes the methods of collection, preservation and identification of Michigan fishes. A paper may be required. Prerequisite: 8 hours of biology, including BIOL 101.

BIOL 598 Readings in Biology
1-3 hrs.
APPROVED APPLICATION REQUIRED

BIOL 599 Independent Studies in Biology
1-4 hrs.
APPROVED APPLICATION REQUIRED. For students who wish to carry on advanced work in special fields. Prerequisite: consent of instructor.

Biomedical Sciences (BMED)

BMED 112 Introduction to Biomedical Sciences
3 hrs. Fall, Winter
A course designed to provide a natural science foundation for BMED minors, allied health majors, and general education students. Foundation concepts in anatomy, physiology, genetics, microbiology, cell chemistry and biology, and ecology and botany are presented for students who do not have strong biology and chemistry backgrounds.

BMED 211 Human Anatomy
4 hrs. Fall, Winter
A lecture and laboratory course in which all major structures of the human body are studied. Prerequisites: BIOL 101 or BMED 112 or equivalent.

BMED 213 Cell Biology
3 hrs. Fall, Winter
This course presents an introduction to the field of cell biology. Concepts which are stressed include cell structure and function, types, chemistry, transport, and interactions. Prerequisites: BIOL 101 or BMED 112 and a college-level chemistry course.

BMED 230 Microbiology and Man
3 hrs. Fall
A course describing the nature of microorganisms, their harmful and beneficial effects on humanity and their role in nature. Not for credit towards a Biomedical Sciences major but does apply toward a minor.

BMED 232 Microbiology and Infectious Diseases
4 hrs. Winter
An introductory microbiology course emphasizing characteristics and modes of transmission of those microorganisms which cause human disease. Credit does apply toward a minor in Biomedical Sciences. For Bronson Hospital nurses or by consent of instructor.

BMED 240 Human Physiology
4 hrs. Fall, Winter
This course is designed to provide non-majors with an understanding of the basic functioning of the organ systems of the human body and their regulation and control. The molecular and cellular mechanisms involved are emphasized. Applications to exercise physiology are made. Clinical applications are introduced where they provide additional insight into basic function and regulatory mechanisms. Prerequisite: BIOL 101 or BMED 112. BMED 211 is recommended.

BMED 250 General Genetics
3 hrs. Fall, Winter
A study of the mechanisms of heredity at the level of cells, individuals, families and populations. Prerequisite: BMED 213.

BMED 312 Microbiology
5 hrs. Fall, Winter
An introduction to the fundamental relationships among microbes with an emphasis on unifying principles. Laboratory work deals with techniques basic to bacteriology. Prerequisites: BMED 250 and a course in organic chemistry, or consent of department.

BMED 319 Clinical Physiology
5 hrs. Winter
A study of the functioning and regulation of the organ systems and the application of this knowledge to an understanding of their malfunctions. The molecular and cellular mechanisms involved are emphasized. Students must be in Physician Assistant curriculum.

BMED 330 Clinical and Pathogenic Microbiology
4 hrs. Winter
A course dealing with infectious diseases and their etiology. Emphasis will be placed on epidemiology, pathogenesis and pathology, diagnosis and treatment of various diseases. Laboratory work will employ current methods utilized for cultivation and identification of most common pathogens and non-pathogens encountered in a clinical microbiology laboratory. Prerequisites: BMED 312.

BMED 360 Human Physiology for Majors
5 hrs. Fall, Winter
An introduction to the function and interrelationships of the human body organ systems with description of various physiological malfunctions. The laboratory provides experience with some types of clinical measurements, laboratory instrumentation, data organization and scientific writing. Prerequisites: BMED 250 and organic chemistry, anatomy is recommended.

BMED 401 Principles and Techniques of Laboratory Diagnosis
3 hrs. Winter
This course describes the common diseases and their treatment with emphasis on the significance of laboratory findings in their diagnosis. Students must be in Physician Assistant curriculum or permission of instructor.

BMED 430 Hematology—Serology
4 hrs. Winter
The principles of normal blood cell maturation, morphology and function will be discussed. Additional consideration will be given to various blood dyscrasias and immunological deficiencies. Laboratory will include an introduction to a variety of hematological and serological procedures routinely employed in hospitals and clinics, with special emphasis on the principles involved and interpretation of the test results. Prerequisites: BMED 350, CHEM 450 and 456.

BMED 405 Medical Genetics
3 hrs. Winter (alternate years)
This course will provide the information necessary to understand Medical Genetics. The principal focus will be on the diagnosis and identification. After an introduction to the basic principles of human genetics and birth defects, genetic and congenital abnormalities associated with various parts of the body will be presented. Topics to be covered include: sensory disorders, mental retardation, genetics
of cancer, skeletal abnormalities, genetic disorders of the blood system, and genetic counseling. Prerequisites: BMED 112, 240 or permission of instructor.

BMED 518 Endocrinology 3 hrs. Fall (alternate years)
A survey of the hormonal integration of organism function including the chemical nature of these secretions, the cellular and biochemical mechanisms of hormone actions and the endocrine feedback control mechanisms. The regulatory nature of hormones in developmental processes, in adaptation and in disease processes will be stressed. Prerequisite: BMED 350, biochemistry is recommended.

BMED 519 Endocrinology Laboratory 3 hrs. Winter (alternate years)
Laboratory experience in endocrinological concepts involved in endocrine research and clinical testing. Prerequisite: Permission of instructor.

BMED 520 Human Genetics 3 hrs. Winter (alternate years)
The principles of human heredity with particular emphasis on the clinical significance of biochemical and chromosomal variation. Abnormalities of development and methods of risk analysis in genetic counseling are discussed. Prerequisite: BMED 250, biochemistry is recommended.

BMED 524 Microbial Genetics 3 hrs. (alternate years)
A molecular approach to microbial genetics, dealing primarily with bacterial and viral systems. Emphasis is placed on current literature and on the application of concepts to biomedical research. Prerequisites: BMED 250 and 312 or consent of instructor, biochemistry is recommended.

BMED 525 Genetics Laboratory 3 hrs. Winter (alternate years)
Students will acquire techniques currently used in the field of genetics. Although all areas of genetic interest will be presented, emphasis will be placed on the areas of cytogenetics, biochemical genetics, genetic toxicology and genetic counseling techniques which are currently used in industrial and biomedical research areas. In addition, time will be provided for indepth experimentation. Prerequisite: BMED 250 or equivalent.

BMED 531 Biology of Aging 3 hrs.
This course is designed to provide non-majors with an understanding of the aging process. The lectures will emphasize the anatomical, physiological and molecular changes which occur in cells and organs with aging. Clinical applications are introduced where they provide additional insight into the aging process. Prerequisites: Consent of instructor.

BMED 532 Bacterial Physiology 3 hrs. Winter
Bacterial structure-function relationships are examined in a biochemical context. Current concepts of cell biochemistry are organized around the bacterial cell as a traditional model system for understanding energetics, synthesis of cell structures, transport, metabolism and regulatory mechanisms. The course is designed for advanced undergraduates and beginning graduate students. No textbook is required; reading assignments are from the scientific literature. Prerequisites: a microbiology course and a biochemistry course.

BMED 534 Virology 3 hrs. Winter
A study of the classification, structure and chemistry of viruses. Emphasis will be placed on the cell-virus interaction leading to the disease process or cellular alterations in mammalian systems. Prerequisite: BMED 312; biochemistry is recommended.

BMED 536 Immunology 3 hrs. Fall
A study of the biological and biochemical mechanisms of the immune response and the chemical nature of antibodies, antigens and their interaction. Emphasis will be placed on in vitro and in vivo humoral and hypersensitivity reactions. Prerequisite: BMED 312; biochemistry is recommended.

BMED 537 Histology 3 hrs. Fall
A study of the function and microscopic anatomy of mammalian tissues. Prerequisite: BMED 211 or consent of department.

BMED 540 Cell and Organ Culture 3 hrs. Fall
The purpose is to introduce the student to the fundamental procedures of cell and organ cultures of mammalian tissue. The application of cell and organ culture to routine clinical, research or drug screening procedures will be emphasized as well as specialized procedures employed to solve specific biomedicor research problems. Prerequisite: consent of instructor.

BMED 554 Histological Techniques 2-3 hrs. Winter (alternate years)
A variety of techniques including cellodin, paraffin, decalodon and immunostaining techniques will be used to prepare mammalian tissues for histological examination. Prerequisites: BMED 537 or consent of instructor.

BMED 570 General Pathology 4 hrs. Fall (alternate years)
An introduction to pathology which describes to the structural and biochemical changes occurring in cells and tissues following injury or disease. Prerequisites: BMED core curriculum and organic chemistry.

BMED 574 Embryology 4 hrs. Winter (alternate years)
Embryology is the study of the development of an organism from a single fertilized cell to a complex multicellular fetus. This course will present this material from both a classical descriptive and an experimental cellular point of view. In addition to the lecture, laboratory exercises will provide experience in the recognition of the various stages of development and in the culturing and manipulations of embryos in vitro and in vivo. Prerequisite: BMED 213, 250 or equivalent.

BMED 598 Readings in Biomedical Sciences 1-3 hrs.
Approved application required.

BMED 599 Independent Studies in Biomedical Sciences 1-4 hrs.
Approved application required.

BLACK AMERICANA STUDIES
See “Interdisciplinary Programs” in the College of Arts and Sciences.

CHEMISTRY
Michael E. McCarville, Chair
Robert H. Anderson
Donald C. Berndt
Donald J. Brown
Dean W. Cooke
J. Lindsay Foote
Robert E. Harmon
Paul E. Hokeboer
Thomas Housek
James A. Howell
Joseph M. Kanamourter
George G. Lowery
William J. Kelly
Ralph K. Steinhaus
Jochanan Stenesh
H. Dale Warren

Students majoring in chemistry may prepare for a career in high school teaching, industrial laboratory work, or graduate work in departments of chemistry or medical colleges. The course offerings for the undergraduate attempt to give a broad but thorough grounding in the elements of chemistry. They should be fortified by a minor in physics, mathematics, or biology. Most students who intend to do advanced work in chemistry should plan to obtain a reading knowledge of a European language. At the present time German is preferred, but French or Russian might well be taken.

The Chemistry Department is accredited by the American Chemical Society. Students who follow the American Chemical Society certification course sequence below are considered professional chemists by the American Chemical Society. These students are eligible for direct membership senior grade in the American Chemical Society immediately upon graduation.

In order to complete an American Chemical Society Certified chemistry major, the following would be the expected minimum schedule of chemistry and prerequisite courses:

Freshman Year:
CHEM 101 or 102, General Chemistry I
CHEM 120, General Chemistry II
MATH 122, Calculus I
MATH 123, Calculus II

Sophomore Year:
CHEM 360, Organic Chemistry I
CHEM 361, Organic Chemistry II
MATH 272, Vector and Multivariate Calculus
PHYS 210, Mechanics and Heat
PHYS 211, Electricity and Light

Junior Year:
CHEM 222, Quantitative Analysis
CHEM 430, Physical Chemistry I
CHEM 431, Physical Chemistry II
CHEM 436 (2 hrs.), Physical Chemistry Laboratory

Senior Year:
CHEM 520, Instrumental Methods
CHEM 510, Inorganic Chemistry
In addition two 3 or 4 hour advanced electives from 500 level chemistry or mathematics or physics as approved by the Chemistry adviser. Reading knowledge of German or Russian is required for ACS certification.

Majors and Minors
To qualify as a major or minor in chemistry from Western Michigan University the student must complete a minimum of 14 credit hours or 7 credit hours, respectively, in the Chemistry Department following the declaration of the
major or minor with the departmental adviser. Students who plan to attend graduate school in chemistry should take a minimum of courses under the credit no credit option. Students who fail to earn a grade of “C” or better in CHEM 120, 360, and 430 must not enroll in courses requiring these classes as prerequisites.

The Arts and Sciences Curriculum Chemistry Major requires 34 hours in chemistry including the basic sequence through Physical Chemistry as in the A.C.S. certified program and two 3 or 4 hour courses at the 500 level, chosen from at least two areas of chemistry.

Secondary Education Chemistry Majors require 30 hours of chemistry courses as in the Arts and Sciences curriculum including a minimum of 4 hours of Physical Chemistry.

The Health Chemistry Major is designated to meet the needs of a chemistry background for the preprofessional degree leading to health science areas such as medicine, dentistry, veterinary medicine, nutrition, clinical chemistry, toxicology, pharmacology, etc. A minimum of 33 chemistry credit hours must be selected according to the following:

CHEM 101 or 102, General Chemistry I
CHEM 120, General Chemistry II
CHEM 360, Organic Chemistry I
CHEM 535, Introduction to Physical Chemistry
CHEM 222, Quantitative Analysis
CHEM 450 and 456, Intro. Biochem. and Lab.
CHEM 552 and 556, Biochem. I and II with Laboratory
CHEM 535, Introduction to Physical Chemistry or CHEM 430, Physical Chemistry I
CHEM 436(1 hr.), Physical Chemistry Laboratory
CHEM 506, Chemical Laboratory Safety or CHEM 564, Drugs and Pesticides and additional 500 level Chemistry electives if necessary to meet the minimum hour requirement.

The Business-Oriented Chemistry Major is available to provide chemical understanding to the level needed by students who intend to prepare for careers in non-laboratory functions of chemical industry and distribution of its products and technology, principally in the areas of management and sales, as well as for some aspects of government service. Those who elect this major are required to complete a minor in either General Business—option I, 21 hrs. (Fall, Winter), Management—option II, 21 hrs. (Fall, Winter), or Marketing—option III, 21 hrs. (Fall, Winter). In the College of Business and must include BIS 142, 242 courses in writing and communication. This chemistry major must include a minimum of 30 chemistry credit hours as follows:

CHEM 101 or 102, General Chemistry I
CHEM 120, General Chemistry II
CHEM 360, Organic Chemistry I
CHEM 361, Organic Chemistry II
CHEM 222, Quantitative Analysis
CHEM 450, Introductory Biochemistry
CHEM 535, Introduction to Physical Chemistry or CHEM 430 and 431, Physical Chemistry I and II
CHEM 506, Chemical Laboratory Safety
CHEM 520, Instrumental Methods

Other specialized chemistry programs can be developed through the undergraduate chemistry adviser.

All chemistry majors must satisfactorily complete one of the following writing courses prior to their senior year: ENGL 105 or 305; BIS 142 or 242; or IE 102, or equivalent courses.

A minimum chemistry minor will contain at least 18 hours. Chemistry minors in secondary education are required to take 20 hours of chemistry and to complete one year of physics before student teaching.

Science and Mathematics Teaching Minor

The Department of Chemistry participates in the science and mathematics teaching minor for students in the elementary curriculum. For a full description of the program, consult its listing under the “Interdisciplinary Programs” section in the College of Arts and Sciences.

Chemistry Placement Examination

The chemistry placement examination is required in order to insure that students are placed in beginning professional chemistry courses based upon the skills they possess in mathematics and chemistry. It tests mathematics at the level of one year of high school algebra (or MATH 110) and chemistry at the level of one year of high school chemistry. Passing only the mathematics portion allows a student to enroll in CHEM 100. Passing both portions meets the prerequisite for CHEM 101 and 103. A high level passing grade allows the student to enroll in CHEM 102.

Chemistry Courses (CHEM)

(Courses described in italics are approved for General Education)

CHEM 100 Introduction to General Chemistry 4 hrs. Fall, Winter

A course for students with insufficient background for college level chemistry which develops skills essential to a working understanding of the science of chemistry. Instruction and practice in the fundamental tools for solving chemical problems: chemical formulas, chemical equations, stoichiometry, measurement units, conversions. An introduction to the nature of matter is developed. Enrollment is restricted to students without high school chemistry or to those who demonstrate inadequate retention of their chemistry background. This course credit will not apply to curricular requirements of chemical science at this university and should be followed by CHEM 101. It is assumed that students have mathematical competence through MATH 110.

CHEM 101 General Chemistry I 4 hrs. Fall, Winter

The theory and fundamental principles of chemistry are emphasized in this foundation course which serves primarily those who intend to enroll for two or more additional courses in chemistry. Credit for 101 is equivalent to the level of completion of CHEM 102. Prerequisite: CHEM 100 with a grade of “C” or better or one year of high school algebra and one year of high school chemistry and a passing grade on the chemistry placement examination. This course includes lecture and laboratory. Students can receive credit for only one of CHEM 101, 102, 103.

CHEM 102 General Chemistry I 4 hrs. Fall

The theory and fundamental principles of chemistry are emphasized in this foundation course which serves primarily those who intend to enroll for two or more additional courses in chemistry. Prerequisite: One unit of high school chemistry and one unit of algebra, pass chemistry placement examination at upper level. Students well prepared may earn credit by taking examination. This course includes lecture and laboratory. Students can receive credit for only one of CHEM 101, 102, 103.

CHEM 103 General Chemistry I 4 hrs. Fall, Winter

A course primarily for students in Engineering and Applied Sciences curricula and others planning only a one or two semester terminal review of chemistry. This course surveys principles of chemistry with emphasis on calculations, descriptive and applied chemistry. Prerequisite: CHEM 100 with a grade of “C” or better or one year of high school algebra and one year of high school chemistry and a passing grade on the chemistry placement examination. May be used as a prerequisite for CHEM 120 if passed with a grade of “C” or better. This course includes lecture and laboratory. Student can receive credit for only one of CHEM 101, 102, 103.

CHEM 107 Chemistry of Textiles and Design Media 4 hrs. Fall, Winter

A course in which the concepts needed to understand the chemical properties of textile and design media are developed in a non-mathematical manner. Textile fibers, textile finishes, dyes, plastics, rubber, paint, paper, leather, metals, cleaning agents, ceramics, glass, cosmetics, and wood are considered. This course is designed to meet the needs of students of home economics who plan a career in merchandising, or other students of art and applied science who handle the materials being considered. Not applicable for major or minor in chemistry nor as a prerequisite to other chemistry classes. This course includes lecture and laboratory.

CHEM 120 General Chemistry II 4 hrs. Fall, Winter

The properties of a number of the more representative elements and the compounds which they form are studied. The descriptive chemistry of some common cations and anions is studied using the hydrogen sulfide scheme of analysis in the laboratory. The chemical relationships in the periodic table, electrochemistry, and the equilibrium principle are also treated. Prerequisite: CHEM 101, 102 or 103.

CHEM 140 Introductory Environmental Chemistry 4 hrs. Winter

Purpose of course is to develop an appreciation of the chemical aspects of environmental problems and an acquaintance with the basic principles involved. This limited treatment considers elementary concepts of the nature of matter with application of tools of chemists important in exploration of environmental problems. Laboratory may entail field trips as well as experiments utilizing the laboratory analysis of graphs, charts, and and conveniences of the laboratory. The properties of a number of the more representative elements and the compounds which they form are studied. The descriptive chemistry of some common cations and anions is studied using the hydrogen sulfide scheme of analysis in the laboratory. The chemical relationships in the periodic table, electrochemistry, and the equilibrium principle are also treated. Prerequisite: CHEM 101, 102 or 103.

CHEM 200 Chemical Science in Elementary Education 4 hrs. Winter

This course is designed to help students understand the chemical nature of the world around them and how the behavior of things depends on chemical makeup and physical
CHEM 206 Chemistry for Physician Assistant
5 hrs. Fall
A simplified non-theoretical approach to practical inorganic, organic and physiological chemistry. The course serves both as a background for pharmacology and for interpreting biochemical parameters in the didactic medical course. Students must be in Physician Assistant Curriculum.

CHEM 222 Quantitative Analysis
4 hrs. Fall, Winter
This course includes the theory, techniques and calculations of quantitative analysis. Instrumental techniques are used to supplement classical analytical procedures in the laboratory. Prerequisite: CHEM 120.

CHEM 308 Teaching of Physical Science
3 hrs. Winter
Problems of teaching high school chemistry, physics and physical science. The main emphasis is on effective methods of instruction. Practical methods of apparatus ordering, maintenance, and construction are also considered.

CHEM 360 Organic Chemistry I
4 hrs. Fall, Winter
The preparation and chemical properties of aliphatic and aromatic compounds are studied. Emphasis is placed upon the nature of covalent bonds and molecules and the general reactions of functional groups. The course includes lecture and laboratory. Prerequisite: CHEM 120.

CHEM 361 Organic Chemistry II
4 hrs. Fall, Winter
A continuation of CHEM 360. Prerequisite: CHEM 360.

CHEM 365 Introduction to Organic Chemistry
4 hrs. Fall, Winter
A one semester course which surveys the chemistry of aliphatic and aromatic carbon compounds, designed for those needing a working knowledge of organic chemistry without the theoretical detail of a full year course. Credit may not be received for both CHEM 365 and 360. This course, which includes laboratory, will not serve as a prerequisite for CHEM 361. Prerequisite: CHEM 120.

CHEM 390 Special Problems in Chemistry
2 hrs. Fall, Winter
This course is designed to give students that have completed basic chemistry an opportunity to receive credit for experience in chemical laboratory independent study in association with a faculty member. May be repeated once for credit. Prerequisite: 18 hours of chemistry, with approval of the department chairperson and a faculty director.

CHEM 430 Physical Chemistry I
3 hrs. Fall
Lectures on kinetic theory of gases, thermodynamics, phase rule, equilibria, electrochemistry, quantum theory, spectroscopy, statistical mechanics, chemical kinetics and mechanisms, transport properties, surface chemistry, macromolecules, crystal structure, etc. Prerequisites: PHYS 210, 211; MATH 272 or CHEM 120.

CHEM 431 Physical Chemistry II
3 hrs. Winter
A continuation of CHEM 430. Prerequisite: CHEM 430.

CHEM 436 Physical Chemistry Laboratory
1 hr. Fall, Winter
Laboratory experiments designed to emphasize and reinforce the principles covered in CHEM 430 and 431, with consideration of the limitations of physical measurements and their quantitative interpretation. Can be multiplied enrolled or remediated for a total of 2 credit hours. Prerequisites: CHEM 222 and 430 or 535. Repeatable for up to 2 credit hours.

CHEM 450 Introductory Biochemistry
3 hrs. Winter
A basic course in the chemistry and metabolism of carbohydrates, lipids, proteins and nucleic acids. Not applicable to chemistry majors. Prerequisite: CHEM 365 or 361.

CHEM 456 Introductory Biochemistry Laboratory
2 hrs. Winter
Basic biochemical laboratory techniques; isolation and properties of proteins, enzymes, carbohydrates, lipids and nucleic acids. Studies of metabolism; determinations of clinical interest involving blood, urine, liver and brain. Prerequisite or corequisite: CHEM 450 or 550.

CHEM 501 Chemical Communications
1 hr. Fall
Principles and techniques involved in writing and/or presenting technical information are discussed and practiced through a series of lectures and assignments. Prerequisite: 24 hours of chemistry.

CHEM 505 Chemical Literature
2 hrs. Fall
An introduction to the use of the various types of chemical literature such as journals, abstracts, monographs, government, and institutional publications and patents. Both manual and computer search techniques are employed in the course of completing assigned problems involving literature searches in analytical, inorganic, biological, organic, and physical chemistry fields. Prerequisite: 23 hours of chemistry.

CHEM 506 Chemical Laboratory Safety
1 hr. Winter
A study of toxic, corrosive, flammable, explosive, electrical, mechanical, thermal, and radiant energy hazards frequently encountered in chemical laboratory work. Emphasis is placed on precautionary methods to avoid damaging accidents and on emergency procedures to apply when accidents occur. Prerequisite: 24 hours of chemistry.

CHEM 509 Topics in Chemistry
3 hrs. Winter
A topic is presented in greater depth or from a different perspective from that of a typical undergraduate course. Representative topics such as microprocessors, industrial chemistry, chemical pollution, etc. according to student interest and request. Prerequisite: 16 hours of chemistry.

CHEM 510 Inorganic Chemistry
4 hrs. Winter
The course includes descriptive and theoretical inorganic chemistry as well as preparation of different types of inorganic compounds. Prerequisite or corequisite: CHEM 431.

CHEM 520 Instrumental Methods in Chemistry
3 hrs. Fall
An introduction to the theory and application of modern chemical instrumentation is presented. General topics covered are elementary electronics, electrochemistry, spectroscopy, and other instrumental techniques. Prerequisite or corequisite: CHEM 431, 436.

CHEM 535 Introduction to Physical Chemistry
3 hrs. Fall
Theory and applications of chemical structure, energetics, and rates and mechanisms of processes as a basis for understanding the principles of chemistry. Laboratory credit is obtained by taking CHEM 436, Physical Chemistry I, laboratory. This course may not be applied to a graduate curriculum in chemistry. Prerequisites: 16 hours chemistry, MATH 123, PHYS 111 or 211.

CHEM 550 Biochemistry I
3 hrs. Fall
The chemistry, properties, and molecular biology of proteins and nucleic acids. Includes discussions of amino acids, enzymes and biochemical energetics. Prerequisites: CHEM 361, and 430 or 535.

CHEM 552 Biochemistry I with Laboratory
4 hrs. Fall
This course consists of CHEM 550 plus laboratory. Experiments involve more detailed study of the synthetic and metabolic pathways of cells than CHEM 456. Emphasis will be on purification and properties of proteins and nucleic acids. Prerequisites: CHEM 361, and 430 or 535.

CHEM 554 Biochemistry II
3 hrs. Winter
Continuation of CHEM 550. Chemistry and metabolism of carbohydrates and lipids. Metabolism of amino acids and photosynthesis. Prerequisite: CHEM 550 or 552.

CHEM 556 Biochemistry II with Laboratory
4 hrs. Winter
This course consists of CHEM 554 plus laboratory. Experiments will involve more advanced techniques than CHEM 456. Emphasis will be on metabolism of carbohydrates, lipids, proteins, and nucleic acids. Prerequisite: CHEM 550 or 552.

CHEM 560 Qualitative and Spectroscopic Analysis of Organic Compounds
4 hrs. Fall
A course in spectroscopic and chemical methods of identification of organic compounds in the pure state and in mixtures, which has as a secondary goal the development of deductive reasoning in the field of organic chemistry. Prerequisites: CHEM 361 and 24 hrs. of chemistry.

CHEM 564 Drugs and Pesticides
3 hrs. Winter
This course introduces students to the chemical nature and uses of drugs and pesticides. Abuses and potential toxicological hazards are also discussed in respect to biological-chemical properties and the behavioral-sociological implications. Prerequisite: CHEM 361 or 365.

CHEM 570 Polymer Chemistry
4 hrs. Winter
The aspects of macromolecular chemistry which are significantly different from the chemistry of small molecules are studied. In particular, mechanisms and techniques involved in the synthesis of macromolecules, and the structure, composition, mechanical properties, and solution properties of polymers are studied in terms of the organic, physical, and analytical chemistry involved. Prerequisite: CHEM 361 or 365, and CHEM 431 or 535.

CHEM 580 History of Chemistry
3 hrs. Winter
This course traces the roots of chemistry from ancient technology through alchemy and medicine to the chemical revolution of Lavoisier and Dalton. In more detail it examines the nineteenth century basis of modern chemistry and the twentieth century clarification of the structural atom. Prerequisite: 16 hours of chemistry, including CHEM 360 or 365.
**CHEM 590 Special Problems in Chemistry**

2 hrs. Fall, Winter
Research work on a problem in chemistry in association with a faculty member. May be repeated once for credit. Prerequisites: CHEM 436, 24 hours of chemistry, with approval of the department chairperson and a faculty director.

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**COMMUNICATION**

Richard J. Dieker, Chair
Roy Beck
Joseph G. Buchman
June Cottrell
Loran Crane
James Gilchrist
Ruth Hening
Charles Helgesen
James Jaksa
Steven Lipkin
Peter G. Northouse
Thomas F. Pagel
Steven C. Rhodes
George Robeck
Jules Rossman
Thomas Sill
Robert L. Smith
Shirley A. Van Hoeven
Earl Washington
Kim D. White
Shirley C. Woodworth
Paul Yetzma

Communication is the principal mode for establishing and maintaining human relationships. It consists of those processes by which society is made possible, by which people develop and exchange ideas, solve problems, and work cooperatively in attaining common objectives. Effective oral communication is an educational imperative for all human beings.

The Department of Communication is dedicated to meeting the personal and professional communication objectives of our students. Several emphases within the major and minor are available: public relations; interpersonal communication; organizational communication; communication education; mass communication—radio, television, and film. While some students specialize in one emphasis, most take coursework in two or more of these general areas.

The study of communication is important to virtually every profession that involves working with people, making an excellent major, minor or cognate for communication-related jobs in education, business, government agencies, health care professions, social services, industry, and other public and private organizations. Communication is central to positions in public relations, corporate communication, public information management, employee communication, training and development, and radio, television, and film.

Excellent production training facilities and professional curricular programs in radio, television and film provide both the background in communication theory and knowledge and training for positions in mass media production, performance and management.

The department also encourages a close relationship between academic classes and extracurricular and co-curricular experiences. Students may become involved in a variety of activities, including community service projects, WIDR-AM and FM radio stations, video-taping of special events, film-making, and internships in a variety of organizations. Academic credit may be earned for significant participation in many of these communication activities.

Students planning to major in COM or Public Relations or minor in COM should discuss their program needs and interests with a departmental adviser at the earliest possible date. Appointments to see a departmental adviser may be made at the departmental office, 301 Sprau Tower, or by calling 383-4071. A Handbook for Majors and Minors in Communication, which describes career opportunities and suggested programs of study in COM, is available free of charge from the department office.

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**General Program Requirements**

1. All major/minor programs must be approved by a departmental adviser. Declaration of a major in communication must be made with a departmental adviser prior to completing twelve semester hours of COM credit, and not before completing six hours of COM credit. Declaration of a minor in communication must be made with a departmental adviser before the completion of nine semester hours of COM credit.

2. Students must earn a grade of "C" or better in all course work applied toward a major/minor program.

3. Petition for exceptions to any departmental policies should be directed to the department chair.

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**Majors**

**Communication Major**

A communication major requires 30 semester hours of COM, including COM 170, COM 200, and 24 hours of electives to be arranged in consultation with the departmental adviser. Twelve of these hours must be taken at the 300-500 level.

**Communication—Education Major**

An education major in communication requires 30 semester hours of COM, including the following courses: COM 170, COM 200, COM 562 (for the secondary education major) or COM 561 and COM 365 or COM 366 (for the middle school major) and electives to be arranged in consultation with a departmental adviser. Students should note that methods courses are offered only once yearly: COM 561 fall semesters and COM 562 winter semesters.

**Public Relations Major**

The public relations major is designed to prepare students with the knowledge and skills for an entry-level position in public relations in various organizations, and to provide students with the background in communication theory and production to understand the role and function of public relations in organizations and society. Application is required for acceptance to this major. An application form is available from the Undergraduate Adviser. Deadlines for submitting applications are October 1, February 1, and June 1.

A major in public relations consists of 36 hours of COM credit, and 14 hours of required cognate courses, for a total of 50 hours.

**Core course requirements include (12 hours):**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>170</td>
<td>Interpersonal Communication</td>
<td>3</td>
</tr>
<tr>
<td>200</td>
<td>Intro to Communication Theory</td>
<td>3</td>
</tr>
<tr>
<td>549</td>
<td>Public Relations and Organizations</td>
<td>3</td>
</tr>
<tr>
<td>550</td>
<td>Public Relations Program Development (549 Prerequisite)</td>
<td>3</td>
</tr>
</tbody>
</table>
Select one of the following (3 hours):
- 358 Television and Film Scripting 3
- Select one of the following (3 hours):
  - 547 Organizational Uses of Radio & TV 3
  - 581 Communication in Organizations 3
  - 570 Interviewing 3
Select two of the following (6 hours):
- 257 Radio Programming and Production (256 Prerequisite) 3
- 357 Television Studio Production (256 Prerequisite) 3
- 356 Film Production (241 Prerequisite) 3
- 355 Small Format Video Production (256 Prerequisite) 3
Select two of the following (6 hours):
- 240 Broadcast Communication 3
- 543 Mass Communication and Social Change 3
- 544 Mass Communication, News and Public Affairs 3

Cognate course requirements include 14 hours:
- Required:
  - ED 150 Public Speaking 3
  - ED 550 Graphic Arts 3

Select one of the following (3 hours):
- ED 546 Audio Visual Media I 3
- ED 550 Photography Workshop 3

Select two of the following (required courses in English can be used as part of a journalism minor) (8 hours):
- ENGL 264 News Writing 4
- ENGL 265 News Editing (264 Prerequisite) 4
- ENGL 363 Advanced Reporting (264 Prerequisite) 4
- ENGL 364 Feature/Article Writing 4

Recommended minors include: Journalism, General Business, Marketing, and Management. Recommended majors include: Public Administration, Advertising, Environmental Studies, and Travel and Tourism.

Minors

Communication Minor

A communication minor requires 20 semester hours of COM, including COM 170, COM 200 and 14 additional elective hours to be chosen in consultation with the appropriate advisers of the department. Nine of these hours must be taken at the 300-500 level.

Communication—Education Minor

An education minor requires 20 semester hours of COM for teaching in secondary and middle school and junior high schools. COM 170 is required for secondary minors. To teach speech in a Michigan school accredited by the North Central Association, speech teachers are required to have either 24 semester hours in speech or 20 semester hours in speech and 4 semester hours in English. (Courses in COM are counted as courses in speech.)

Interdisciplinary Minors

Integrated Language Arts Minor

The Department of Communication is one of five participating departments in the integrated language arts minor—a program designed particularly for pre-service elementary teachers. The program provides opportunities for a wide variety of individual interests and alternative learning styles. Interested persons should contact the ILAM adviser, June Cottrell, 323 Spaug, 383-4080.

Integrated Creative Arts Minor

The Department of Communication is a participant in the integrated creative arts minor. An interdepartmental program, the minor offers elementary school teachers an opportunity to emphasize the integration of all the arts into the core of the elementary school curriculum. Interested students should contact A. Balkin, Department of Education and Professional Development.

Transfer Students

Transfer students are permitted to transfer as many as 12 semester credit hours for a major and 9 hours for a minor in communication.

Communication Courses (COM)

(Courses described in italics are approved for General Education.) Note: Of courses COM 104 and COM 130, only one may be taken for academic credit.

COM 104 Business and Professional Speech 3 hrs.
A beginning course in speech dealing with the study and application of basic principles underlying effective oral communication. Particular attention is given to developing skill in meeting the speech situations encountered in the business and professional world.

COM 106 Voice and Diction 3 hrs.
Individual improvement program emphasizing voice production and diction.

COM 130 Public Speaking 3 hrs.
Study of public speech and audience psychology principles. Frequent practice to develop skill in speech composition, clarity of language, logical development and effectiveness as a speaker.

COM 131 Parliamentary Procedure 1 hr.
Study and practice of the principles and rules which govern business meetings in voluntary organizations.

COM 170 Interpersonal Communication I 3 hrs.
An introductory course in communication theory and practice in which a student utilizes his/her powers of speech to increase his/her effectiveness in interpersonal relationships through understanding of self and others.

COM 200 Introduction to Communication Theory 3 hrs.
A study of communication models and theories which are common to the fields of interpersonal, group, organizational, public and mass communication.

COM 210 Oral Interpretation I 3 hrs.
Emphasis is placed on developing the student’s appreciation of literature and his/her skill in analysis and oral reading of representative works in prose and poetry.

COM 211 Oral Interpretation II 3 hrs.
A continuation of COM 210. COM 211 introduces the individual reading of dramatic scenes and the basic theory of readers theatre. Class activities include group reading of prose, poetry and drama. Prerequisite: COM 210.

COM 232 Discussion 3 hrs.
Study and practice in discussion and conference. Skill in participation, leadership, group thinking, and evaluation are emphasized. Recommended for students whose vocational plans involve work with groups.

COM 240 Broadcast Communication 3 hrs.
A survey of the nature and structure of contemporary broadcasting in the United States as a mass communication process involving a publicly owned but privately operated medium.

COM 241 Film Communication 3 hrs.
An introduction to the unique language and elements of the film medium through the study of outstanding examples of historical and contemporary experimental, documentary and feature films. $10 lab fee.

COM 256 Broadcast Operations 3 hrs.
Introduction to the electronic theory, equipment, operating procedures and personnel involved in radio/television production, storage and distribution.

COM 257 Radio Programming and Production 3 hrs.
Analysis of sound as a creative element in radio broadcasting and production. Studio experience in writing and producing radio formats, commercials, drama, documentary and other types of aural messages. $10 lab fee. Prerequisite: COM 256

COM 305 Special Topics in Communication 1-3 hrs.
Group study of special topics in communication education, interpersonal and organizational communication, mass communication, oral interpretation, and film. Many of these special courses are organized in response to special needs or interests of students on campus, in the community and in the region. Some topics are announced in the Schedule of Classes, some are added during the semester. Further information and a full listing of topics may be obtained from the Departmental offices, 301 Spaug Tower. Six hours of COM 305 and COM 505 may be accumulated as credit toward a major or minor in COM.

COM 307 Intraperusal Communication 3 hrs.
The examination of intrapersonal communication models showing how imagery and symbolic processes organize patterns of thinking that permit self-direction and regulation.
COM 311 Readers Theatre
3 hrs.
Selecting and arranging materials for readers theatre; directing and participating in performances. Prerequisite: COM 210 or consent.

COM 331 Persuasive Speaking
3 hrs.
The study and application of logical, emotional and ethical principles of persuasion.

COM 334 Argumentation and Debate
3 hrs.
Theory and practice in argumentation and debate. Includes the analysis of propositions and the use of logic and evidence. Students will build, present, and defend cases. Debate is taught as a process of inquiry and advocacy.

COM 335 Leadership
3 hrs.
A study of the characteristics and behaviors of leaders with emphasis on the development of leadership abilities in the individual for different group situations.

COM 342 The Film Industry
3 hrs.
The history and development of the American film medium from an economic, social, and cultural perspective. Emphasis will be on methods of production, distribution, exhibition, and legal issues. $10 lab fee. Prerequisite: COM 241.

COM 355 Small Format Video Production
3 hrs.
Practical experience in the design, production, implementation and evaluation of small-format television programs. Applications of portable video technology to the broadcast industry and community cable television systems will be stressed. $20 lab fee. Prerequisite: COM 256.

COM 356 Film Production
3 hrs.
Production of short experimental films, scripting, planning, editing, directing and photography. Work in this course will be done within the limitations of 8 mm format. In addition to text materials, students must provide supplies averaging about $30.00 per student. $15 lab fee. Prerequisite: COM 241.

COM 357 TV Studio Production
3 hrs.
explores the elements of television studio production and directing. Studio experience in equipment operation, crew roles, and producing and directing various types of television studio formats. In addition to the texts, students must provide supplies averaging about $10. $20 lab fee. Prerequisite: COM 256.

COM 358 TV and Film Scripting
3 hrs.
The styles and techniques of film and television scripting for broadcast formats, station continuity, commercials, dramatic scripts, small format video, and documentary.

COM 359 Broadcast Journalism
3 hrs.
Radio and TV as news and information media. Studies and applies principles of news gathering and reporting, commentary, on-the-spot news coverage, features, and structure of the newscast. $10 lab fee.

COM 365 Oral Communication and the Early Elementary Child
4 hrs.
This course focuses on the oral communication processes, particularly as they relate to personal and social development. Particular attention is paid to the acquisition and development of oral communication by the young child, the role of oral communication in the teaching/learning environment; and the relationship between oral language and reading and writing. Deals with the child from birth through seven years. (This course is required for the integrated language arts minor.)

COM 366 Oral Communication and the Later Elementary Child
4 hrs.
This course focuses on the oral communication processes, particularly as they relate to personal and social development. Particular attention is paid to the development of oral communication by the older child, the role of oral communication in the teaching/learning environment; and the relationship between oral language and writing and reading. Deals with the child from age seven through twelve years. (This course is required for the integrated language arts minor.)

COM 370 Interpersonal Communication II
3 hrs.
An analysis of relational communication with particular emphasis on the nature of transactional relationships. Prerequisite: COM 170 or consent of instructor.

COM 372 Introduction to General Semantics
3 hrs.
A study of the function of language. The course deals with the nature and meaning of symbols and differences between the communication systems of the human animal and other species. Examines the assumptions held by Western man about the structure/function of his universe as reflected in language; the problem of “reality” as distinct from “meaning.” The purpose of the course is to increase the student’s awareness of his/her effectiveness as a thinker or symbol-user.

COM 373 Communication Skills and Career Planning
3 hrs.
Systematic self-assessment and job search, making use of intrapersonal and interpersonal communication skills. The student attempts to fit his/her personality with specific favorable job environments, researches those jobs, and builds a resume to communicate these findings. The course makes use of real interviews and outside resource people as an integral part of the experience.

COM 398 Independent Study Communication
1-6 hrs.
Designed to allow outstanding students to work independently under staff supervision. Includes extensive study, research or special creative projects in any of the several areas of communication arts and sciences. One to six hours credit may be accumulated. Prerequisite: Consent, Chair of Department.

COM 441 Documentary in Film and Television
3 hrs.
A study of documentary philosophies, strategies, and accomplishments through an examination of important documentarians, movements, and films.

COM 457 Advanced TV Studio Production
3 hrs.
Individual and group projects in the development and production of television programs stressing experimental techniques. $20 lab fee. Prerequisite: COM 357 or consent of instructor.

COM 458 Television Performance
3 hrs.
Exercises in television performance, stressing the special problems of the video performer. $15 lab fee. Prerequisite: Consent of instructor.

COM 470 Communication, Social Issues and Change
3 hrs.
A study and practical application of communication and rhetorical methodology in contemporary social problems.

Open to Advanced Undergraduate and Graduate Students

COM 505 Special Topics in Communication
1-3 hrs.
Advanced group study of special topics in communication education, intercultural and organizational communication, mass communication, oral interpretation, and film. Many of these special courses are organized in response to special needs or interests of students on campus, in the community and in the region. Some topics are announced in the Schedule of Classes; some are added during the semester. Further information and a full listing of topics may be obtained from the Department offices, 301 Sprau Tower. Six hours of COM 305 and COM 505 may be accumulated as credit toward a major or minor in COM.

COM 530 Studies in Attitude Change: Variable Topics
3 hrs.
Selected areas of detailed study within the total range of rhetoric. Each of the courses listed below carries separate credit, and a student may take any or all of the offerings listed under COM 530. In addition to the topics listed, additional topics are offered from time to time and will be listed in the Schedule of Classes.

1. Ethics and Freedom of Speech
2. Historical Bases of Rhetoric

COM 540 Studies in Mass Communication: Variable Topics
3 hrs.
Analysis in depth of continuing issues in mass communication. Topics vary from semester to semester and students may take one or all topics for credit. Topics include:

1. Teaching Mass Media in the School
2. Television and Politics

COM 541 Mass Communication Law
3 hrs.
The laws, principles and issues of mass communication regulation. Includes media ownership and licensing, programming, political broadcasting, controversy, defamation, obscenity, advertising, and the roles of the FCC, FTC, and other regulatory agencies.

COM 542 Mass Media and the Child
3 hrs.
Assesses the impact that mass media, including radio, television, films, comics, and other media, may have on the minds and behaviors of children.

COM 543 Mass Communication and Social Change
3 hrs.
The course examines the role of the mass media in diffusing information and persuasive messages, and the effects of these messages on individuals, groups and institutions. The fields of politics, advertising, and public relations are studied from the communication/change viewpoint of the practitioner and the consumer.

COM 544 Mass Communication, News, and Public Affairs
3 hrs.
The course examines the role of the media in covering public affairs news and disseminating it to the public. Questions related to media access, fairness, media regulation and
message production are discussed in light of current events.

COM 545 Television Criticism 3 hrs.
Examines the various functions and writings of contemporary television critics, and establishes criteria for evaluating television programs and program production. Students will view and analyze various television program types, including documentary, drama, visual essay and other entertaining and educational programs.

COM 546 Mass Entertainment 3 hrs.
This course examines the role and function of mass entertainment in modern society. Major topics include mass entertainment as part of leisure, the social and psychological functions of mass entertainment, measuring mass taste, and an in-depth study of popular mass media formats such as soap operas, detective, western, popular music, etc.

COM 547 Organizational Uses of Radio and Television 3 hrs.
Applications of radio and TV technology for the business professional, educator, media specialist and the clinician. Utilization of electronic media for training, research observation and instruction. In addition to required text materials, students must provide supplies averaging about $10.00 per student. $15 lab fee.

COM 548 Broadcast Management 3 hrs.
Studies the functions and responsibilities of broadcast station management. Students examine theories of station management, audience research, budgeting and accounting principles, sales, and regulatory problems.

COM 549 Public Relations and Organizations 3 hrs.
The course will examine the role of public relations and public information in a variety of organizations with a communication theory perspective. The course is designed to prepare individuals for positions in public relations and public information, or for other positions in organizations concerned with the flow of information across organization boundaries.

COM 550 Public Relations Program Development 3 hrs.
This is an advanced course in public relations emphasizing research methods, and program evaluation for corporate, governmental, educational, and social service organizations. Prerequisite: COM 549.

COM 551 Methods of Film Analysis 3 hrs.
An investigation of the approaches to film analysis (auteurist, intentionalist, sociological, structural, historical, ideological, psychological) by intensive “reading” and shot sequence examination and evaluation of widely divergent works. Prerequisite: COM 241 or COM 356.

COM 560 Studies in Communication Education: Variable Topics 3 hrs.
Selected studies in background, method, materials, and procedures in any one of the several speech areas. Possible topics include directing speech activities, communication behaviors of change agents, as well as others. Topics will vary from semester to semester and students may take one or all topics for credit.

COM 561 Teaching Communication in the Elementary School 4 hrs.
Examination of the linguistic development of pre-school and elementary school children, the functions of language, study of the nature of the emotional and physical development of children as related to symbol using behaviors, study of materials and methods for affecting desired behaviors in children’s thinking, communicating and enjoyment. The undergraduate student must have completed at least twelve hours of work in COM or obtain consent of instructor. Prerequisite: ED 300 and COM 365 or COM 366. Offered fall semesters only.

COM 562 Teaching Communication in the Secondary School 4 hrs.
This is a course in becoming a professional teacher of communication. The focus of the course is self-examination, openness, and individual initiative. Some of the major topics are an examination of self in relation to teaching, the evolving and changing philosophies of speech communication education, the world of high school teaching, interpersonal relations, dialogue, procedures in teaching communication, and how to get and hold a job in speech communication. The class is, for the most part, a laboratory-workshop, using a mixture of group work, guest visits and special projects. The student must have completed at least fifteen hours of work in COM and, ideally, take the course immediately prior to student teaching. Prerequisite: ED 301. Offered winter semesters only.

COM 564 Creative Drama for Children 4 hrs.
Study of the principles, materials and techniques of using informal drama as a classroom activity in elementary grades. Emphasizes theoretical and practical application through the planning and teaching of drama experiences. $15.00 fee.

COM 570 Studies in Communication: Variable Topics 3 hrs.
Selected areas of study within the total range of communication. Each topic carries separate credit, and a student may take any or all of the different offerings under COM 570. Selected topics each semester will be listed in the Schedule of Classes.

COM 571 Theories of Interpersonal Communication 3 hrs.
A study of the dynamics of interpersonal communication from various theoretical perspectives. Emphasis is on the assumptions, conceptualizations and models which explain how people interact at the content and relationship levels.

COM 572 Non-Verbal Communication 3 hrs.
The course examines theory and research in the nature and function of nonverbal message systems. Topics include: the role of nonverbal communication in the developmental stages of humans; individual differences in ability to interpret messages; the relationship of nonverbal communication to the concept of culture; extension of a person such as space, clothing, possessions, and specific messages related to the face and body.

COM 573 Personality and Communication 3 hrs.
The course examines the major personality theories as they contribute to an understanding of the role of communication in self-development. Particular emphasis is given to humanistic theories.

COM 574 Intercultural Communication 3 hrs.
An examination of the factors contributing to effective communication in an intercultural context. The course focuses on such topics as ethnocentrism, cultural perceptions, values and beliefs, language and meaning, and nonverbal factors. Communication systems of selected cultures are described and analyzed.

COM 575 Family Communication 3 hrs.
Examines the current literature pertaining to holistic systems, power influences, and satisfactory patterns of family communications. Students analyze family interactions and identify satisfactory patterns of marital family communication.

COM 577 Communication Ethics: Honesty and Deception 3 hrs.
Principles and perspective of ethical speech communication are studied and applied to a variety of private and public communication situations. The impact of honest versus deceptive communication on the individual and society is evaluated.

COM 579 Female/Male Interaction 3 hrs.
Examines the variable of gender as it influences communication between women and men. Topics include female-male stereotypes, interpersonal attraction, differences in female-male verbal and nonverbal codes, relational dialogues and patterns, and female-male interaction on the job.

COM 581 Communication in Organizations 3 hrs.
A study of communication practices and problems found within organizations with emphasis given the three aspects of organizational communication: development of theoretical perspectives; application of communication skills and, awareness of audit and research methodologies. Students will study the relationship between communication and management/employee effectiveness.

COM 582 Group Communication Theory 3 hrs.
A study of small group communication from theoretical perspectives. The emphasis will be on analyzing small group communication based on an understanding of group communication theories, concepts, and research methods.

COM 583 Interviewing 3 hrs.
Theories and principles of planning, conducting, and evaluating interviews are studied and applied to specific interview types, including selection, performance appraisal, survey, and journalistic interviews. Emphasis is placed on the perspective of the interviewer rather than the interviewee.

COM 584 Health Communication 3 hrs.
Studies concepts and theories relevant to the maintenance and enhancement of effective communication in health care settings. Emphasis is given to the study and application of communication theories, to the transactions which occur among health professionals, and between professionals and clients/patients.

COM 591 Introduction to Communication Research 3 hrs.
In this introductory course, students will acquire skills and knowledge of basic research design,
COM 598 Independent Study
1-4 hrs.
A program for advanced students with an interest in pursuing independently a program of readings, research or projects in areas of special interest. To be arranged in consultation with a member of the staff and the Department Chair.

COMPUTER SCIENCE
Donald Nelson, Chair
Fred Bosel
David Johnson
Marianne Johnson
Donna Kaminski
Else de Doncker Kapenga
John Kapenga
Mark Kerstetter
Dionysos Kountanis
Data Motzkin
Iyad Natour
Ben Pinkowski
Robert Trenary
Kenneth Williams

Computer Science is the study of digital computers and their uses for the effective processing of information. Degree programs offered emphasize the software aspects both in theory and application rather than the physical construction of computers (hardware aspects).

The department offers a number of introductory programming courses as well as complete programs which provide a major or minor in computer science.

Students considering a major or minor in computer science should make an appointment with the departmental adviser, Carolyn Oberlink, by contacting the Computer Science Office located in 4045 Friedman Hall (phone 383-6151). This should be done as soon as possible—certainly within the second semester of enrollment in computer science classes. Eligibility requirements for admittance into a major or minor program are available from the computer science adviser.

The department offers three majors providing opportunities for students to pursue a variety of interests.

The minors in computer science are appropriate for students in a variety of fields. Graduates holding minors should be particularly qualified for applications programming positions.

Additional Information
General information regarding counseling and types of degrees may be found under the beginning of the Arts and Sciences section of this catalog.

Students must satisfy prerequisites before enrolling in a course. Those who fail to earn a "C" or better grade in a prerequisite course will be denied permission to enroll in the next course.

The department reserves the right not to honor enrollment in a course if the student fails to attend the first two class meetings of the term, unless prior arrangements have been made with the instructor. Enrollment will not be honored if it is found that the proper prerequisites have not been met. Students whose enrollment is denied for whatever reason are responsible for processing drop slips with the Registration Office.

Majors
Computer Science—Theory and Analysis in the Computer Science Curriculum

The Theory and Analysis program has been accredited by the Computing Sciences Accreditation Board, Inc. (CSAB). It provides a greater depth and breadth in computer science than the Arts and Sciences major (see below). The Theory and Analysis major includes additional emphasis in physics, science, and engineering, as well as the minor in mathematics. Students planning computer science as a profession or contemplating graduate study in computer science are urged to enroll in this major.

Computer Science Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 111</td>
<td>Computer Programming I</td>
<td>3</td>
</tr>
<tr>
<td>CS 112</td>
<td>Computer Programming II</td>
<td>3</td>
</tr>
<tr>
<td>CS 223</td>
<td>Computer Organization and Assembly Language</td>
<td>3</td>
</tr>
<tr>
<td>CS 224</td>
<td>Systems Programming Concepts</td>
<td>3</td>
</tr>
<tr>
<td>CS 299</td>
<td>Professional Concerns for Computer Scientists I</td>
<td>1</td>
</tr>
<tr>
<td>CS 331</td>
<td>Design and Analysis of Algorithms and Data Structures</td>
<td>3</td>
</tr>
<tr>
<td>CS 342</td>
<td>Analysis of File Systems and Structures</td>
<td>3</td>
</tr>
<tr>
<td>CS 485</td>
<td>Programming Languages</td>
<td>3</td>
</tr>
<tr>
<td>CS 499</td>
<td>Professional Concerns for Computer Scientists II</td>
<td>1</td>
</tr>
<tr>
<td>CS 554</td>
<td>Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>CS 580</td>
<td>Theory of Computation</td>
<td>3</td>
</tr>
<tr>
<td>CS *</td>
<td>Four approved non-language electives (See adviser)</td>
<td>12</td>
</tr>
</tbody>
</table>

Required Mathematics Courses

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>MATH 122</td>
<td>Calculus I</td>
<td>4</td>
</tr>
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<td>4</td>
</tr>
<tr>
<td>MATH 230</td>
<td>Elementary Linear Algebra</td>
<td>4</td>
</tr>
<tr>
<td>MATH 310</td>
<td>Discrete Mathematical Structures</td>
<td>3</td>
</tr>
<tr>
<td>MATH 364</td>
<td>Statistical Methods</td>
<td>4</td>
</tr>
</tbody>
</table>

Required Physics Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 210</td>
<td>Mechanics and Heat</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 211</td>
<td>Electricity and Light</td>
<td>4</td>
</tr>
</tbody>
</table>

Required Electrical Engineering Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 250</td>
<td>Digital Logic I</td>
<td>3</td>
</tr>
<tr>
<td>EE 251</td>
<td>Digital Systems</td>
<td>4</td>
</tr>
<tr>
<td>EE 357</td>
<td>Computer Architecture</td>
<td>3</td>
</tr>
</tbody>
</table>

Computer Science in the Arts and Sciences Curriculum

This major is designed to provide the student with the fundamental concepts of computer science and a broad selection of electives in liberal arts and other fields. The major requires a minor in mathematics. Students selecting this major are encouraged to consider completion of a second minor in some other field of interest.

Computer Science Courses (34 hrs.)

<table>
<thead>
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<tbody>
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</tr>
<tr>
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</tr>
<tr>
<td>CS 201</td>
<td>Programming in FORTRAN</td>
<td>2</td>
</tr>
<tr>
<td>CS 202</td>
<td>Programming in COBOL</td>
<td>2</td>
</tr>
<tr>
<td>CS 223</td>
<td>Computer Organization and Assembly Language</td>
<td>3</td>
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</tr>
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<td>Two approved non-language electives (see adviser)</td>
<td>6</td>
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</tbody>
</table>

Mathematics Courses (19 hrs.)

<table>
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<td>MATH 364</td>
<td>Statistical Methods</td>
<td>4</td>
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</tbody>
</table>
**Secondary Teaching Major**

The Secondary Teaching Major is designed for the student interested in the teaching of computer science in the secondary school.

### Computer Science Courses

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>CS 105</td>
<td>Introduction to Computers</td>
<td>3</td>
</tr>
<tr>
<td>CS 111</td>
<td>Computer Programming I</td>
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</tr>
<tr>
<td>CS 299</td>
<td>Professional Concerns for Computer Scientists</td>
<td>1</td>
</tr>
<tr>
<td>CS 331</td>
<td>Design and Analysis of Algorithms and Data Structures</td>
<td>3</td>
</tr>
<tr>
<td>CS 433</td>
<td>Database Management Systems</td>
<td>3</td>
</tr>
<tr>
<td>CS 502</td>
<td>Introduction to Microcomputer Concepts for Teachers</td>
<td>3</td>
</tr>
<tr>
<td>CS 503</td>
<td>Programming the Microcomputer for Teachers</td>
<td>3</td>
</tr>
</tbody>
</table>

Approved Computer Science Elective (see adviser)

Note: With approval of adviser, other 200-level language courses may be substituted for 201 and 202.

CS 302 Teaching of Computer Science does not carry credit toward the major but is a required course for those in secondary education.

### Required Mathematics Courses

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### Minors

**General Option**

### Computer Science Courses

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<td>CS 342</td>
<td>Analysis of File Systems and Structures</td>
<td>3</td>
</tr>
</tbody>
</table>

Approved elective (may be a language course)

### Required Mathematics Courses

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</tr>
</thead>
<tbody>
<tr>
<td>MATH 122</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 200</td>
<td>Application and Analysis</td>
<td>4</td>
</tr>
</tbody>
</table>

### Sciences Option

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<tbody>
<tr>
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<td>CS 331</td>
<td>Design and Analysis of Algorithms and Data Structures</td>
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</table>

Two approved CS electives, only one of which may be a language course.

### Required Mathematics Courses

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</tr>
<tr>
<td>MATH 230</td>
<td>Elementary Linear Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 374</td>
<td>Introduction to Linear Algebra and Differential Equations</td>
<td>4</td>
</tr>
</tbody>
</table>

### Teaching Minor

CS 105 Introduction to Computers . . . 3
CS 111 Computer Programming I . . . 3
CS 122 Computer Programming II . . . 3
CS 223 Computer Organization and Assembly Language . . . 3
CS 502 Introduction to Microcomputer Concepts for Teachers . . . 3
CS 503 Programming the Microcomputer for Teachers . . . 3
MATH 122 Calculus I . . . 4
MATH 230 Linear Algebra . . . 4

Students majoring in mathematics may not count mathematics courses for both computer science and mathematics.

### Computer Science Courses (CS)

(Courses described in italics are approved for General Education.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 105</td>
<td>Introduction to Computers</td>
<td>3</td>
</tr>
</tbody>
</table>

The BASIC programming language is used to acquaint students with the computer facility and with the abilities of computers. The course consists of one hour of lecture and two hours in recitation sections each week. Computer terminology and capabilities are explored. Student-written computer programs are executed and related to a variety of computer applications. Illustrations of programming techniques and the significance of computers in contemporary society will be given. A student may not receive credit for both BIS 102 and CS 105. A student may not receive credit for CS 105 after the completion of any CS course except CS 306.

CS 106 BASIC for Engineers

1 hr.

This course provides an introduction to programming in the BASIC language and an introduction to the WMU computer system. It is designed primarily to give students in certain engineering programs enough background so they can use BASIC in further coursework. Prerequisite: 1-1/2 years of high school algebra or MATH 111.

CS 110 Introduction to Computer Programming Using BASIC

3 hrs.

This course is designed for those with little previous programming experience beyond computer literacy. The emphasis is on non-numeric problem solving. Students learn about system commands necessary to create and execute computer programs written in a high-level programming language and are introduced to problem solving, program design, coding, and debugging using the BASIC programming language. Programming assignments are given to build technical skill. These general language concepts will be discussed: program syntax, declaration and basic data types, constants and variables, arrays, executable instructions, statements and expressions, statement types (i.e., assignments, decision, looping, subroutine definition and use, functions with parameters). This course cannot be used for a major or minor in computer science nor can it be taken for any credit after completing CS 111 or a higher level CS course. Prerequisite: Computer Literacy.

CS 111 Computer Programming I

3 hrs.

A first course in the science of programming digital computers. Analysis of problems and development of correct procedures for their solution will be emphasized along with the expression of algorithmic solutions to problems in a structured computer language. Applications will involve the use of the Pascal language to solve numerical and non-numerical problems on the computer. Prerequisite: CS 105 or BIS 102. (This prerequisite will be waived for students with a year of high school computer programming or a college level programming course.) Corequisite: MATH 122 or 200.

CS 112 Computer Programming II

3 hrs.

This course is a continuation of Computer Programming I with more emphasis on top-down, modular, structured design and techniques involved in the production of large computer programs. The Pascal language will be used, and advanced features of the language such as recursion, pointers, sets, and variable records will be discussed. Data structures and their various implementations are introduced. Discussion and analysis of searching and sorting techniques will be presented. Elementary file processing using sequential and random input and output will be demonstrated. A team project is assigned. Prerequisite: CS 111 and MATH 122 or 200.

CS 201 Programming in FORTRAN

2 hrs.

Details of the FORTRAN computer programming language are presented. Students obtain practice by writing programs in the language. This course assumes knowledge of the use of the computer system and editor and basic programming concepts. Credit will not be given for both CS 201 and CS 306. Prerequisite: CS 110 or CS 111 and one and one-half years of high school algebra or MATH 111.

CS 202 Programming in COBOL

2 hrs.

Details of the COBOL computer programming language are presented. Students obtain practice by writing programs in the language. This course assumes knowledge of the use of the computer system and editor and basic programming concepts. Prerequisite: CS 110 or CS 111 and one and one-half years of high school algebra or MATH 111.

CS 223 Computer Organization and Assembly Language

3 hrs.

The structure and internal organization of digital computers will be emphasized. Additional topics include addressing techniques, internal machine representation of numbers, characters, and programs; program control; arithmetic and logical operations; input-output; subroutines and linkage; system control programs in timesharing and batch environments. An introduction to assembly languages will be given. Prerequisite: CS 111.
CS 224 Systems Programming Concepts 3 hrs.
This course introduces concepts and examples of systems software: assemblers, linkers, loaders, macroprocessors, compilers, and languages and file systems. An introduction to operating systems concepts including device drivers, time sliced and interrupt driven processes, interprocess communication, reentrant and shareable code, and data and instruction space will also be provided. A discussion of the structure of a single user operating system will take place. Prerequisite: CS 112 and CS 293.

CS 299 Professional Concerns for Computer Scientists I 1 hr.
This writing-intensive course explains the different things computer scientists do and how it affects the world around them. It teaches about the use of research tools such as library and electronic tools. Emphasis is placed on oral and written communication skills. Professionalism and professional societies are discussed. Students are required to become involved with the profession outside of class.

CS 302 Teaching of Computer Science 3 hrs.
This course deals with the problems and current trends of teaching high school computer science. The main emphasis is on effective methods of instruction. Practical methods of selection, organization, and maintenance of hardware and software are also considered. Topics such as computer literacy, the computer as a problem-solving tool, issues in computing, and related computer applications will be considered and discussed. This course does not carry credit towards a Computer Science Major or Minor, however, it is required course for those in Secondary Education. Prerequisites: CS 105, CS 112, and junior status.

CS 306 Introductory Programming: FORTRAN 2 hrs.
An introduction to computer programming using the FORTRAN language (FORmula TRANslation). Prerequisite: One and one-half years of high school algebra or MATH 111. Credit will not be given for both CS 201 and CS 306. This course will not be used towards a major or minor in Computer Science.

CS 309 Introductory Programming: ALGOL 2 hrs.
An introduction to computer programming using the ALGOL language (ALGOrithmic Language). Prerequisite: A programming course.

CS 331 Design and Analysis of Algorithms and Data Structures 3 hrs.
Various data structures such as stacks, queues, lists, trees and graphs will be modeled and implemented. Algorithms to manipulate these structures will be studied and analyzed. Memory management systems as well as techniques for searching and sorting will be discussed. The idea of a data base will be introduced. Prerequisite: CS 112 and CS 233.

CS 342 Analysis of File Systems and Structures 3 hrs.
Programming projects will be assigned to give students experience in systems programming and file processing. Topics will include: records, file blocking, data base management systems, characteristics of storage media, algorithms to process direct access devices, inverted lists, multilists, indexed sequential and hierarchical structures. Prerequisites: CS 331.

CS 443 Data Base Management Systems (DBMS) 3 hrs.
This course presents the fundamental concepts and practices of data base management systems. The data base environment and administrative areas will be covered, with the roles of the data base administrator and the data dictionary. Conceptual and logical models are discussed. The three approaches—relational, hierarchical and network—are briefly described. Data access techniques such as sequential and multi-level sequential indexes, linked lists, inverted files and hashing are briefly reviewed. A few commercial systems will be surveyed. Security, reliability and integrity will be studied. Students will acquire experience with the various topics by applying them to an actual data base system. Students will also write application programs which use the data base system. Not for Computer Science Majors (except Teaching major). Prerequisite: CS 202 or BIS 362. A student may not receive credit for both CS 443 and CS 543.

CS 485 Programming Languages 3 hrs.
Properties of various programming languages including structure, storage allocation, control structures and formal parameters will be studied, as well as run time representation of programs and data structures. A study of compilers and interpreters will be made. This will include loading, execution, storage allocation, symbol tables, lexical scan, parsing and object code generation. The relation of automata to formal languages and grammars will be discussed. Prerequisites: CS 331; MATH 310.

CS 495 Topics in Computer and Information Science 3 hrs.
The content of this course varies. It is intended to introduce the student to significant topics which are not normally offered as separate courses. This course may be taken more than once with the approval of the student’s adviser. Prerequisite: Approval of Department.

CS 499 Professional Concerns for Computer Scientists II 1 hr.
This course discusses the role of the computer scientist in society. It prepares students for their next step in their career as a computer scientist. The second major theme of the course promotes awareness of professional issues such as ethics and current events. Oral and written communication will be stressed. Students are required to become involved with the profession outside of class. Prerequisite: Senior status.

A fundamentals course for students in academic programs in Public Administration. An introduction to how computers work, how they are programmed and their use in information systems. Students learn to work with computer input and output on the WMU DEC System 10 and write at least one elementary computer program. Course requirements include several reports and a term project. This course may not be used towards a major or minor in Computer Science.

CS 502 Introductory Microcomputer Concepts for Teachers 3 hrs.
This course is designed to provide teachers with a minimum foundation in computer concepts and programming. Emphasis is on the use of the BASIC language to perform a variety of educational applications on microcomputers. Computer terminology and capabilities are explored as well as the significance of computers in contemporary society. Students will write a number of programs and will receive an introduction to the use of standard system software. Flowcharting is introduced. Examples of Computer Assisted Instruction will be given. Not for Computer Science majors and minors (except teaching). Prerequisite: MATH 150 or equivalent.

CS 503 Programming the Microcomputer for Teachers 3 hrs.
A course in programming at an intermediate level for teachers. An introduction to file handling and graphics on small computers will be provided. Flowcharting, top-down design and the development of algorithms are stressed. Some programming projects in each teacher’s area of interest will be assigned. Not for Computer Science majors or minors (except teaching). Prerequisite: CS 502 or equivalent experience.

CS 504 Advanced Microcomputer Concepts for Teachers 3 hrs.
This course will provide teachers with an understanding of how microcomputer software is developed to fit the hardware. A review of number systems and an introduction to machine and assembly languages is given. Programs will be written in these low level languages. An introduction to several data structures is provided. Concepts in graphics and file handling will be extended. Not for Computer Science majors or minors. Prerequisite: CS 503.

CS 506 Scientific Programming 3 hrs.
An introduction to solving scientific and engineering problems on computers. The topics include root finding, matrix calculations, numerical integration and the numerical solution of differential equations. The FORTRAN language and various library software packages will be used. Prerequisite: MATH 230 or MATH 374, and CS 201 or CS 306. Jointly listed with Mathematics and Statistics.

CS 518 Introduction to Computer Modeling and Simulation 3 hrs.
This course provides an overview of both model development and computer simulation. A methodology is introduced which is generally applicable to simulation projects. The relationships between real systems, models and simulation are presented, and the concept of experimental frames is discussed. General purpose simulation languages (e.g., Simscript, GPSS, CSMP, Simula) and the formalisms they support are presented. An introduction to random variables and elementary frequency distributions is provided. Simulation as a tool for exploring ill-defined systems will also be discussed. Several small programs and a simulation project will be assigned the student. Prerequisite: CS 331 and a course in probability or statistics.

A first course in the design of interactive computer graphics systems. Currently available hardware and software systems are described. Emphasis is on theoretical considerations in the design of interactive computer graphics software systems. Prerequisites: MATH 230 and CS 331.
CS 543 Principles of Database Management Systems
3 hrs.
The fundamental concepts of database design and efficient usage are presented. Topics include: an overview of databases; the three data models—relational, hierarchical, and network; conceptual, logical, and physical database design and evaluation. The design theory of relational data models will be emphasized. Query languages, query optimization, security, integrity, and concurrency protocols will also be covered. A student may not receive credit for both CS 443 and CS 543. Prerequisite: CS 342.

CS 544 Software Systems Development
3 hrs.
Advanced computer programming techniques used in the specification, design and implementation of large software systems. Testing and maintenance of software systems. Modular programming, top down structured design, composite design, HIPO, project management. Emphasis is placed on the solution of large software system problems using a team approach. Prerequisite: CS 331.

CS 554 Operating Systems
3 hrs.
Fundamentals are stressed. A historical survey of the development and growth of operating systems is given to lend perspective to the ideas that follow. Basic concepts and terminology will be emphasized. Programming assignments leading to the construction of a simple operating system are required. Processes, communication and synchronization, shared resources, memory management, resource allocation, scheduling, deadlocks, file management, and protection are discussed. Applications to a real system are investigated to motivate the ideas presented in the text and lectures. Prerequisite: CS 331.

CS 555 Computer Networks and Distributed Systems
3 hrs.
The design and evaluation of computer networks using current hardware and software are explained. Various types of computer buses, local area networks, and long haul networks are described. Case studies of popular networks are presented. Layered network models are studied. There is lab work with local area and long haul networks. Prerequisite: CS 224 and CS 331.

CS 580 Theory of Computation
3 hrs.
Provides an introduction to the theory of computation in the framework of programming languages. Basic definitions and concepts dealing with algorithms, sets, relations, functions, induction operations on functions and cardinality are covered. Primitive and partial recursive functions are defined and their properties treated with application to coding techniques. The Chomsky hierarchy of languages, including recursive and recursively enumerable sets and their acceptors, is introduced. Students are assigned theoretical as well as implementation oriented problems. Prerequisites: CS 331 and MATH 310.

CS 581 Compiler Design and Implementation
3 hrs.
Students are introduced to major aspects of compiler design. These include lexical analysis, parsing, and translation. Each student will implement a small compiler using modern compiler writing tools. Prerequisite: CS 465 or CS 580.

CS 582 Introduction to Artificial Intelligence Techniques
3 hrs.
Provides and overview of artificial intelligence and its major issues and application areas. Covers basic techniques and concepts used in AI applications, e.g., searching techniques, pruning, heuristics, production systems, predicate calculus, resolution, and plan-generating systems. Prerequisite: CS 331.

CS 595 Advanced Topics in Computer and Information Science
1-3 hrs.
The content of this course varies. It is intended to introduce the student to advanced topics which are normally offered as separate courses. The course may be taken more than once with approval of the student's adviser. Prerequisite: Approval of Department.

CS 599 Independent Study in Computer Science
1-3 hrs.
Advanced students with good scholastic records may elect to pursue independently the study of some topic of special interest. Topics are chosen and arrangements are made to suit the needs of each particular student. Prerequisite: Written approval of instructor.

CRIMINAL JUSTICE PROGRAM
See Sociology Department in the College of Arts and Sciences

ECONOMICS
Werner Schel, Chair
Sisay Asefa
Philip Caruso
Wayland Gardner
Bassem E. Harik
Salim E. Harik
Alfred Ho
Emily Hoffman
Wei-Chiao Huang
Timothy L. Hunt
William S. Kerr
Gangaram K. Kripalani
Jon Neill
Michael R. Payne
Susan Pozo
Myron Ross
Margaret Schwarz
Jared Wend
Raymond E. Zelder
David Zinn

Courses are designed (1) to contribute to General Education by providing basic understanding of the economy; (2) to fulfill the requirements for the training of teachers in certain professional groups, such as social sciences, business studies, and business administration; (3) to furnish courses and explore areas of economic thought which are prerequisite to graduate study in economics; and (4) to provide areas of study as pre-professional training for business administration, engineering, foreign service, journalism, law, and social work.

A minor in economics consists of a minimum of 15 hours in the department. A major in economics consists of a minimum of 30 hours of work in the department. The following are required courses for majors: Principles of Economics (201, 202), Income Analysis and Policy (306), Price Theory (303), and Statistics (503). In addition majors should choose the remainder of their courses in consultation with the undergraduate adviser, with careful attention paid to achieving a proper spread.

A major in economics who intends to do graduate work in economics is advised to take MATH 122 and 123 at least, and ECON 509.

The undergraduate adviser of the department will assist students in selecting courses suited to their needs in fulfilling the minor and major requirements.

The honors program of the Department of Economics is designed for the student who possesses special talents and abilities who is particularly interested in exploiting them to the fullest extent. Students wishing to participate in this program should consult a member of the economics honors committee.

Group Social Science
Students in the secondary education curriculum who major in economics must also complete a minor in group social science. Refer to the “Interdisciplinary Program” section of this catalog for a description of the minor requirements.

Courses By Topic

Principles and General Theory
100 Contemporary Economic Problems
201 Principles of Economics
202 Principles of Economics
303 Price Theory
306 Income Analysis and Policy
400 Managerial Economics
501 Studies in Economic Problems: Variable Topics
502 Economic Statistics
ECON 504 Introduction to Mathematical Economics
3 hrs. Fall, Winter
An introduction to calculus for economic analysis and decision making.
Prerequisites: ECON 201 and 202.

ECON 505 History of Economic Thought
3 hrs. Fall, Winter
An examination of the development of economic thought from ancient times to the present.
Prerequisites: ECON 201 and 202.

ECON 509 Econometrics
3 hrs. Fall, Winter
An introduction to the methods of econometrics, including hypothesis testing, regression analysis, and time series analysis.
Prerequisites: ECON 201 and 202.

Labor and Resource Economics
313 Poverty and Economic Security
3 hrs. Fall, Winter
An introduction to the economic analysis of poverty and inequality.
Prerequisites: ECON 201 and 202.

318 The Economics of Medical Care
3 hrs. Fall, Winter
An introduction to the economic analysis of health care systems and health care financing.
Prerequisites: ECON 201 and 202.

319 Environmental Economics
3 hrs. Fall, Winter
An introduction to the economic analysis of environmental problems and policies.
Prerequisites: ECON 201 and 202.

316 Collective Bargaining in Public Employment
3 hrs. Fall, Winter
An introduction to the economic analysis of collective bargaining in public employment.
Prerequisites: ECON 201 and 202.

317 Economics of Health and Human Services
3 hrs. Fall, Winter
An introduction to the economic analysis of health care and human services.
Prerequisites: ECON 201 and 202.

Money, Credit, and Finance
420 Money and Credit
3 hrs. Fall, Winter
An introduction to the theory of money and credit and their role in the economy.
Prerequisites: ECON 201 and 202.

424 Federal Government Finance
3 hrs. Fall, Winter
An introduction to the economic analysis of government finance and budgeting.
Prerequisites: ECON 201 and 202.

507 Monetary Theory and Policy
3 hrs. Fall, Winter
An introduction to the economic analysis of monetary policy and its impact on the economy.
Prerequisites: ECON 201 and 202.

511 Economic Growth
3 hrs. Fall, Winter
An introduction to the economic analysis of economic growth and development.
Prerequisites: ECON 201 and 202.

512 Labor Problems
3 hrs. Fall, Winter
An introduction to the economic analysis of labor markets and labor relations.
Prerequisites: ECON 201 and 202.

515 Economics of Human Resources
3 hrs. Fall, Winter
An introduction to the economic analysis of human resource management.
Prerequisites: ECON 201 and 202.

516 Collective Bargaining
3 hrs. Fall, Winter
An introduction to the economic analysis of collective bargaining.
Prerequisites: ECON 201 and 202.

525 State and Local Government Finance
3 hrs. Fall, Winter
An introduction to the economic analysis of state and local government finance.
Prerequisites: ECON 201 and 202.

Industrial Organization and Public Control
314 Industrial Organization and Public Control
3 hrs. Fall, Winter
An introduction to the economic analysis of industrial organization and public control.
Prerequisites: ECON 201 and 202.

International Economics
480 International Economics
3 hrs. Fall, Winter
An introduction to the economic analysis of international trade and finance.
Prerequisites: ECON 201 and 202.

484 Comparative Economic Systems
3 hrs. Fall, Winter
An introduction to the economic analysis of comparative economic systems.
Prerequisites: ECON 201 and 202.

485 Studies in Asian Economics
3 hrs. Fall, Winter
An introduction to the economic analysis of Asian economies.
Prerequisites: ECON 201 and 202.

487 Studies in Soviet Economics
3 hrs. Fall, Winter
An introduction to the economic analysis of Soviet and Eastern European economies.
Prerequisites: ECON 201 and 202.

500 Continuing Education in Economics: Variable Topics
1-3 hrs. Fall, Winter
Variable topics as they relate to the economic analysis of specific areas of interest.
Prerequisites: ECON 201 and 202.

501 Studies in Economic Problems: Variable Topics
1-3 hrs. Fall, Winter
Variable topics as they relate to the economic analysis of specific problems.
Prerequisites: ECON 201 and 202.

502 Economic Statistics
4 hrs. Fall, Winter
An introduction to the economic analysis of statistical methods and their application to economic problems.
Prerequisites: ECON 201 and 202.

503 Price Theory
3 hrs. Fall, Winter
An introduction to the economic analysis of price theory and its application to market behavior.
Prerequisites: ECON 201 and 202.

504 Introduction to Mathematical Economics
4 hrs. Fall, Winter
An introduction to the application of mathematical tools to economic analysis.
Prerequisites: ECON 201 and 202.

505 History of Economic Thought
3 hrs. Fall, Winter
An introduction to the development of economic thought and its impact on economic analysis.
Prerequisites: ECON 201 and 202.

506 Income Analysis and Policy
3 hrs. Fall, Winter
An introduction to the economic analysis of income distribution and policy.
Prerequisites: ECON 201 and 202.

507 Monetary Theory and Policy
3 hrs. Fall, Winter
An introduction to the economic analysis of monetary policy and its impact on the economy.
Prerequisites: ECON 201 and 202.

508 Economic Development
3 hrs. Fall, Winter
An introduction to the economic analysis of economic development and its impact on the economy.
Prerequisites: ECON 201 and 202.

510 Labor Problems
3 hrs. Fall, Winter
An introduction to the economic analysis of labor markets and labor relations.
Prerequisites: ECON 201 and 202.

511 Economic Growth
3 hrs. Fall, Winter
An introduction to the economic analysis of economic growth and development.
Prerequisites: ECON 201 and 202.

512 Labor Problems
3 hrs. Fall, Winter
An introduction to the economic analysis of labor markets and labor relations.
Prerequisites: ECON 201 and 202.

515 Economics of Human Resources
3 hrs. Fall, Winter
An introduction to the economic analysis of human resource management.
Prerequisites: ECON 201 and 202.

516 Collective Bargaining
3 hrs. Fall, Winter
An introduction to the economic analysis of collective bargaining.
Prerequisites: ECON 201 and 202.

525 State and Local Government Finance
3 hrs. Fall, Winter
An introduction to the economic analysis of state and local government finance.
Prerequisites: ECON 201 and 202.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Term</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 501</td>
<td>Taxation, Financing of Education and Expenditure, Taxation, and Borrowing</td>
<td>3 hrs.</td>
<td>Fall or Winter</td>
<td>ECON 201 and 202, MATH 122 or consent of instructor.</td>
</tr>
<tr>
<td>ECON 502</td>
<td>History of Economic Thought</td>
<td>3 hrs.</td>
<td>Fall or Winter</td>
<td>A survey of the origin and development of economic thought from early times to the present. After a brief consideration of early mercantilism and the evolution of the philosophy of national liberties, special emphasis will be placed on the contributions of significant economic thinkers and the influence of various schools of economic thought on national policy and economic development. Prerequisites: ECON 201 and 202.</td>
</tr>
<tr>
<td>ECON 507</td>
<td>Monetary Theory and Policy</td>
<td>3 hrs.</td>
<td>Winter</td>
<td>This course concentrates on the main elements of monetary theory and policy having to do with such problems as promoting economic growth, maintaining full employment and price stability, influencing the flow of capital into the various economic sectors with different possible social goals in mind, and stabilizing international trade and financial relationships. Prerequisite: ECON 420.</td>
</tr>
<tr>
<td>ECON 509</td>
<td>Econometrics</td>
<td>3 hrs.</td>
<td>Winter</td>
<td>The application of econometric techniques to the estimation of economic models, properties of estimating procedures, and time series analysis. Prerequisites: ECON 201, 202, and 502 or equivalent.</td>
</tr>
<tr>
<td>ECON 512</td>
<td>Collective Bargaining</td>
<td>3 hrs.</td>
<td>Fall</td>
<td>An analysis of the major problems in present day collective bargaining including the negotiation of collective agreements, the practical aspects and the economic implications. Prerequisites: ECON 201 and 202, or consent of instructor.</td>
</tr>
<tr>
<td>ECON 515</td>
<td>Economics of Human Resources</td>
<td>3 hrs.</td>
<td>Winter</td>
<td>The course examines the development and utilization of manpower in the United States, including such topics as labor force components, contributors to productivity such as education, training, health and mobility, and issues of manpower policy. Prerequisites: ECON 201 and 202.</td>
</tr>
<tr>
<td>ECON 516</td>
<td>Collective Bargaining in Public Employment</td>
<td>3 hrs.</td>
<td>Winter</td>
<td>This course examines collective bargaining developments in local, state and federal governments, including bargaining units, negotiations, grievance procedures, strikes and dispute settlements. Prerequisites: ECON 201 and 202, or consent of instructor.</td>
</tr>
<tr>
<td>ECON 517</td>
<td>Economics of Health and Human Services</td>
<td>3 hrs.</td>
<td>Winter</td>
<td>Economic problems of health and human services will be considered. Alternative policy solutions are viewed from the economist's point of view. Not open to Economics graduate students.</td>
</tr>
<tr>
<td>ECON 525</td>
<td>State and Local Government Finance</td>
<td>3 hrs.</td>
<td>Winter</td>
<td>Practices, effects and issues in state and local expenditure, taxation, and borrowing, with particular attention to property and sales taxation, to the financing of education and highways, and to intergovernmental fiscal relations. Prerequisites: ECON 201 and 202.</td>
</tr>
<tr>
<td>ECON 588</td>
<td>Economic Development</td>
<td>3 hrs.</td>
<td>Fall</td>
<td>An analysis of the economic factors such as population, resources, innovation and capital formation which affect economic growth. Selected underdeveloped areas will be studied to understand the cultural patterns and economic reasons for lack of development and the steps necessary to promote economic progress. Special attention will be paid to evaluating the effectiveness of the United States foreign aid program and examining the issues arising as a result of the conflict with the U.S.S.R. Prerequisites: ECON 201 and 202.</td>
</tr>
<tr>
<td>ECON 591</td>
<td>Guest Economist Seminar</td>
<td>1 hr.</td>
<td>Fall</td>
<td>Seminar series on a topic of current interest featuring invited visiting economists. Topics will vary and courses may be repeated. Prerequisites: ECON 201 and 202.</td>
</tr>
<tr>
<td>ECON 592</td>
<td>Readings in Economics</td>
<td>1-3 hrs.</td>
<td>Winter</td>
<td>An independent program of study for qualified advanced students to be arranged in consultation with the instructor. Prerequisite: Consent of chairperson of department.</td>
</tr>
</tbody>
</table>

**ENGLISH**

Edward Galligan, Chairman
Thomas Bailey
Norman Carlson
William Combs
Joel Cooper
Seamus Cooney
Nancy Cutbirth
Cllifford Davidson
Robert Davis
Stephanie Demetrakopoulos
Rolin Douma
Kathleen Dzick
Stuart Dybek
Philip Egan
Gwendolyn Etter-Lewis
C.J. Gianakaris
Martin Gingerich
Clare Goldfarb
Russell Goldfarb
Jaimy Gordon
Maryellen Hains
Bradley Hayden
Robert Hinkel
Edward Jayne
W. Arnold Johnston
Elise B. Jorgens
Lois Matthews
Jerry Morton
John Murphy
David Pugh
Herbert Scott
Shirley Scott
Thomas Seler
Robert Shaler
Thomas Small
Nancy Stone
John Stroupe
Larry Syndergaard
Anne Szalkowski
Constance Weaver
John Woods

The English Department serves students in two principal ways: in developing their power to communicate and express themselves and in enhancing their ability to participate in and understand the experiences of other people, real and imaginary, past and present. Courses and programs offered by our department—in writing, English language, and literature (including film)—enable students to concentrate in English, complement their other studies, or simply explore and sample the worlds of language and literature. As a department we are traditionally engaged in training teachers and preparing students for graduate study. We are equally concerned with serving those students preparing for the many professions in which humane perceptions and the skills of communication, especially writing, are important.

**Special Note to Non-Majors**

The English Department offers many courses, including a variety of writing courses, suitable for students not majoring in English: 105 Thought and Writing, 107 Good Books, 110 Literary Interpretation, 111 Contemporary Topics in Literature, 150 Literature and Other Arts, 210 Film Interpretation, 223 Black American Literature, 252 Shakespeare, 264 News Writing, 266 Writing Fiction and Poetry, 282 Children's Literature, 305 Practical Writing, 307 Good Books II, 311 Perspectives Through Literature, 312 Western World Literature, 313 Asian Literature, 314 African Literature, 315 The English Bible as Literature, and certain advanced courses, that may be appropriate to...
the interests and background of the student. Many of these English courses may be used to satisfy General Education requirements.

English advisers will help any student select courses in writing, English language, or literature which will be useful in General Education or as a background for a career. Advisers’ offices are on the sixth floor of Sprau Tower (phone 383-1628).

Majors and Minors

1. The requirements for the English majors (listed below) are flexible enough to allow students to follow individualized courses of study. As soon as students decide to major in English they should confer with one of the English advisers, who can help plan the major. All major programs must be approved by an English adviser. Students should see the adviser early enough to leave at least 12 credits to complete after declaring the major. Minor slips are required for all minors. Students minoring in English should see the adviser as soon as possible after they begin work on the minor.

2. A minimum of 30 hours is required for a major in English, and 20 hours are required for a minor. Students are urged, however, to take as many additional hours as they can. In particular, students planning to teach or attend graduate school should consider taking additional work in preparation.

3. No more than four hours of "D" credit may be applied to an English major or minor.

4. Foreign Language Requirement: English majors must have at least one college year of a foreign language or its equivalent (at least two years of the same language in high school). The department recommends as much additional work in the language as students can manage. Students planning to do graduate work beyond the M.A. ought to study at least two languages. French and German are most frequently required in graduate school.

5. Special Note to Transfer Students. All transfer students majoring or minoring in English should consult with one of the department’s undergraduate advisers (383-1628) about transferring credit in English courses from other colleges. An early conference will enable students to avoid duplication of courses and possible loss of transfer credit and may enable them to bypass some of the department’s basic requirements. Students with this English major should not register for courses in the teaching of English (380) without consulting with an English adviser.

Secondary Education Curriculum

110 Literary Interpretation: Entry to the program. Prerequisite to all required literature courses but does not count toward this major (may be counted in AREA I of the General Education Program).

1. Either 310 Literary History and Criticism or 340 Development of English Verse; or 322 Major American Writers;

2. An English language course (371, 372, or 572);

3. Two courses chosen from those indicated with an * (courses which emphasize literature written before 1950);

4. Two additional English courses.

5. Plus electives to complete the 30 hours.

Twenty of the thirty hours must be in 300, 400, or 500 level courses. (300-500 level courses fulfilling other basic requirements of the major may be included in this total; for instance, the two * courses.) English advisers (383-1628) will help plan individualized programs.

Majors

30 hours required

Arts and Sciences, Liberal Arts, Other Non-Teaching Curricula

110 Literary Interpretation: Entry to the program. Prerequisite to all required literature courses but does not count toward this major (may be counted in AREA I of the General Education Program).

1. Either 310 Literary History and Criticism or 340 Development of English Verse;

2. 322 Major American Writers;

3. An English language course (371, 372, or 572);

4. Two courses chosen from those indicated with an * (courses which emphasize literature written before 1950);

5. Plus electives to complete the 30 hours.

No more than two of the following courses—282 Children’s Literature, 283 Literature for Adolescents, and 528 Studies in Children’s Literature—may count toward the 30 hours.

An alternative option for the 282, 369, 373 core listed above is the ILAM/ENGL 375-376 sequence plus one course selected from 282, 369, or 373. Both 375 and 376 must be taken or no credit toward the major will be given under this option. This option requires a major slip. The student should see an adviser before completing the first eight hours of course work under this option.

Students with this English major should not register for courses in the teaching of English (380) without consulting with an English adviser.

English Major With Writing Emphases

Major slips required. Transfer students who wish to enter these programs should see an adviser as soon as possible after admission to work out the details of taking at least 18 hours before graduation.

English Major With Creative Writing Emphasis

110 Literary Interpretation: Entry to the program. Prerequisite to all literature courses but does not count toward the major (may be counted in AREA I of the General Education Program).

1. 266 Writing Fiction and Poetry (prerequisite to all other writing courses);

2. 12 hours from the following courses: 366 Advanced Fiction Writing, 367 Advanced Poetry Writing, 368 Playwriting, 566 Creative Writing Workshop (386, 367, and 368 may be taken concurrently). The prerequisite for 566 is 6 hours of creative writing courses.;

3. 16 hours (four courses at the 300-500 level) chosen from the core requirements (No. 1-4) of the Arts and Sciences English Major; See above;

4. Electives to make 30 hours.

English Major With Practical Writing Emphasis

110 Literary Interpretation: Entry to the program. Prerequisite to all literature courses but does not count toward the major (may be counted in AREA I of the General Education Program).

1. 264 News Writing or any option of 305 Practical Writing. (One of these courses is prerequisite to all other writing courses in this major.);

2. 364 Feature and Article Writing (may be taken concurrently with 462, below);

3. 462 Advanced Writing (may be taken concurrently with 364, above);

4. 464 Professional Writing (Prerequisite: 2 upper level writing classes);

5. 461 Form in Non-Fiction;

6. 12 hours (three courses at the 300-500 level) chosen from the core requirements (No. 1-4) of the Arts and Sciences Major. See above;

English Major With Practical Writing Emphasis
## Practical Writing Minor

Students in the Arts and Sciences, Liberal Arts, or other non-teaching curricula may elect to take a practical writing minor, consisting of a cumulative series of upper-level courses in writing and analyzing English. Required: one course in English language or literature, to be taken early in the sequence from those courses which presently count toward an English major or minor, approved by an English advisor prior to enrollment, plus at least twelve hours to be selected from ENGL 265 Pre-Professional Writing, 305 Research and Report Writing, 309, 310, 311 other topic listed in schedule (e.g. Analytical Writing), 364 Feature and Article Writing, 464 Professional Writing, 462 Advanced Writing (recommended as capstone), plus one other course in the department, including any of the above not already taken, to be selected in consultation with an English advisor. Minor slips are required for the practical writing minor.

## Journalism Minor

This minor, which can include key courses outside the department, is useful preparation not only for prospective reporters and editors but also for people who plan careers in broadcasting and the media, advertising, marketing, public relations, business, industry, and government. Courses within the program may also be good choices for anyone who wants to understand a vital subject: the ways we communicate in our society.

The minor allows great flexibility in course selection so that students can combine the journalistic skills and insights of their minor with any of a wide variety of major programs; political science, engineering, economics, business, and history, for example. Students may be advised toward the minor; approved by an English advisor prior to enrollment, plus at least twelve hours to be selected from ENGL 375-376 Literature for Adolescents, 382 Children's Literature, 377 Children's Literature, also to be selected in consultation with an English department advisor. Minor slips are required for the writing emphasis minor.
World Literature Minor
The Department of English and the Department of Languages and Linguistics offer jointly a world literature minor (20 hours). For description and requirements see the “Interdisciplinary Programs” listing in the College of Arts and Sciences section of this catalog, or consult Dr. Combs, 721 Sprau (383-1718).

Integrated Language Arts Minor
The Department of English is one of several participating departments in the integrated language arts minor—a program designed particularly for preservice elementary school teachers. The program provides opportunities for a wide variety of individual interests and alternate learning styles. For a full description of the program, consult its listing under the “Interdisciplinary Programs” section of the College of Arts and Sciences or its listing in the College of Education or the College of Health and Human Services or call the English Department (383-1684).

English Courses (ENGL)
(Courses described in italics are approved for General Education.)

ENGL 100 Basic Writing Skills
4 hrs. (Credit/No Credit)
A writing course designed to help students develop basic writing skills. Emphasis is on English usage, sentence structure, and paragraph development. Does not count toward English major or minor. Credit for the course will not apply to the number of credits needed for graduation.

ENGL 105 Thought and Writing
4 hrs.
A writing course in which the students will work closely with the instructor to develop their sense of language as a means of sharpening and ordering their experience and ideas, and to develop imagination, thought, organization, and clarity in their written work. Does not count as a credit towards English major or minor. Fulfills the University Intellectual Skills college level writing requirement.

ENGL 107 Good Books
4 hrs.
An exploration of good literature, selected from all times and cultures and experienced in a variety of ways—as fantasy and adventure, as imaginative response to fundamental human experience such as death or evil, as social criticism and analysis, as a revelation of character and psychology, as experience of unfamiliar customs and cultures. A course for the general student rather than the student who plans to specialize in the study of literature. Credit towards English major or minor by permission of the department only.

ENGL 110 Literary Interpretation
4 hrs.
An introduction to the study of literature, aimed at developing sensitivity and skill in the critical interpretation of poetry, drama, and prose fiction. Designed for entry to any English major program; does not count toward the 30 hours required in a major but may be counted in AREA I of the General Education Program.

ENGL 111 Contemporary Topics in Literature
4 hrs.
Exploration of fiction, poetry, drama, and film related to current concerns. Topics are: A. Myth and Folk Literature, B. Man, Woman and Marriage in Literature. An exploratory course for the general student rather than the student who plans to specialize in the study of literature. Credit toward English major or minor by permission of the department only.

ENGL 150 Literature and Other Arts
4 hrs.
Study of literature through its relationship to other arts. The course approaches literature by relating novels, stories, poems, or plays to their representations in other media and art forms, particularly film (including TV), music and song, dramatic representation, and painting.

ENGL 210 Film Interpretation
4 hrs.
Studies in the motion picture as art form.

ENGL 222 American Literature and Culture
4 hrs.
A study of some of the recurrent themes in American life as seen in American literature.

ENGL 223 Black American Literature
4 hrs.
A survey of important black American writers and the historical development of the black image and experience in American literature and culture.

ENGL 252 Shakespeare
4 hrs.
A survey of Shakespeare’s art through study of selected tragedies, histories, and comedies.

ENGL 264 News Writing
4 hrs.
Introduction to journalistic principles with an emphasis on writing news stories and learning news style. Students should be able to type.

ENGL 265 News Editing
4 hrs.
Instruction and extensive practical experience in copy editing, rewrite, typography, headline writing, handling wire copy and photographs, and layout. Prerequisite: ENGL 264 News Writing.

ENGL 266 Writing Fiction and Poetry
4 hrs.
Study and practice in writing of fiction and poetry, intended to develop the student’s understanding of formal techniques and skill in the use of these techniques.

ENGL 282 Children’s Literature
4 hrs.
An exploration of the human and literary values in the best of children’s books. Emphasis is on critical sensitivity and techniques necessary for interpreting and evaluating works representative of the major forms of children’s literature—folk tale, fairy tale, fantasy, fiction and non-fiction, myth and poetry.

ENGL 283 Literature for Adolescents
4 hrs.
Critical analysis of those genres read by youth from twelve to sixteen: fiction (especially that of maturation, adventure, history, and fantasy), drama, poetry, myth and legend, biography, and other non-fiction.

ENGL 305 Practical Writing
4 hrs.
A practical course for juniors and seniors who wish to develop their skills in writing. Emphasis is on understanding the writing forms of non-fictional prose such as research papers and reports; personal writing, and pre-professional writing (for students planning careers in business, social service, industry, law, the arts, or other professions). Topics vary and will be announced each year. May be repeated for credit, but may be counted only once toward fulfillment of General Education requirements, and counted only once for major/minor credit, except for the practical writing minor.

ENGL 307 Good Books II
4 hrs.
An advanced version of ENGL 107 Good Books, more challenging books for more experienced readers. No prerequisite. Does not count toward English major or minor.

ENGL 310 Literary History and Criticism
4 hrs.
Discussion of important topics and problems, both historical and critical, involved in the systematic study of literature. Emphasis includes study in the chronology of English literature, its development and continuity, and an introduction to the nature and uses of formal literary criticism. Prerequisite: ENGL 110.

ENGL 311 Perspectives Through Literature
4 hrs.
Exploration of an important realm of human nature and action through the special perspective provided by literature. The literary perspectives may be supplemented by materials from other arts or disciplines. Topics are A. The Quest for the Self, B. Science Fiction and Fantasy, C. Man’s Place in Nature. A non-technical course for the general student rather than the student specializing in the study of literature; does not count as credit towards an English major or minor.

ENGL 312 Western World Literature
4 hrs.
Study of works selected from the Western literary tradition, excluding those from Great Britain and the U.S.A. Selections may range from biblical literature and great works of Greece and Rome through classics of the Middle Ages and Renaissance to major works of the present. Works will be studied in English. Approved for General Education under Area I.

ENGL 313 Asian Literature
4 hrs.
Study of works selected from the great literature of Asia, especially the Chinese, Japanese, and Indian traditions. Works will be studied in English. Approved for General Education under Area IV (Non-Western World).

ENGL 314 African Literature
4 hrs.
Study of works selected from the great literature of Africa, including both traditional and contemporary material. Works will be studied in English. Approved for General Education under Area IV (Non-Western World).

ENGL 315 The English Bible as Literature
4 hrs.
Study of selections from the Old and New Testaments and the Apocrypha. Some attention will be given to the influence of the English Bible on a few representative writers, musicians, and artists, but emphasis will be on the poetic, philosophical, and narrative elements of the Bible itself.
ENGL 322 American Literature: Major Writers
4 hrs.
Intensive reading of representative works of major American writers. Prerequisite: ENGL 110.

ENGL 340 Development of English Verse
4 hrs.
A historical study of English poetry, from its beginning to the present, emphasizing the development of poetic techniques, major verse forms and styles, and their relation to theories of poetry. Prerequisite: ENGL 110.

ENGL 363 Reporting
4 hrs.
Instruction and practice in covering news beats, writing complex news stories, and developing good interviewing skills. Prerequisite: ENGL 264.

ENGL 364 Feature and Article Writing
4 hrs.
Study and practice in writing feature and magazine articles; attention to contemporary techniques and styles in documentary and personal reportage. Prerequisite: A previous college-level writing course.

ENGL 365 Reviewing for the Press
4 hrs.
Theory and practice in reviewing books, drama, films, television, concerts, and exhibitions for various kinds of mass-audience publications. Prerequisite: Previous course work in journalism, creative writing, literature, or media.

ENGL 366 Advanced Fiction Writing
4 hrs.
An advanced course in the writing of fiction, with emphasis on class discussion and criticism of each student’s writing. Prerequisite: ENGL 266 or permission of the department.

ENGL 367 Advanced Poetry Writing
4 hrs.
An advanced course in the writing of poetry, with emphasis on class discussion and criticism of each student’s writing. Prerequisite: ENGL 266 or permission of the department.

ENGL 368 Playwriting
4 hrs.
An introductory course in the writing of drama, with class discussion and criticism of each student’s writing, and including study of selected examples of drama in print and in production. Prerequisite: ENGL 266 or permission of the department.

ENGL 369 Writing for Elementary Teachers
4 hrs.
A course intended to develop the writing skills of prospective teachers and to explore the means by which the writing ability of elementary school children can be encouraged, developed, and evaluated.

ENGL 371 The English Language
4 hrs.
This course will examine the structure of the English language as a tool for understanding choice of style, for reflecting human diversity through the impact of historical as well as of cultural change, and for understanding language acquisition.

ENGL 372 Development of Modern English
4 hrs.
A course in the history of the language treating the historic and linguistic forces which have affected pronunciation, grammar, and vocabulary.

ENGL 373 Reading and Writing as Psycholinguistic Processes
4 hrs.
A study of the processes of reading and writing English as these are explained by developments in linguistics and psycholinguistics. Particular attention is paid to the degree of complexity in sentence structure as it affects writing maturity, writing style, and reading.

ENGL 375 Acquisition of Literacy and the Early Elementary Child
4 hrs.
This course focuses on the psycholinguistic nature of the reading and writing process, emphasizing how literacy builds upon oracy. Particular attention is paid to literature for the young child and to how children’s literature can further the acquisition of literacy. Deals with the child from birth through seven years. (This course is required for the integrated language arts minor.)

ENGL 376 Acquisition of Literacy and the Later Elementary Child
4 hrs.
This course focuses on the psycholinguistic nature of the reading and writing processes, emphasizing how children can be helped to develop their reading and writing abilities. Particular attention is paid to literature for children and how that literature can further not only their reading and writing but also their development of artistic and human values. Deals with the child from seven through twelve years. (This course is required for the integrated language arts minor.)

ENGL 379 Writing for the Secondary Teacher
4 hrs.
A course developing the abilities of prospective teachers to control language in the writing process and exploring means by which the writing ability of secondary students can be encouraged, developed, and evaluated.

ENGL 380 Teaching of Literature in the Secondary Schools
4 hrs.
A study of techniques and theories of teaching literature to young adults. Prerequisite: ED 301 Teaching and Learning—Secondary. Students in the elementary education curriculum must obtain permission from a department adviser before enrolling in this course. Does not count as credit toward the major or minor.

ENGL 410 Special Topics in Literature
4 hrs.
A study in historical perspective of selected literary works of the English speaking world or international literature in translation. May be repeated for credit as long as the topics are different. Prerequisite: ENGL 110 or permission of the department.

ENGL 416 Women in Literature
4 hrs.
A study of literature of different periods and cultures to identify the images of women and to interpret the search for self as experienced by women protagonists and women writers. Prerequisite: ENGL 110.

ENGL 442 Modern Drama
4 hrs.
Studied in the major styles and forms of modern drama from Ibsen to the present. Prerequisite: ENGL 110.

ENGL 452 Shakespeare Seminar*
4 hrs.
Intensive study of selected aspects of Shakespeare’s poetic and dramatic art. Prerequisite: ENGL 110 or 252.

ENGL 461 Form in Non-Fiction
4 hrs.
A literary analysis of the form and development of non-fiction. Prerequisite: ENGL 110.

ENGL 462 Advanced Writing
4 hrs.
Practice in writing articles, essays, biographical and critical prose, with emphasis on development of the student’s individual style and elimination of obstacles to clear and vital expression.

ENGL 463 Reporting Community Affairs
4 hrs.
Practice in the covering and reporting of the police, the courts, and other governmental units. Some stress on investigative and in-depth reporting. Prerequisites: ENGL 264 and 363.

ENGL 464 Professional Writing
4 hrs.
Practice in developing the forms and techniques of writing, editing, and researching required in business, industry, and government. Students should take this course as their capstone experience in practical writing. Prerequisite: two writing courses.

ENGL 466 English Honors Seminar
4 hrs.
Special studies in selected topics. Open only to majors working for honors in English, or by permission of the instructor.

ENGL 477 Studies in English: Variable Topics
1-3 hrs.
Group study of special topics in literature, film, English language, and writing. May of these special courses are organized around special events or speakers on campus or in the community, or in response to special needs or interests of students. Some topics are announced in the schedule of classes, some are added during the semester. Further information and full listing of topics may be obtained from the English Department, sixth floor Srai Tower.

ENGL 510 Special Topics in Literature
4 hrs.
Study of a literary movement, theme, or genre, such as classicism, the Arthurian tradition, the lyric. May be repeated for credit as long as the topics are different. Prerequisite: ENGL 110 or permission of the department.

ENGL 530 Medieval Literature*
4 hrs.
Readings in the medieval literary tradition. Some Middle English works will be studied in the original; works in Old English and continental literature will be mainly in translation. Prerequisite: ENGL 110.

ENGL 532 English Renaissance Literature*
4 hrs.
Readings in representative writers of the period 1500-1660. Prerequisite: ENGL 110.

ENGL 534 Restoration and 18th Century Literature*
4 hrs.
(British Literature 1660-1800) Readings in representative writers of the period, focusing on the diversity of literary forms in the period. Prerequisite: ENGL 110.

ENGL 536 Nineteenth Century British Literature*
4 hrs.
Readings in representative writers focusing on one or more principal movements of the century. Prerequisite: ENGL 110.

ENGL 538 Modern Literature*
4 hrs.
Readings in representative writers in the period 1890-1945, not exclusively in British and American literature. Prerequisite: ENGL 110.

ENGL 540 Contemporary Literature*
4 hrs.
Readings in representative writers who have come to prominence chiefly since 1945. Prerequisite: ENGL 110.
ENGL 544 The British Novel* 4 hrs.
A study of the novel as a literary form reflecting, in its development and diversity, changes in human consciousness. Emphasis will be on development of the British novel from the eighteenth to the early twentieth century. Prerequisite: ENGL 110.

ENGL 555 Studies in Major Writers* 4 hrs.
Study of the works of classical, European, British or American writers. Limited to one or two authors. Prerequisite: ENGL 110.

ENGL 566 Creative Writing Workshop 4 hrs.
A workshop and conference course in the writing of poetry, fiction, or drama, with emphasis on refinement of the individual student’s style and skills. May be repeated for credit. Prerequisite: Six hours of creative writing, graduate standing, or permission of the department.

ENGL 572 American Dialects 4 hrs.
A study of regional, social, and stylistic variation among American dialects, with emphasis on the dialects of minority ethnic groups as structured systems.

ENGL 574 Linguistics for Teachers 4 hrs.
An application of the concepts of linguistics to the teaching of language, literature, composition and reading in the English curriculum. Prerequisite: ENGL 371, 373, or an introduction to linguistics course, or permission of the department.

ENGL 582 Studies in Children’s Literature 4 hrs.
A study in depth of significant themes, movements, types in children’s literature. Prerequisite: ENGL 282 or permission of the department.
Only one of the three courses 282, 283, 582 may be counted toward the elementary education English minor, and only two of these three courses may be counted toward the elementary education English major.

ENGL 597 Studies in English: Variable Topics 1-3 hrs.
Group study of special topics in literature, film, English language, and writing. Many of these special courses are organized around special events or speakers on campus or in the community, or in response to special needs or interests of students. Some topics are announced in the schedule of classes, some are added during the semester. Further information and full listing of topics may be obtained from the English Department, sixth floor Sprau Tower.

ENGL 598 Readings in English 1-4 hrs.
Individual reading project available to advanced students by special permission from the appropriate departmental adviser (undergraduate or graduate) and the staff member who will supervise the study.
Normally, permission is granted only to students who have well thought-out projects dealing with authors or materials not being covered currently in the schedule. Permission is usually not granted to students who want to use the course simply to get one or two hours credit to complete an English major or minor.

ENVIRONMENTAL STUDIES PROGRAM
See “Interdisciplinary Programs” in the College of Arts and Sciences.

FRENCH
See “Languages and Linguistics” in the College of Arts and Sciences.

GEOGRAPHY
Eldor C. Quandt, Chair
David G. Dickason
Val L. Eichenlaub
Rainer R. Erhart
Charles F. Heller
Eugene C. Kirchherr
Philip P. Mickin
Henry A. Raup
Hans J. Stolle
Joseph P. Stoltman
George Vuich

These programs are designed to provide students with an improved understanding of humanity’s physical and cultural surroundings and the interrelations of these. Students are prepared through geography as a physical and social science for careers in such diverse fields as urban and regional planning, cartography, environmental studies and analysis, teaching in elementary and secondary schools, and tourism and travel. A program is also available for those who desire to continue in graduate studies.
A core of three courses (GEOG 105, 205, 203) are required of majors. A non-teaching major in geography with specialization provides for a minimum of 32 hours. It is recommended that 6 additional hours of work from the complementary disciplines be taken in support of the area of specialization. An internship for variable credit (GEOG 412) may be arranged in this program. For those who intend to pursue graduate work, it is recommended that courses in mathematics and foreign languages be considered as electives.
The department will accept, toward the major or minor, credits earned at community and junior colleges which correspond to the 100-, 200-, 300-level offered by this department. However, transfer students should meet with the undergraduate adviser as soon as possible in order to finalize their program and avoid the danger of duplication of course work. Courses taken on a Credit/No Credit basis may not be counted toward the major except with the approval of the department chairperson. An honors program is available for students so recommended by members of the faculty of the Department of Geography. Students are invited to call at Room 317, Wood Hall (phone 383-1839) for information concerning the departmental major, minor, honors program, or financial assistance.

Geography Major
32 hours credit
105 Physical Geography 4 hrs.
203 Geographic Inquiry 3 hrs.
205 Human Geography 3 hrs.
265 Map, Chart, and Air Photo Reading 3 hrs.
Two courses from Group I at the 200 level or above
One course from Group II
One course from Group III

Geography Minor
20 hours credit
105 Physical Geography 4 hrs.
or
205 Human Geography 3 hrs.
and
One of the following: GEOG 203, 265, 375, 566, or 582
Remaining courses to be selected with consent of adviser.
Geography Major

Specialization

32 hours credit

The areas of specialization are: urban and regional geography, environmental management, regional planning, economic geography, and regional geography. A program of courses is provided for each of these areas.

This major is focused upon courses designed to meet a student's particular needs. An intern will wish to gain practical experience. This can be done by either assisting faculty in research or by working in an approved off-campus agency. It is recommended that 6 additional hours of work from complementary disciplines be taken in support of the area of specialization.

105 Physical Geography 4 hrs.
203 Geographic Inquiry 3 hrs.
205 Human Geography 3 hrs.
265 Map, Chart, and Air Photo Reading 3 hrs.

Remaining courses must be selected with consent of adviser.

Science and Mathematics Teaching Minor

The Department of Geography participates in the science and mathematics teaching minor for students in the elementary curriculum. For a full description of the program, consult its listing under the "Interdisciplinary Programs" section in the College of Arts and Sciences.

Science Credit

This can be done by either assisting faculty in research or by working in an approved off-campus agency. It is recommended that 6 additional hours of work from complementary disciplines be taken in support of the area of specialization.

105 Physical Geography 4 hrs.
203 Geographic Inquiry 3 hrs.
205 Human Geography 3 hrs.
265 Map, Chart, and Air Photo Reading 3 hrs.

Secondary Education—Geography Major

32 credit hours

105 Physical Geography 4 hrs.
203 Geographic Inquiry 3 hrs.
205 Human Geography 3 hrs.
265 Map, Chart, and Air Photo Reading 3 hrs.

Remaining courses must be selected with consent of adviser.

Science and Mathematics Teaching Minor

The Department of Geography participates in the science and mathematics teaching minor for students in the elementary curriculum. For a full description of the program, consult its listing under the "Interdisciplinary Programs" section in the College of Arts and Sciences.

Science Credit

This can be done by either assisting faculty in research or by working in an approved off-campus agency. It is recommended that 6 additional hours of work from complementary disciplines be taken in support of the area of specialization.

105 Physical Geography 4 hrs.
203 Geographic Inquiry 3 hrs.
205 Human Geography 3 hrs.
265 Map, Chart, and Air Photo Reading 3 hrs.

Remaining courses must be selected with consent of adviser.

Secondary Education—Geography Minor

20 credit hours

105 Physical Geography 4 hrs.
205 Human Geography 3 hrs.
460 Concepts and Strategies in the Teaching of Geography 3 hrs.
311 Geography of Michigan 3 hrs.
380 United States and Canada 3 hrs.

Courses by topic

Systematic Geography

100 World Ecological Problems and Man 3 hrs.
102 World Geography Through Media and Maps 3 hrs.
405 Physical Geography 4 hrs.
204 National Park Landscapes 3 hrs.
205 Human Geography 3 hrs.
225 Introduction to Meteorology and Climatology 3 hrs.
237 Environmental Earth Science 3 hrs.
244 Geographic Patterns of Economic Activity 3 hrs.
306 The Atmosphere and Environment of the Antarctic 3 hrs.
356 Introduction to City and Regional Planning 3 hrs.
408 Geography of Travel and Tourism 3 hrs.
521 Studies in Climatology and Meteorology 3 hrs.
544 Studies in Economic Geography 3 hrs.
553 Water Resources Management 3 hrs.
554 Outdoor Recreation: Resources and Planning 3 hrs.
555 Contemporary Issues in Resources Management 3 hrs.
556 Studies in Urban and Regional Planning 3 hrs.
557 Environmental Impact Assessment 3 hrs.
570 Cities and Urban Systems 3 hrs.

Regional Geography

369 Studies in Regional Geography 3 hrs.
311 Geography of Michigan 3 hrs.
380 United States and Canada 3 hrs.
381 South America 3 hrs.
382 Mexico and the Caribbean 3 hrs.
383 Western and Southern Europe 3 hrs.
384 Soviet Peoples and Landscape: Continuity and Change 3 hrs.
385 The Pacific Realm 3 hrs.
386 Sub-Saharan Africa 3 hrs.
387 East Africa 3 hrs.
389 Monsoon Asia 3 hrs.
390 The Middle East and North Africa 3 hrs.
391 North America 3 hrs.
392 Europe and Western Asia 3 hrs.
393 Australia, New Zealand, and the South Pacific 3 hrs.
394 East Asia 3 hrs.
395 South America 3 hrs.
396 Latin America 3 hrs.
397 Sub-Saharan Africa 3 hrs.
398 Monsoon Asia 3 hrs.
399 The Middle East and North Africa 3 hrs.

Tourism and Travel Major

32 credit hours

The tourism and travel major is designed for students planning to pursue careers in the tourism and travel industry. Application is required for acceptance to this major. An application form is available from the Undergraduate Adviser, Department of Geography, Room 321 Wood Hall, Western Michigan University, Kalamazoo, Michigan 49008.

Geography Courses (GEOG)

(Courses described in italics are approved for General Education.)

GEOG 100 World Ecological Problems and Man 4 hrs.
(Science credit) Geographers have long been concerned with studying the interactions between human beings and the environment. The major focus of these investigations today is concerned with misuse of the environment, which has led to the present day environmental crisis. The introductory course combines scientific and non-technical appraisals of processes and problems dealing with the question of environmental quality. Therefore, humanity will be studied in the physical as well as the social setting. Though major issues may vary for developing and developed nations, topics concerned with population pressure, pollution and urbanization will be among those considered.

GEOG 102 World Geography Through Media and Maps 3 hrs.
This course presents an introduction to the geography of the earth. This includes the earth as the home of humans, major urban concentrations, descriptive physical characteristics of continents and countries, political subdivision, and general man-land relationships which reflect cultural preferences. Information delivery will be through textual material with a major concentration of carefully selected audiovisual and map study activities to enhance investigating the character of distant places.

GEOG 105 Physical Geography 4 hrs.
(Science credit) A study of the physical environmental systems of our Earth. The course examines the seasonal and latitudinal distribution of solar energy, analyzes the many elements of weather, climate, vegetation, and soils, and finally considers the earth's major landforms and the processes which shape them. Though each topic is treated separately, this course demonstrates the basic relationships among these topics and points out the human implications in all physical earth systems. Maps, photos, reading, laboratory, and outdoor observation are utilized as primary investigative tools. Laboratory work is an integral part of this course.

GEOG 203 Geographic Inquiry 3 hrs.
Students will be introduced to geography as a field of study, research and professional opportunity. Students will have an opportunity...
to investigate social and environmental problems through data collection, analysis, interpretation, and graphic representation. The emphasis throughout will be on the application of inquiry models to geographic problems.

Prerequisite: CS 105 or equivalent.

GEOG 204 National Park Landscapes 3 hrs.
(Science credit) Introduction to the physical and human landscapes of the national park system. Consideration of those natural and human processes which have produced the distinctive features of the national parks. Evolution of the national park concept, policies, and problems.

GEOG 205 Human Geography 3 hrs.
An introduction to those aspects of geography concerned with the efforts of humans to cope with the environment. Included are population and settlement forms, the utilization of resources, the impact of technology on human occupation of the earth, and the origin and dispersal of cultural elements among the various world regions.

GEOG 225 Introduction to Meteorology and Climatology 4 hrs.
(Science credit) A non-mathematical analysis of atmospheric behavior. The fundamental physical laws affecting the elements of weather—solar radiation, temperature, moisture, pressure, and winds—are examined during the first half of the course. Weather systems and forecasting, atmospheric optics, climatic change, and regional climates are examined during the second half of the course. Laboratory meetings dealing with instrumentation and weather map analysis are an integral part of the course. Prerequisite: GEOG 105 or equivalent.

GEOG 237 Environmental Earth Science 4 hrs.
An interdisciplinary environmentally oriented science offering for students in the Science and Mathematics Teaching minor. The course integrates the environmental aspects of meteorology and geology. The students spend 7 1/2 weeks in environmental geology and 7 1/2 weeks in environmental meteorology. Techniques for presenting the content of the course will model the ways in which environmental earth science can be presented to elementary students. The course is usually taught by cooperating faculty from Geography and Geology.

GEOG 244 Geographic Patterns of Economic Activity 3 hrs.
A survey of locational economic patterns and their interrelationships, including the study of spatial variation in economic development, primary production, energy generation, manufacturing, transportation, service occupations, and trade.

GEOG 265 Map, Chart and Air Photo Reading 3 hrs. (Science credit) Introduction to the fundamental principles that link maps and nature: scale, surface transformations of earth relief and round planet, selection, simplification, and symbolization of data; reference grids and orientation. Methods of map reading, analysis, and interpretation are practiced on maps of different kinds and scales. Air photos and other remotely sensed images and their application are also introduced.

GEOG 306 Atmospheric Environment and Society 3 hrs. (Science credit) An introduction to the physical processes of the earth's atmosphere and their relationship to the human environment. Emphasis on the impact of severe weather. Students should expect to learn data collection, analysis, and interpretation of atmospheric processes. Prerequisite: GEOG 265 or equivalent.

GEOG 380 United States and Canada 3 hrs.
A study of the physical environment north of the Rio Grande followed by an analysis of the spatial structure of the area's population and economy. The bases for the regional differentiation of the USA and Canada is considered, followed by a region-by-region analysis of each of these unique integrations of physical and cultural phenomena.

GEOG 381 South America 3 hrs.
Regional study of the nations of South America with attention to the interrelationships of the physical and cultural environments. Historical background necessary for the present political, social, and economic conditions is included.

GEOG 382 Mexico and the Caribbean 3 hrs.
Systematic consideration of the physical environment of Mexico, Central America, and the West Indies. A problems approach is utilized to reckon with the economic, social, and political trends of the region.

GEOG 383 Western and Southern Europe 3 hrs.
Intensive regional study of those Western European nations situated west of the Iron Curtain. The physical elements (climate, landforms, resources, etc.) are examined and the derivative cultural elements are identified. Emphasis is placed upon the social and economic activities of contemporary Western Europe.

GEOG 384 Soviet Peoples and Landscape: Continuity and Change 3 hrs.
A general examination of the most important aspects of Soviet society and economic development in a spatial framework. Topics discussed include: the physical environment, population distribution and dynamics, the Soviet strategy of economic development (both national and regional), problems of agricultural development, industrial and transport patterns, and problems of environmental deterioration.

GEOG 385 The Pacific Realm 3 hrs.
Selected studies of the relationship between human beings and the environment in Australia, New Zealand, Melanesia, and Polynesia.

GEOG 386 Sub-Saharan Africa: Man, Environment, Resources 3 hrs.
Survey of the principal physical and political patterns of Africa south of the Sahara, followed by studies of the significant elements of the major realms and states, e.g., population distribution, patterns of subsistence and commercial agriculture, status of mineral and power resource development, transportation routes, regional development programs.

GEOG 387 The Middle East and North Africa 3 hrs.
Study of the diversity and uniformity—both physical and cultural—of the Middle East and North Africa north of (and including) the Sahara. Special attention is given to arid land problems, economic development, petroleum, Arab reunification movements, and the impact of the Muslim World on the current political scene.
GEOG 389 Monsoon Asia 3 hrs.
Systematic survey of the physical and human (socio-economic) environments of the southeastern rim of Asia (Pakistan in the west to Japan in the east). Geographical background necessary to interpret present conditions is included.

GEOG 408 Geography of Travel and Tourism 4 hrs.
The student studies global environments and transportation systems to analyze tourism and travel trends and opportunities. An examination of resort areas, tourist frequency patterns to various resorts, cultural opportunities, and perception of places through travel brochures and literature are included in the course. Theoretical assumptions underlying perceptions of place and mental maps of tourism and travel preferences are examined.

GEOG 412 Professional Practice 2-6 hrs.
Provision for an advanced student to benefit by supplementary practical experiences in a particular branch of geography, either by assisting faculty engaged in research or by working in a departmentally-approved off-campus agency. Specific assignments are arranged in consultation with departmental advisers during the semester preceding that in which the student expects to enroll in 412. The student may enroll for one additional semester, but no student will be allowed more than six hours total credit for 412. Prerequisite: Junior standing and consent of Department Chairperson.

GEOG 460 Concepts and Strategies in the Teaching of Geography 3 hrs.
Study of objectives, tools, organization and presentation of material, methods of evaluation, and scrutiny of textual material in the field of geography.

GEOG 521 Studies in Climatology and Meteorology 3 hrs.
(Science credit) Studies at an advanced level in meteorology and climatology. Topics of current interest to atmospheric scientists are examined in depth. Regional climatic phenomena and the relation to atmospheric circulation patterns are also investigated. Prerequisite: GEOG 225 or consent of department.

GEOG 544 Studies in Economic Geography 2-3 hrs.
Presents world patterns of agriculture, manufacturing or transportation which link global production and consumption. In any term, the course focuses upon one of these three economic sectors.

1. Agriculture. Describes and analyzes the distribution of major crops and livestock, and their combinations in common farming operations. The spatial organization of agriculture throughout the time is analyzed for selected areas.

2. Industry. Evaluates the general distribution and locational factors associated with selected industries, giving particular attention both to models of industrial location and to the empirical interrelation of economic, technological, and political elements affecting the locational decision.

3. Transportation. Emphasizes the historical evolution of transport systems in transport and developing nations, transport factors in location theory, techniques of transport analysis, the urban transport problem, and competitive and complementary characteristics of transport modes in differing political systems. Prerequisites: GEOG 205 and GEOG 244 or consent of department.

GEOG 545 Studies in Human Geography 2-3 hrs.
Each course listed under this general title is a concentrated study of one of the principal subdivisions of human geography. The scope and principal themes of each specialized field are reviewed, with consideration given to current research on selected problems. Prerequisite: GEOG 203, or GEOG 205 or GEOG 244, or by consent of instructor. Course may be repeated for credit.

1. Cultural Geography. Techniques of spatial analysis applicable to the study of humans and their environment. The place of origin, diffusion, and present distribution of selected cultural patterns will be traced with emphasis given to cultural traits which strongly influence human occupancy of the earth's surface.

2. Historical Geography. Studies of geographic and related features which have combined to influence the course of historical development. This course will concentrate on a particular region and/or period of time during each semester in which it is offered. Each specialization will be designated in the class schedule.

3. Political Geography. General survey of the principles and the applied aspects of political geography, primary emphasis on the physical and cultural resource bases and conflicts of national states, the assessment of the location, boundary delimitation and the territorial sea, politically-organized territories within the administrative hierarchy, and electoral geography.

GEOG 553 Water Resources Management 3 hrs.
(Science credit) Examination of water resources management with emphasis upon rational development and utilization of available supplies. Topics include supply and demand, methods of supply augmentation (desalinization, inter-basin transfers), water administration and policies, and various water problems together with their solutions.

GEOG 554 Outdoor Recreation: Resources and Planning 3 hrs.
(Science Credit) Examination of extensive, resource-based outdoor recreation (such as parks, wilderness, wild rivers, hunting and fishing, hiking, etc.) with emphasis upon recreational planning. Topics include supply and demand, outdoor recreation, identification of present and future recreational needs, policy considerations, administration of recreational land uses, and various problems associated with outdoor recreation. Readings, discussion, and student-designed and executed individual studies provide professional orientation.

GEOG 555 Contemporary Issues in Resources Management 3 hrs.
(Science credit) Examination of selected contemporary natural resource and environmental problems, such as questions of natural resource adequacy, environmental pollution, energy shortages, political and economic problems related to resource management, and individual studies of local environmental problems. Prerequisite: GEOG 350 or consent.

GEOG 556 Studies in Urban and Regional Planning 3 hrs.
Each of the courses listed under this number focuses on a major aspect of planning, including a review of the objectives of the planning process, legislation pertaining to planning operations, and methods of field and library investigation required for analysis and policy formulation in matters related to planning.

1. Urban Planning and Zoning. A survey of American planning thought and practice: the background of planning and zoning in American municipalities; traditional and contemporary approaches to the comprehensive plan; elements of land use and transportation planning; the legal foundations of zoning, and the organization of the planning agency.

2. Regional Planning. Organization and plans of regional development programs.

3. Public Lands and Parks. Specific programs and policies relating to the preservation and/or development of government-controlled lands. Prerequisite: GEOG 350 or consent of department.

GEOG 557 Environmental Impact Assessment 3 hrs.
(Science credit) Alteration of the natural and human environment for perceived economic and social benefits often has significant adverse consequences. Recognition of this problem is reflected in federal, state, and local laws and regulations requiring environmental impact statements. This course provides an introduction to the analysis and preparation of environmental impact statements. Prerequisites: Senior standing and GEOG 350 or permission.

GEOG 566 Field Geography 2-4 hrs.
The theory and application of geographic techniques and instruments. Field investigations: collection and analysis of field data, preparation and presentation of materials. The course is based primarily upon field observations. Prerequisite: GEOG 265 or 375, and 582, or consent of department.

GEOG 567 Computerized Geodata Handling and Mapping 4 hrs.
Principles and procedures involved in structuring and using computerized geographic data systems (applicable to land use analysis, impact assessments, and urban and regional planning), and in representing these data by computer mapping methods. Equivalent applications of these methods will be made to both microcomputers and larger main-frame computer systems. Prerequisite: Senior or graduate standing.

GEOG 568 Quantitative Methodology 3 hrs.
The application of quantitative concepts and methods to the solution of geographic problems. Critical review of research in quantitative geography, ranging from the use of common statistical techniques to alternate methods of model formation and the analysis of spatial problems. Prerequisite: GEOG 567 or the consent of department.

GEOG 570 Cities and Urban Systems 3-4 hrs.
Study of processes and forms of urban settlement highlighting problems relating to (1) political and geographical realities or urbanized regions, (2) factors in city growth (or decline), (3) the sizes, functions, and geographical distribution of cities, and (4) population patterns in contemporary cities. Activities are designed to provide the student with experience in the use of source materials and methods of analysis utilized in urban geography.
GEOG 580 Advanced Cartography 4 hrs. (Science credit) A review of current trends and the-art map design, multicolor production, photoreproduction, and computer-assisted mapping. It is recommended that GEOG 567 be taken before 580. Prerequisite: GEOG 375 or equivalent.

GEOG 582 Remote Sensing of the Environment 3 hrs. (Science credit) The student will acquire proficiency in the fundamental techniques and skills of photogrammetry and photo-interpretation during the first part of the course. The remainder of the semester will be spent in interpreting photos dealing with such topics as geomorphology, archaeology, vegetation and soils, water resource, rural and urban land use as well as topics adapted to the interest and anticipated future work of the student.

GEOG 597 Readings in Geography 1-3 hrs. Prerequisite: Consent of departmental counselor. Repeatable.

GEOLOGY

John D. Grace
Lloyd J. Schmaltz, Chair
William B. Harrison, III
W. Thomas Straw

GEOL 130 Physical Geology .......... 4
GEOL 131 Earth History and Evolution .4
GEOL 335 Mineralogy .......... 4
GEOL 336 Optical Mineralogy .......... 3
GEOL 430 Structural Geology .......... 3
GEOL 433 Invertebrate Paleontology ...... .4
GEOL 440 Petrology and Petrography .... 3
GEOL 532 Surficial Processes and Groundwater Geology .......... 4
GEOL 535 Sedimentation and Stratigraphy .... 3
GEOL 560 Introduction to Geophysics .... 3

A minimum of a "C" is required in each of the required Geology courses, and a "C" average in all cognate courses.

Supporting required courses
CHEM 101 or 102 and 120, PHYS 110 and 111, or 210 and 211, BIOL 101 or as arranged by counselor, and MATH 122 and 123 and CS 105 Introduction to Computers. Some modification of these requirements may be made in consultation with the student’s departmental counselor. A summer field course in geology is strongly recommended for all geology majors and is indispensable for students planning professional careers. In addition, at least one year of foreign language is recommended.

Geology majors should elect minors of mathematics, computer science, chemistry, physics, or biology. Students electing one of the above minors must still complete all other supporting required courses. Students not electing one of the above minors may elect the group science minor for majors (see below).

Suggested 4-year program of study for geology majors including all required supporting courses.

Freshman Year
Fall
GEOL 130
MATH 122
(Students with insufficient high school mathematics may have to take MATH 118 prior to 122.)
Winter
GEOL 131
MATH 123
BIOL 101

Sophomore Year
GEOL 335
CHEM 101 or 102
GEOL 433
CHEM 120

Junior Year
GEOL 336
GEOL 430
PHYS 210 or 110

Geology Minor
Minimum 18 Hours
The geology minor is designed as a supporting minor for students preparing to do professional work in the fields of chemistry, physics, engineering, zoology, botany, and geography. It cannot be combined with earth science as a major-minor or double minor relationship. A student may design a geology minor for his/her specific need.

Required Courses
GEOL 130 Physical Geology .......... 4
GEOL 131 Earth History and Evolution .4
One of the following options is recommended:
GEOL 335 Mineralogy .......... 4
GEOL 336 Optical Mineralogy .......... 3
GEOL 440 Petrology/Petrography .... 3
GEOL 301 Minerals and Rocks .......... 3
GEOL 433 Invertebrate Paleontology ..... 4
6 additional hours in geology .......... 6

Course substitution from other geology offerings can be made with the consent of counselor (e.g., a geography major minor in geology might elect Surficial Processes and Groundwater Geology, or Glacial Geology).

Geophysics Major
The Geology and Physics Departments offer a program of study leading to a major in geophysics. Students choosing this program of study are also required to take mathematics courses which correspond to a minor in mathematics. Students contemplating a geophysics major should contact the Geology Department as early as possible for advising.

Total Major Hours: 44-49

Major Core: 35-38
Geology (GEOL) (17 hours)
GEOL 130 Physical Geology .......... 4
GEOL 131 Earth History and Evolution .4
GEOL 301 Minerals and Rocks .......... 3
GEOL 430 Structural Geology .......... 3
GEOL 560 Introduction to Geophysics .... 3

Physics (PHYS) (15-16 hours)
GEOL 210 Mechanics and Heat .......... 4
GEOL 211 Electricity and Light .......... 4
GEOL 212 Introductory Modern Physics .... 4
GEOL 342 Electronics ....
GEOL 344 Microprocessor Electronics .... 3

One of the following (3-4 hours)
GEOL 330 Thermodynamics and Kinetic Theory ....
GEOL 352 Optics .......... 4
GEOL 540 Electricity and Magnetism I .... 3

Electives (9-12 hours)
Three electives from upper-level geology, physics, and engineering courses to be chosen with consent of adviser (9-12 hours).
Earth Science: Non-Teaching Major and Minor

The non-teaching earth science major and minor program is a broad and flexible course of instruction for students anticipating careers in conservation and related professions, state and federal parks and planning agencies. The program is interdisciplinary in nature and offers students an opportunity to select earth science and related courses from the Departments of Geology, Engineering, Biology, Geography, Chemistry, Physics, and others. Courses are selected in consultation with the earth science advisor in order to design programs that will satisfy students' needs and professional objectives. A complete list of approved courses is available from the Department of Geology. A minimum of 15 credit hours in Geology is required for a major and 10 credit hours for a minor including GEOL 130, 131 and 301 and/or 339.

Science and Mathematics Teaching Minor

The Department of Geology participates in the science and mathematics teaching minor for students in the elementary curriculum. For a full description of the program, consult its listing under the "Interdisciplinary Programs" section in the College of Arts and Sciences.

Geology Courses (GEOL)

(Courses described in italics are approved for General Education)

GEOL 100 Earth Studies 4 hrs. Fall, Winter, Spring

Students are introduced to the materials of which the earth is made, to the processes which have created the earth as we know it and to the geological hazards which affect our lives. Included are such topics as rocks and minerals, earthquakes and the structure of the earth, water occurrences and resources, glaciers, volcanoes, oceanography, mineral resources and fossil fuels, plate tectonics and continental drift, and the origin and evolution of life. Students intending to major or minor in earth science or related sciences should take GEOL 130.

GEOL 107 Planetary Science in Elementary Education 4 hrs. Fall, Winter

An interdisciplinary study of the earth, atmosphere, solar system and universe, and their relationships and interactions. Taught by cooperating faculty from four departments, the course will provide a survey of geology, meteorology and climatology, and astronomy. Students will study each of the three topics for five weeks with different instructors. Classes will be limited to 30 students in order that instructors may use techniques which emphasize the relevancy of their disciplines in elementary education and its significance in the present and future lives of children. (No prerequisites) Not recommended for science majors.

GEOL 129 Physical Geology Laboratory 1 hr.

A laboratory experience covering minerals and rocks, and the interpretation of topographic and geologic maps. Prerequisite: Minimum 3 hours of nonlaboratory geology.

GEOL 130 Physical Geology 4 hrs. Fall, Winter, Spring

A study of the common rocks and minerals and the geologic processes acting upon these materials that form the structure and surface features of the earth. Three lectures and a two-hour laboratory period.

GEOL 131 Earth History and Evolution 4 hr. Fall, Winter, Spring

Geologic time, evolution of prehistoric life, and principles of earth history with case examples from North America. Prerequisite: GEOL 130 or consent of department.

GEOL 237 Environmental Earth Science 4 hrs.

An interdisciplinary environmentally oriented science offering for students in the Science and Mathematics Teaching minor. The course integrates the environmental aspects of meteorology and geology. The students spend 7-1/2 weeks in environmental geology and 7-1/2 weeks in environmental meteorology. Techniques for presenting the content of the course provide the ways in which an environmental earth science can be presented to elementary students. The course is taught by cooperating faculty from Geography and Geology. Prerequisite: GEOL 107.

GEOL 300 Oceanography 3 hrs. Fall, Winter, Spring

Survey of oceanographic sciences including physical, chemical, biological, and geological oceanography. Lecture 3 hours a week.

GEOL 301 Minerals and Rocks 3 hrs. Winter

A one semester course covering hand specimen mineralogy and petrology, includes introduction to crystallography, physical and chemical properties of minerals, and rock description and genesis. Will not count toward a major in geology. Prerequisite GEOL 100 or 130.

GEOL 312 Geology of the National Parks and Monuments 2-3 hrs.

A study of the origin of geologic features and the development of landscapes through geologic time in selected National Parks and Monuments. Students will be expected to read extensively in the available literature. Lecture 2 hours per week (2 credits).

GEOL 335 Mineralogy 4 hrs. Fall

Introduction to crystallography, crystal chemistry, and determinative mineralogy. Physical and chemical properties, occurrence, uses and determination of about 100 minerals. Lecture 3 hours a week. Laboratory 3 hours a week. Prerequisite: GEOL 100 or 130 and General Chemistry or consent of department.

GEOL 336 Optical Mineralogy 3 hrs. Fall

Principles and methods of optical crystallography. Study of minerals in crushed grains and in thin sections. Lecture 2 hours a week. Laboratory 3 hours a week. Prerequisite: GEOL 335 (may be taken concurrently).

GEOL 430 Structural Geology 3 hrs. Fall

Development of rock structures and mechanics of rock deformation. Structural interpretation of geologic maps, cross sections, and aerial photographs. Lecture 2 hours a week. Laboratory 2 hours a week. Prerequisites: GEOL 131 or consent of department.

GEOL 433 Invertebrate Paleontology 4 hrs. Winter

Morphology, classification, evolution, and stratigraphic distribution of major invertebrate fossil groups. Three lectures and a three-hour laboratory. Prerequisite: GEOL 131 or consent of department.
GEOL 434 Problems in Geology
1-3 hrs.
Intensive reading and research on a topic in geology under the direction of a member of the geology faculty. Prerequisite: 16 hours in Geology and permission of department.

GEOL 440 Petrology and Petrography
3 hrs. Winter
Classification, origin, and description of igneous, sedimentary, and metamorphic rocks. Laboratory study of rocks and thin sections. Lecture 3 hours a week. Laboratory 3 hours a week. Prerequisite: GEOL 336.

GEOL 502 Problems in Geology and Earth Science
1-3 hrs. Fall, Winter
Individual problems involving topical reading and/or research problems in earth sciences. May be repeated for credit. Prerequisite: Consent of department.

GEOL 520 Economic Geology
3 hrs.
Origin, occurrence, and utilization of metallic and non-metallic mineral deposits, and mineral fuels. Lecture 3 hours a week. Prerequisite: GEOL 335, or consent of department.

GEOL 530 Plate Tectonics and Earth Structure
3 hrs. Fall
Major tectonic features and internal structure of the earth in relation to plate tectonics, critical examination of the tenets of plate tectonics. Prerequisites: GEOL 131, 301 or 335.

GEOL 532 Surficial Processes and Ground-water Geology
3 hrs. Winter
Detailed consideration of fluvial, eolian, and glacial processes and the geological aspects of surface water and ground-water hydrology. Qualitative and quantitative aspects of ground-water movement, location, and evaluation and the influences of man on the hydrologic system. Prerequisite: GEOL 130.

GEOL 533 Sedimentation and Stratigraphy
4 hrs. Fall
Processes, characteristics, and relationships among fluvial, deltaic, strand plain, lagoon, shelf, and slope tergenous depositional systems. Laboratory includes textural analysis, sedimentary structures, paleocurrent analysis, electric logs, subsurface maps, and application of statistical and computer methods to the solution of sedimentologic problems and basin analysis. Course includes a 3-day field trip. Three lectures and one three-hour laboratory per week. Prerequisite: GEOL 131.

GEOL 536 Glacial Geology
3 hrs. Spring
A study of the mechanics of glacier movement, processes of glacial erosion and deposition, and the distribution of glacial features in space and time. Special emphasis will be placed on the glacial geology of the Great Lakes area. Prerequisites: GEOL 131 and consent of department.

GEOL 539 Field Studies in Geology
1-6 hrs.
Field study of specific subjects in geology. Subject offered will be announced in advance and selected from field mapping, stratigraphy and sedimentation, and regional geology. GEOL 539 is required in the Earth Science teaching major and is normally taught the two weeks of summer prior to the fall semester. Students planning to take this course should consult the Earth Science Department for guidance. Prerequisite: Eight hours of geology, earth science, or consent of department.

GEOL 543 Paleocology
3 hrs.
Study will include the ecology, life, habits and environmental interactions of ancient organisms. Prerequisite: GEOL 433 or BIOL 541.

GEOL 544 Environmental Geology
3 hrs. Fall
Geology related to human affairs and land use planning. Includes representation of properties of earth materials, waste disposal systems, slope stability, floods, erosion and sedimentation, land subsidence, volcanic hazards, earthquakes, and urban geology. Field trips required. Prerequisite: GEOL 131 or consent.

GEOL 545 Carbonate and Evaporite Depositional Systems
3 hrs.
Processes, characteristics, and relationships of modern and ancient platform and basinal carbonate and evaporite facies. Course includes an 11-day field trip (Spring Vacation) to investigate Holocene, Pleistocene, and Tertiary carbonate environments and facies in Florida, and a 3-day trip to northern Indiana and Ohio to examine Silurian Platform carbonates. Student projects include logging description and interpretation of core and slab at the mesoscopic level. Two 2 hour meetings per week. Prerequisites: GEOL 433, GEOL 535 and consent.

GEOL 560 Introduction to Geophysics
3 hrs. Winter
Seismology, gravity, geomagnetism, electrical resistivity, and heat measurements applied to the determination of the internal structure of the earth. Two lectures and 3 hr. practical laboratory and field exercises and problems. Prerequisites: GEOL 560, CS 306, and MATH 123.

GEOL 562 Gravity and Magnetic Methods
3 hrs.
Potential field methods as used in mining and petroleum exploration, for geologic mapping, and groundwater problems. Analytical solutions, numerical modeling, and other interpretational techniques. Prerequisites: GEOL 560, CS 306, and MATH 123.

GEOL 563 Electrical Methods
3 hrs.
Resistivity sounding and profiling, induced polarization, spontaneous potential, electromagnetic methods using natural and artificial fields. Two lectures and 3 hr. laboratory with field studies and laboratory modeling. Prerequisites: GEOL 560, CS 306, MATH 123, and PHYS 540 (recommended).

GEOL 564 Field Geophysics
3 hrs.
Field studies demonstrating the use of seismic reflection, gravity, and electrical resistivity methods for geologic geology and ground-water problems in the Kalamazoo area. Course also includes 1-week trip to Michigan’s Upper Peninsula to apply magnetic, self potential, electromagnetic, and gravity methods in Precambrian terrain. Prerequisite: GEOL 560.

HISTORY

Ernst A. Breisach, Chair
George T. Beech
Alfred S. Brown
Richard T. Burke
Albert E. Castel
Sherwood S. Corrier
Ronald W. Davis
George M. Dennison
Rosa Gregory
Robert J. Hjhn
H. Nicholas Hanner
Graham P. Hawks
John T. Houdek
Paul L. Maier
Andrew C. Nahm
Emanuel Nodel
Dale P. Patterson
Peter Schmitt
Judith Stone

The Department of History offers several professional and preprofessional programs with varying requirements. In addition to these programs, it provides a broad range of courses in the university general education program, as well as courses serving other specialized curricula. The department seeks to develop all students a sense of historical awareness and a systematic approach to the vast human experience which no longer may be observed firsthand.

History majors should consult with the undergraduate advisor early and regularly in their undergraduate careers. Curriculum, major and minor program slips are required for graduation audits. HIST 201 (Historians in the Modern World) is an orientation course to the historical professions and should be taken as early as possible after declaring a major.

Transfer students must complete at least 18 hours of course work at Western Michigan applicable to a major, or at least 12 hours applicable toward a minor. Correspondence courses, or other types of self-instructional courses transferred from other institutions, may be used to fulfill major or minor requirements. Students who earn advanced placement credit in history strengthen their majors or minors by substituting more advanced courses in lieu of those for which credit already has been earned.

Only courses in which a grade of “C” or better is earned may be applied toward history major or minor requirements.

Each year the department faculty designates a small number of majors as History Graduates. To be eligible for consideration you must possess a minimum grade point average of 3.5 in history and overall. Membership in the Honors College is not required to be considered for honors in history.

Majors
Ronald Davis, Undergraduate Adviser
4075 Friedmann Hall (383-1731)

History Major

PUBLIC HISTORY CURRICULUM (PUH)

This program is designed to prepare students for a wide variety of entry-level positions in fields of public history such as museum and archival administration, preservation and restoration work, interpretation, consulting, and applied research, in both private and public sectors.

GERMAN

See “Languages and Linguistics” in the College of Arts and Sciences.
94

COLLEGE OF ARTS AND SCIENCES

Major Requirements:

1. Basic Courses: 100,101,201,210,211 ..15

2. Advanced courses: at least 15 hours in

courses numbered 300 through 563,
including at least 9 hours in courses
numbered 520 through 527 and at least one
course in European history.
3. Theory and practice: 505, 511
6
4. At least 36 hours of course work in history.

History majors in the public history curriculum
must take an approved minor along with the
above major. One option is to complete a minor
in public history (see minor requirements
below). A second option is to complete only the
required courses in the public history minor and
take a minor in one of the following fields:
anthropology, art history, communications,
earth science, general industrial education,
geography, interior design, or public
administration. The public history curriculum
requires certain emphases in some of these
minors, and courses therein must be approved
by the undergraduate adviser in the
Department of History. (In special cases other
minors may be permitted with prior approval.)
Each student in the curriculum also must

complete 6-9 hours of credit in an approved
internship experience (HIST 599).

History Major
SECONDARY EDUCATION CURRICULUM

(SED)

The secondary teacher preparation program

4. SSCI 300 Teaching of Social Studies in
Secondary Schools or GEOG 460 Concepts
and Strategies in the Teaching of
Geography.

1. HIST 201,315, 512, 513;ANTH210 ....13
2. HIST 505 or 511

History Major
LIBERALARTS CURRICULUM (LA)

prepare students for graduate studies leading

course work, with all grades "C" or better.

to careers in higher educaton and research.

History Minor

Major requirements:

SECONDARY EDUCATION CURRICULUM

1. HIST 201

2. Two courses in theory and practice, one of

1

which must be 390 or 591
5-6
3. Advanced courses: 21 hours of course work

at the 300-level and above, including at least
12 hours numbered 520 through 563.

4. HIST 470 Senior Thesis
3
5. At least 30 hours of course work included in

the major.

In addition to the major, students in the liberal
arts curriculum pursue a course of study
providing a knowledge base in the social
sciences and humanities, as well as foreign
languages and research skills appropriate to
graduate work. The general requirements for
the liberal arts curriculum may be found
elesewhere in this catalog in the section
describing the programs of the College of Arts
and Sciences. Specific cognate sequences for
the curriculum are included in the department's

(SED)

1. Basic courses: 100,101,210, 211

Major requirements:

1. Basic courses: 100, 101,201,210, 211

.15

2. Theory and practice: 390 or 591

2-3

3. Advanced courses: at least 18 hours of

courses numbered 300 through 591,
including at least 3 hours numbered 500
through 591. One course each in at least two
of the following areas:

North American (310-317, 375, 520-527)
Europe (349-369, 549-563)
Non-Western (370-372, 381-389)
General (301-325, 420)
Theory and Practice (390, 505-513, 591)
3. At least 23 hours of course work in history.
4. To be approved for directed teaching,
students must complete at least 6 hours of

course work at the 300-level or above with

grades of "B" or better, including at least 3
hours numbered 505 through 591.

History Minor

History Major

CURRICULA

ARTS ANDSCIENCES (ASC) and OTHER

2. Advanced courses: at least 9 hours in

1. Basic courses: 100, 101,210, 211

CURRICULA

Major requirements:

1. Basic courses: 100, 101,201,210, 211 ..15

aditional course work numbered 300

through 591, including at least 9 hours
numbered 520 through 563, distributed as

2. Advanced courses: at least 15 hours in

follows:

North America (310-317, 375, 520-527) .. .6
Non-Western (370-372, 381-389)
3
Pre-Modern (349-354, 549-554)
3
Europe (361-369, 556-563)
3
Elective (any field)
3

4. Atleast 35 hours of course work in history.

To be approved for directed teaching, students
must complete at least 6 hours of course work

numbered 520-563 with grades of "B" or

North American (310-317, 375, 520-527)
Europe (349-369, 549-563)
Non-Western (370-372, 381-389)
General (301-325, 420)

course work numbered 300 through 563,
including at least 9 hours numbered 500
through 563. At least one course each from
any three of the following areas:

Theoryand Practice(390, 505-513, 591)
3. Atleast 23 hours ofcourse workinhistory.
4. To be approved for directed teaching,

North America (310-317, 375, 520-527)
Europe (349-369, 549-563)
Non-Western (370-372, 381-389)
General (301-325, 420)
3. Theory and practice: two courses, chosen
form 390, 470, 505, 511, 591

students must complete at least 6 hours of

course work at the 300-level or above with

5-6

4. At least 34 hours of course work in history.

grades of "B" or better, including at least 3
hours numbered 505 through 591.

approved electives from above departments

3. One approved course in philosophy or

religion, or in political, economic, or
ethnographic theory, at the 200-level or
above.

100 The Early Western World

101 The Modern Western World

3

6
3-4
3
3

prehistory: ANTH 300, 332, 500, 501 .. .3

above.

Basic Courses

Ronald Davis, Undergraduate Adviser

4075 Friedmann Hall (383-1731)

one course on American Indian cultures or

at 300-level or above

Courses By Topic

Minors

In addition to the history major, students must
also complete the following:
1. A group social science minor of at least 28
hours including:

6-7

102 History Through Literature
103 History and Current events
106 Historical Writing

Public History Minor

201 Historians in the Modern World

PUBLICHISTORYCURRICULUM (PUH)
1. HIST315, 512, 513
2. ANTH 210, 250

204 Business History
9
7

3. Electives approved by adviser
12
including at least one course in social
science research methods and/or computer
applications. A maximum of 3 hours of

additional course work in history, exclusive
of HIST 599, may be included in the minor.

4. Minor must include at least 28 hours of

course work, with all grades "C" or better.

14

courses numbered 300 through 591,
including at least 3 hours numbered 500
through 591. One course each in at least two
of the following areas:

better.

2. One approved literature course in the
Department of English at the 200-level or

14

2. Advanced courses: at least 9 hours in

ARTS ANDSCIENCES (ASC)and OTHER

American Historical Association.

ECON 201, 202
GEOG 102 or 105 or 205
PSCI 200
SOC 200

3
9

5. Minor must include at least 28 hours of

The history major and associated course work
in the liberal arts curriculum is designed to

of Teachers of History established by the

ANTH 120 or 220 or 240

3

3. One course in United States history
(520-527)
4. Electives approved by adviser

undergraduate handbook.

conforms to the Guidelines for the Certification

Public History Minor
OTHER CURRICULA

210 United States to 1877
211 United States Since 1877
275 Introduction to Canadian Studies

298 Directed Reading in History
North America

310 History of Michigan

313 History of United States Foreign Relations
314 Black American History
315 Popular Art and Architecture in America
317 The History of the United States

Constitution


HIST 101 The Modern Western World 4 hrs.
Throughout the centuries western man has constantly adjusted his life style in response to the challenge of his times. In the process he has created many government forms, social structures, interpretations of man, ideological systems, and modes of artistic expression. The course examines these creations and shows how the historian analyzes the patterns of persistence and change which they reflect. Period covered: 1648 to the Present.

HIST 102 History Through Literature 3 hrs.
The written works of any age reveal the moods, tensions, interests, outlook, tastes, and problems of that period. This course shows specifically how the effects of wars, revolutions, depressions, machines, and social conditions are reflected in novels and other writings. How people have reacted to their problems in the past will suggest how we may deal with those of the present.

HIST 103 History and Current events 3 hrs.
The mass media supply modern man with a wealth of information and current social, political, and economic developments that confusion often results. Nevertheless the citizen of a democratic state is expected to make well-considered choices. This course will show what history can contribute to a clearer and deeper understanding of great contemporary problems such as the relationship between the West and the Third World, the balance of power between the U.S., the U.S.S.R., and China, the stabilization of Europe, and the new ecological situation.

HIST 106 Historical Writing 3 hrs.
This course teaches writing in the context of studying historical material. Although it considers in a general manner some of the problems historians face in writing about the past, its primary purpose is to teach good writing. Hence, all work and all discussion are directed to the preparation, execution, and analysis of writing assignments. Fulfills the University Intellectual Skills college-level writing course requirement.

HIST 201 Historians in the Modern World 1 hr.
A survey of the historical professions and the academic preparation needed to enter them.

HIST 204 Business History 3 hrs.
This course will focus on business and business leaders as an integral part of society. Extensive use will be made of the case study method and business biography to explore questions of production, distribution, finance, management, and industrial and public relations in a variety of historical settings. The case study topics will cover the whole range of Western history with a special emphasis on the American experience, one which cannot be properly understood without taking business and its development into account.

HIST 210 United States to 1877 3 hrs.
This is an introductory course, but not the traditional, narrative survey. Emphasis is placed upon basic intellectual, political, economic, and social influences that have shaped American life. Selected themes that reveal continuities in the American experience are used to demonstrate the American heritage.

HIST 211 United States Since 1877 3 hrs.
The story of how modern America was shaped with an emphasis upon the emergence of the United States as a world power and the consequences of this development. The focus is upon selected themes such as urbanization, industrialization, and social class. Particular attention is given to various attempts to interpret twentieth-century American development.

HIST 275 Introduction to Canadian Studies 3 hrs.
An interdisciplinary survey of contemporary Canada taught by a faculty team from various departments of the University.

HIST 298 Directed Reading in History 1-3 hrs.
Designed for students with special interests. Registration requires a minimum 2.8 GPA, sophomore standing, approval of the supervising faculty member and the Department Chair. May be repeated to a maximum of 3 semester hours.

HIST 300 Issues in History 1-3 hrs.
Selected topics in historical studies. Topics announced in the Schedule of Classes. Course may be repeated under different topics.

HIST 301 Law and Justice in Western History 3 hrs.
The theorist who devises the ritual of the law, the advocate who argues for it, and the judge who pronounces it: the philosopher who examines ethical principle and the moralist who expresses it, the investigator of crime, the criminal, and the punisher; the ordinary person who is sustained, ennobled, abandoned or oppressed by the moral customs of his fellows-all are familiar figures in any organized society, and their activities and the manner in which these interact help establish the tone and quality of life of that society. The course observes and analyzes these activities on a comparative basis over the centuries of Western history.

HIST 302 History of Medicine and Medical Care 3 hrs.
A study of the development of medicine throughout history. Medicine will be covered as (1) a science, (2) a healing agency, and (3) a social institution. Topics under (1) will include: Near Eastern medicine, Hippocratic medicine, medical science at Alexandria, Galen and Greek medicine at Rome, the transmission of Greek medicine through the Arab and Byzantine cultures, medical theory and practice in the Middle Ages, the Renaissance recovery of ancient Greek medical writing, emergence of modern medical concepts, specifically the emergence of the cell theory and cellular pathology, the germ theory of disease, the rise of bacteriology and immunology. (2) will deal with the development of methods of diagnosis, of treatment, and of hospitals; and the evolution of the nursing profession. (3) will show the changing role of medical experts in different cultures; the types of medical education in the past; the development of medical social work as well as of organization and social role of medical research.

HIST 303 Women in the Western World 3 hrs.
This course is designed to explore the condition of women in various periods of European and American history from ancient Greece to America of the 80s. Attention will be given to women’s roles and status in each period in
order to come to some conclusions about women’s contributions to Western history and culture.

**HIST 310 History of Michigan**
3 hrs.
The development of Michigan from a primitive wilderness to an industrial state, with emphasis on the relation of the history of the state to that of the nation.

**HIST 313 History of United States Foreign Relations**
3 hrs.
While this course traces the full scope of American foreign relations, from the American Revolution to the present, it emphasizes diplomacy of the twentieth century. The course gives attention to major diplomatic problems, but it also considers such themes as the effect of personality and politics on foreign policy, and the various “schools” of diplomatic thought.

**HIST 314 Black American History**
3 hrs. Fall
A survey of the Black American experience from African origins to the contemporary American scene. Although the changing cultural and historical framework will not be ignored, attention will center on what Black Americans did, said, and thought. Individual reading assignments on the lives of outstanding figures from Phillis Wheatley to Eldridge Cleaver will be utilized.

**HIST 315 Popular Art and Architecture in America**
3 hrs.
Introduction to popular themes in American history as shown in paintings, buildings, cartoons, and commercial art. While issues will vary, the topics will include the Middle Americans, the Environment, the Frontier, the City, and Industrialization. Extensive use will be made of local illustrations which could be adapted to elementary and secondary teaching.

**HIST 317 The History of the United States Constitution**
3 hrs.
A study of the nature of the United States Constitution, of constitutional issues in American history, and of the role of the Supreme Court and its major decisions.

**HIST 321 Topics in the History of War**
3 hrs.
Selected topics in the history of modern war, such as America and war; military technology, impact of war on society, etc. Topics announced in the Schedule of Classes. Course may be repeated under different topics.

**HIST 325 Jewish History**
3 hrs.
The fate of the Jews in the Moslem and Christian worlds; the French Revolution and the emancipation of Western European Jewry; the history of Russian, Polish, and Romanian Jewry; rise of Zionism and the beginnings of Jewish colonization in Palestine; post World War I Europe and the fragmentation of European Jewry; spread of Fascism and Nazism; World War II, the Holocaust, the emergence of Israel and her struggle for survival in the Arab world. World Jewry since 1945.

**HIST 349 The Ancient Near East**
3 hrs.
Archaeology, prehistory, and the cradles of civilization in Mesopotamia and the Nile Valley. Survey of ancient Sumenian, Babylonian, Egyptian, Hittite, Phoenician, and Hebrew cultures, as well as the emergence of the Assyrian, Neo-Babylonian, and Persian empires.

**HIST 350 Ancient Greece**
3 hrs.
Origins of the ancient Greeks and their role in the Aegean civilizations of Crete, Troy, and Mycenae; the Homeric Age, and development of the polis. Examination of the contrasting city-states of Athens and Sparta, as well as the unique cultural achievements and legacy of Hellenism. The course concludes with Alexander the Great and the Hellenistic world.

**HIST 351 Ancient Rome**
3 hrs.
The early Italic, Etruscan, and Greek cultures of ancient Italy prior to the founding of Rome; rise of the Roman republic and conquest of the Mediterranean; civil wars and emergence of the Roman Empire. Cultural achievements and ultimate decline and fall of Rome.

**HIST 354 Medieval History**
3 hrs.
History of medieval Europe from the fall of Rome to the 14th and 15th centuries. Attention will be given to the following themes: the development of the European nations and political systems; the agricultural and commercial foundations of medieval civilization; social classes, especially the aristocracy; the formation of the medieval view as reflected in the rise of the church, monasticism, the schools and universities and in medieval art and architecture.

**HIST 361 British History**
3 hrs.
A survey of the history of Great Britain from the 16th century to the present with emphasis on the development of constitutional government; emergence of the empire and commonwealth; the economic and social revolutions and their consequences in the 20th century.

**HIST 369 The Soviet Union**
3 hrs.
The survey course is designed to give the student a knowledge and appreciation of the various facets of the history of the Union of Soviet Socialist Republics from 1917 to the present. Aspects of the U.S.S.R. that are studied include Marxism-Leninism, the Communist Party, the Government, foreign policy, planned economy, the systems of health and education, and contemporary art, literature, and music.

**HIST 370 History of Latin America**
3 hrs.
A survey is undertaken of the historical development of the Latin American region from its pre-Columbian Indian and Iberian ancestry to its contemporary expression in national entities. Attention is given to people and motives as well as institutions and attitudes insofar as each of them determined the character of a given epoch and contributed to the pattern of overall development.

**HIST 371 Modern Latin America**
3 hrs.
There is undertaken here an analysis of contemporary Latin America, a world area of immediate and future critical import in the affairs of humanity. An effort is made to gauge the origins, depth, and intensity of the dynamic forces and impulses which are inexorably wrenching Latin America out of a tradition-encrusted mold and forming it anew.

**HIST 372 History of Mexico and the Caribbean**
3 hrs.
Two of the most profound social revolutions in Latin American history have occurred in Middle America. The Mexican and Cuban revolutions require our understanding as do the present developments in Central America. The course surveys the history of the area in order to further that understanding.

**HIST 375 Canadian History**
3 hrs.
A survey of Canada from the 16th century to the present. Special attention to the sources of Anglo-French discord and Canada’s changing relationship with the United States.

**HIST 381 The Modern Far East**
3 hrs.
A survey of the international relations of China, Japan, and Korea; reform and revolutionary movements in East Asia; aims and techniques of modernization and Westernization, the rise and fall of militaristic Japan, political and social upheavals, and the emergence of American influence in China; and the rise of two Koreas.

**HIST 386 Introduction to African History and Civilization**
3 hrs.
An overview of the major aspects of African civilization in the context of the development from pre-colonial times to the present. Emphasis upon those elements which contribute to the cultural and historical unity and uniqueness of the African experience.

**HIST 389 Modern Middle East**
3 hrs.
The Middle East since the collapse of the Ottoman Empire at the close of World War I. Emphasis is upon the history of the Arab-Israeli conflict, which may be seen as thematic of the clash of the major forces shaping the modern Middle East, including Arab nationalism, Zionism, and colonialism.

**HIST 390 Introduction to the Study of History**
2 hrs.
Through the ages man has asked why heroes, dynasties, and empires rise and fall, revolutions occur, populations grow and recede, and ever new ways have been devised to “make a living.” Man has tried hard to find order and meaning in the maze of events. This course deals with the many human attempts first to reconstruct what happened and then with the interpretations given to make sense of the past.

**HIST 400 War in the Modern World**
3 hrs.
Topics in modern war and current military developments. Topics for each semester will appear in the Schedule of Classes. The course may be repeated for separate credit as long as the topic varies.

**HIST 470 Senior Thesis**
2-3 hrs.
Written preparation and defense of a supervised research project. The thesis must be supervised and approved by at least two faculty members. Two copies of the final draft must be filed with the Department of History. Registration requires junior standing, a declared major in History, and approval of the supervising faculty members and the Undergraduate Adviser.

**HIST 500 Studies in History**
3 hrs.
Selected topics in historical studies. Topic announced in the Schedule of Classes. Course may be repeated under different topics.

**HIST 505 Local and Regional History**
3 hrs.
Studies of small areas in great detail frequently precede, modify, or augment historical studies of wider scope. Local historians rely heavily on primary sources such as archives and manuscript collections, genealogy, oral history, archaeological and ethnographic data. This course is an introduction to the sources and
techniques of local historians and their application to a variety of research objectives.

HIST 511 Introduction to Archives 3 hrs.
Theory, techniques, and practice in the development and administration of archives and archival materials.

HIST 512 Introduction to Museum Studies 3 hrs.
a survey course dealing with the history, philosophy, organization, and practice of museums. The course will examine the organization and structure of various types of museums, and will cover such topics as: collecting theory, conservations and security, care of collections, display techniques, historic preservation, registration and cataloging, and museum ethics.

HIST 513 Historic Preservation 3 hrs.
Examination of problems in developing historic sites and districts. Topics include documenting historic sites, registration procedures, preservation law, funding sources, history of the preservation movement, social issues in urban rehabilitation, public, private and citizen interaction.

HIST 520 Colonial America 3 hrs.
The American colonies as part of the British empire, their founding, and their political, social, and economic growth to the eve of the American Revolution.

HIST 521 Era of the American Revolution, 1763-1789 3 hrs.
Causes, characteristics and consequences of the American Revolution. Emphasis on factors which induced the British to alter existing relationships with the American colonies, and the nature of American responses. Efforts by both British and American leaders to preserve the imperial connection are studied along with the American movement to independence. The course also covers military and diplomatic aspects of the Revolution, and societal changes brought about by American independence.

HIST 522 The Age of Democracy and Expansion, 1789-1848 3 hrs.
Deals with the establishment of the Federal Government, the origin and development of political parties, the causes and consequences of the War of 1812, territorial expansion and the westward movement, and the increasing sectional conflict between North and South.

HIST 523 The American West 3 hrs.
a study of the exploration and settlement of the North American continent. Topics include Indian relations, utilization of land and resources in the fur trade, mining, and cattle ranching, and the establishment of law and order on the frontier.

HIST 524 The Civil War and Reconstruction 3 hrs.
Examines the origins of the Civil War, the reasons for Northern victory and Southern defeat, and the conflicts over Reconstruction policy and the status of Black Americans.

HIST 525 The Emergence of Modern America, 1877-1914 3 hrs.
The course will focus on the causes and consequences of industrialization, urbanization, progressivism, and the concurrent revolutions in agriculture, transportation, and communications. Attention will also be given to changing attitudes and values, the problems of generalization, and the anonymous American.

HIST 526 United States, 1914-1945 3 hrs.
This course deals with four periods of recent American history: the Great War and Peace Conference of 1914-1919, the 1920s, the Depression, and American participation in World War II. Focus is on major social, political and economic trends, problems and personalities of the era, and the vastly changed position of the United States in world affairs.

HIST 527 United States Since 1945 3 hrs.
This course deals with the efforts of the nation, and groups within the nation, to cope with the enormous social, political, and economic problems of the decades after World War II. It traces the growth of American involvement in foreign affairs as a world power.

HIST 549 Topics in Ancient History 3 hrs.
Selected topics in ancient history such as recent archaeological discoveries, the Roman Empire, Imperial Rome, Zoroastrianism, and the like. The specific topic is announced in the Schedule of Classes. Course may be repeated under different topics.

HIST 550 Topics in Medieval History 3 hrs.
Selected topics in medieval history such as the History of the Medieval Church, Daily Life in the Middle Ages, etc. Topic to be announced in the Schedule of Classes. Course may be repeated under different topics.

HIST 554 Renaissance and Reformation 3 hrs.
Major developments in the period: activities of merchant venturers; rise of the modern state; cultural achievements of the Italian Renaissance; religious thought of Luther, Calvin, and Zwingli; renewal of the Roman Catholic Church, Anglicanism; the Radical Reformation; religious wars, and cultural activities in the Reformation.

HIST 556 Studies in Modern European History 3 hrs.
The topics will be announced in the Schedule of Classes. The content of the course will vary from semester to semester. Students may repeat the course for credit as long as the subject matter is different. Topics will be chosen from those areas of European history which are not adequately covered by regularly scheduled courses.

HIST 559 The French Revolution and Napoleon 3 hrs.
The nature of revolution and revolutionary psychology. 18th century background to the French Revolution; major events and phases; Napoleon and the French empire; impact of the revolution on Europe and the rest of the world.

HIST 560 Nineteenth Century Europe 3 hrs.
Major developments in European history from the fall of Napoleon to the beginning of World War I. Confrontation between the forces of reform, conservatism, and nationalism; unification of Germany and Italy; the changing diplomatic balance; arts and culture of the era.

HIST 561 Victorian England: The Era of the Middle Class 3 hrs.
A look at the years of Victoria’s long reign as Great Britain attempted to solve the problems caused by the French and Economic Revolutions through parliamentary reform and additional democracy, resulting in the transition from a rural to an urban society, the rise of the middle class to a position of dominance, and the emergence of Britain as the greatest industrial nation and the most powerful empire in the world.

HIST 562 Hitler’s Europe, 1914-1945 3 hrs.
Major developments in European history from the beginning of World War I to the conclusion of World War II. The new structure of postwar Europe in the 1920s; the result on ethnic and religious minorities and on democratic government, the collapse of international order and World War II, arts and culture of the era.

HIST 563 Europe since 1945 3 hrs.
Major developments in European history since the end of World War II. Recovery and reconstruction; the movement toward European unity; the East-West conflict, roles, and objectives of major European states and blocs in international affairs.

HIST 591 Topics in Theory and Practice 2-3 hrs.
Selected theoretical, technical, and interpretive issues in the field of history. Topics include philosophy of history, computers in historical research, interaction between history and such disciplines as archaeology, psychology, and climatology, new forms and techniques of historical documentation, and major historical interpretations currently before the academic world and the public. Topics announced in the Schedule of Classes. Course may be repeated under different topics.

HIST 598 Independent Reading in History 3 hrs.
Research supervised by a faculty member. Registration requires a minimum of 3.0 GPA, junior standing, a declared major in History, and a research proposal developed by the student and the supervising faculty member. Registration also requires approval by the Undergraduate Adviser and the Department Chair.

HIST 599 Internship 3 hrs.
Professional internship experiences in museums, historical administration, historic preservation, editing, etc. Normally restricted to students enrolled in the Public History curriculum. Registration requires junior standing, a minimum 2.7 GPA, prior completion of theory and practice courses appropriate to the internship experience, and approval of the undergraduate adviser and the Department Chair. Graded on a credit/no credit basis.

INTEGRATED LANGUAGE ARTS MINOR
See “Interdisciplinary Programs” in the College of Arts and Sciences.

INTERNATIONAL AND AREA STUDIES PROGRAM
See “Interdisciplinary Programs” in the College of Arts and Sciences.
Modern and Classical Languages

For students majoring or minoring in a modern foreign language, a course in modern European history is desirable. For Latin majors and minors a course in Roman history is recommended. A student in the Arts and Sciences curriculum (ASC) may apply eight (8) credits toward a Latin major by taking both GREK 100 and 101. A student in the Secondary Education curriculum (SED) may apply four (4) credits toward a Latin major by taking both GREK 100 and 101. English majors are encouraged to take as much beyond the minimum in a foreign language as they can handle.

All students (either entering or advanced) who wish to continue in a language they have studied in high school must take a placement examination. It may be used as a qualifying examination to exempt students for specific language requirements. The examination is given prior to each registration period and scores are posted in time for registration. Students must register according to their placement score.

The department considers one year of high school work equivalent to one semester of University work. Consequently:

1. A student underplacing receives no more than 8 hours of University credit and no more than 4 hours credit towards a major or a minor unless the required level is reached.

2. A student may overplace by one or two courses. This student is allowed to decide on whether to omit the course overplaced. If he/she chooses to omit the course, he/she is eligible to receive credit, but must check with the Placement Director.

Native speakers of a given language must consult with a departmental adviser before registering for courses up through the 300 level. A student planning a language major should consult with a departmental adviser as early as possible and obtain a recommendation form to insure proper planning and avoid subsequent difficulties.

The undergraduate major consists of a minimum of 30 credit hours (minimum of 20 credit hours for an undergraduate minor) beyond the 100-level (basic) courses. At least two 500-level courses must be included in a modern language major.

Teaching certification is approved for majors or minors in secondary and middle school and junior high school education for the following languages: French, German, Latin (secondary only), Russian (minor only), and Spanish.

A language methods course is required for all teaching majors and minors in the foreign languages. Exceptions to the patterns may be granted only by departmental permission. For courses in Independent Study, consult listings under the individual language concerned.

Only courses in which a grade of "C" or better is obtained can be counted toward a major or minor.

Majors and Minors

French Major
Thirty hours beyond 100 level to include 316, 317, 328, 329, and two 500-level courses (one of them must be 560). Students in the secondary education curriculum who are required to take Modern Language Instruction 558 may count this course as one of the 500 courses.

French Minor
Twenty hours beyond 100-level to include 316 and 317. Modern Language Instruction 558 may not be counted toward a minor.

German Major
Thirty hours beyond 100-level to include 316, 317, 322, 325, and at least two 500-level courses other than 558. Students in the secondary education curriculum are required to take Modern Language Instruction 558.

German Minor
Twenty hours beyond the 100-level to include 316, 317, 322 or 325 plus one 500-level course. Modern Language Instruction 558 may not be counted toward a minor.

Latin Major
Thirty hours including 100-level (basic) courses or equivalent, remaining hours from 200-500 series which may include LANG 250, 252, 350, 375, 450 and GREK 100 and 101. Teaching majors must include LAT 200, 201, 324, 550, 557, and 560.

Latin Minor
Twenty hours including 100-level (basic) courses or equivalent, remaining hours from 200-500 series which may include LANG 250, 252, 350, 375, and 450. Teaching minors must include LAT 200, 201, and 557.

Latvian Major
Thirty hours beyond the 100 level, to include 200-201, 316, 317, 320, 322, 325, and PSCI 549, with the remaining hours from 500-level LATV courses.

Latvian Minor
Twenty hours beyond the 100 level, to include 200-201, 316, 317, 320, 322, and 325, with the remaining hours from 500-level LATV courses.

Russian Minor
Twenty hours including 100-level (basic) courses or equivalent, remaining hours from 200-500 series.

Spanish Major
Thirty hours beyond the 100-level to include 322 or 323, 325, and three 500-level courses (to include 3 hrs. of 526, 527, 528, 529, or 560). Students in the secondary education curriculum are required to take Modern Language Instruction 558, which will be accepted in place of one 500-level non-literature course.

Spanish Minor
Twenty hours beyond 100 level to include 6 hrs. of 322, 323 or 325. Modern Language Instruction 558 may not be counted toward a minor.

World Literature Minor
The Department of Languages and Linguistics and the Department of English offer jointly a world literature minor (20 hours). For description and requirements, see the "Interdisciplinary Programs" listing in the College of Arts and Sciences section of this catalog, or consult Dr. Flesh, 509 Sprau.

Translation Center
The Translation Center offers applied foreign language assistance to business and industry, the WMU community, professionals, and private individuals. The center serves its clients by arranging translations for information and publication, notarized translations of legal documents, interpretation, terminology searches, and assessment of translation quality, and by providing information, advice, referral, and research in the field of applied foreign language.

For further information, contact Dr. Peter W. Krawutschke, director, Translation Center, Sprau Tower, 383-0958.

Foreign Credits
Credits for language study at a foreign university may be granted on official proof that the student has completed the coursework successfully. For courses where no examination or grades are given, the student may be recommended for appropriate credit upon his/her return to Western on the basis of papers, colloquia, or comparable work to be determined by the department.

Foreign Literature in English Translation
(Courses described in italics are approved for General Education)

These courses will survey literary masterpieces of other countries in English translation. They are open to any student and there is no foreign language prerequisite. The courses will be taught entirely in English by specialists in the areas.

LANG 375 Foreign Literature in English Translation
3 hrs.
The content of the course will stress the observation and experience of another society and culture as depicted in some of the great writings of foreign literature through reading in English. Universal themes about the human condition and insight into their treatment by representative native writers will be presented. The course will consider the differences in treatment of individuals and society and will offer a comparison to contemporary life through
various literary works and the social-historical background for each of the selections.

This course does not apply toward a major or minor in French, German, or Spanish, but it may apply toward a major or minor in Latin or a minor in Russian. The course may be taken in more than one language area.

Representative topics which may be treated in this course include:

**Classical Drama in English Translation**

Reading and analysis of selected plays of Aeschylus, Sophocles, Euripides, and Aristophanes as dramas and as expression of the Greek view of life. Some attention to Roman Drama.

**French Literature in English Translation**

A thematic and stylistic analysis of major French writers from LaFayette to the present, to include Stendhal, Balzac, Flaubert and Proust.

**German Literature in English Translation**

A comparative study of literary themes and techniques of major German writers from Hauptmann to the present, including Mann, Brecht, Kafka, and Borchert.

**Russian Literature in English Translation**

A survey of the development of great Russian prose in its historical and cultural context. The course will include but not be restricted to works by Pushkin, Gogol, Turgeniev, Dostoevski, Tolstoy, Gorki, Sholokhov, Pasternak, and Solzhenitsyn.

**Spanish-American Literature in English Translation**

Selected prose and poetry from the late 19th century (Ruben Dario and Modernismo) to the contemporary writers of Hispanoamerica.

**Spanish Literature in English Translation**

Selected Spanish prose and poetry from the Middle Ages to the twentieth century. The course will include, but will not be restricted to, works by Lope de Vega, Cervantes, St. Teresa, Calderon de la Barca, Unamuno and Garcia Lorca, as well as the Anonymous Poem of the Cid and Lazarillo de Tormes.

### Classics Courses in English

(Courses described in italics are approved for General Education.) All courses listed below will be taught entirely in English, have no foreign language requirement, and are open to any student.

**LANG 250 Ancient-Modern Studies**

3 hrs.

The course is designed to examine the Greco-Roman world and its influence on the modern world in as many perspectives as possible. Examples: the rebel in society, concepts of justice, ancient literary criticism, ancient and modern technology. Topics vary and will be announced each year. May be repeated for credit with different topics.

**LANG 252 Classical Origins of English Vocabulary**

3 hrs.

This course gives the student—even the student without any knowledge of a foreign language—an understanding of how Greek and Latin elements, which make up over half of our English vocabulary, operate in both literary and scientific usage. Attention is paid to how words acquire their meaning and to enriching each student’s working vocabulary.

**LANG 350 Classical Art and Architecture of the Aegean World**

3 hrs.

A course dealing with the classic forms of art and architecture as they developed from the Cretan civilization to the height of Greek culture and as they were reflected in later Roman civilization. No prerequisite.

**LANG 450 Classical Greek and Roman Mythology**

3 hrs.

Investigates the origins, elements, and interpretations of the principal myths and legends of Greece and Rome and their preservation not only in literature, but also in painting, music and sculpture. No prerequisite.

### Language Teaching Course

**LANG 558 Modern Language Instruction (in French, German, Spanish or other language)**

3 hrs.

Required for modern language teaching majors and minors (but the hours may not be counted toward the minor). This course will acquaint prospective language teachers with various approaches and strategies involved in modern language teaching. Specifically, in a performance oriented program, students will learn theory and practice related to teaching the listening, speaking, reading and writing skills, as well as the culture component. Preferably, students should complete this course before beginning directed teaching.

This course will be offered regularly.

The comparable methods course for Latin is LAT 557, Teaching of Latin.
GER 317 German Conversation
3 hrs.
Emphasis upon increasing the student's command of spoken German. Prerequisite: GER 201 or equivalent.

GER 322 German Life and Culture
3 hrs.
Investigates cultural aspects necessary for an understanding of Germany. Prerequisite: GER 201 or equivalent.

GER 325 Introduction to the Study of German Literature
3 hrs.
An appreciation of German literature through reading and critical interpretation of selected works of various literary types. Prerequisite: GER 201 or equivalent.

GER 400 Elementary German for Reading Proficiency
4 hrs.
Intensive grammar and elementary reading for translation and research purposes. The course is primarily for the graduate student who has had little or no study in the language. However, undergraduates who desire a thorough reading knowledge may also apply. Undergraduates must secure a "C" card. No oral work.

GER 477 Foreign Study
1-16 hrs.
Fall-Winter; 1-8 hrs. Spring-Summer. Prerequisite: GER 316 and 317.

GER 528 Survey of German Literature
3 hrs.
A comprehensive study of German literature from its beginning through Romanticism. Prerequisites: GER 316, 317; 322 or 325 or equivalent.

GER 529 Survey of German Literature
3 hrs.
A comprehensive study of German literature from its beginning through Realism. Prerequisites: GER 316, 317; 322 or 325 or equivalent.

GER 550 Independent Study in German
1-3 hrs.
Directed, individual study of a specific topic or genre in a German literary or linguistic area, e.g., biography, bucolic poetry, comedy, history. Prerequisites: GER 316 and 317.

GER 553 Advanced German Conversation
3 hrs.
Intensive training in conversational German with emphasis on colloquial language and idiom. Prerequisites: GER 316 and 317.

GER 559 History of the German Language
3 hrs.
Survey of the development. Prerequisite: 6 hours of 300-level German or above.

GER 560 Studies in German Literature
3 hrs.
Topic varies according to genre, author, or period and will be announced. Each of these courses carries separate credit, although all are listed under 560. Thus, a student may take any or all of the offerings at various times. Prerequisites: GER 316, 317; 322 or 325 or equivalent. Representative topics which may be treated in this area include:

The Novelle—Survey of the development with representative selections.
Lyric Poetry—Survey of the development with significant selections.
Nineteenth Century Drama—Primarily Kleist, Grillparzer, Hebbel, and Hauptmann.
Twentieth Century Drama—Representative selections.

Greek (GREK)
(Courses described in italics are approved for General Education.)

GREK 100 Basic Greek I
4 hrs.
Fundamentals of classical Greek; readings emphasize Greek thought, culture, and civilization.

GREK 101 Basic Greek II
4 hrs.
Continuation of 100. Prerequisite: GREK 100 or equivalent.

Latin (LAT)
(Courses described in italics are approved for General Education.)

LAT 100 Basic Latin I
4 hrs.
Fundamentals of Latin; readings emphasize Roman thought, culture, and civilization.

LAT 101 Basic Latin II
4 hrs.
Continuation of 100. Prerequisite: LAT 100 or equivalent.

LAT 200 Vergil
4 hrs.
Intermediate Latin. Development in use of fundamental language skills and the understanding and appreciation of the thought and style of the Aeneid. Prerequisite: LAT 101 or equivalent.

LAT 201 Lyric Poetry
4 hrs.
Intermediate Latin. Readings from Latin lyric poems, with special attention to development in use of fundamental language skills, prosody, literary style and appreciation. Prerequisite: LAT 101 or equivalent.

LAT 324 Latin Literature
4 hrs.
Selections from Latin prose and poetry from the beginning of Latin literature through the Silver Age. Prerequisite: LAT 200 or 201 or equivalent.

LAT 477 Foreign Study
1-16 hrs.
Fall-Winter; 1-8 hrs. Spring-Summer. Prerequisite: LAT 324 Latin Literature.
LAT 557 Teaching of Latin
3 hrs.
For prospective teachers of Latin. Principles, problems, and current practice. Required for
Latin teaching majors and minors.
LAT 560 Medieval Latin
3 hrs.
A study of the period 500-1500 A.D., when Classical Latin was blending into the new
vernaculars to form eventual Romance Languages. Prose and poetic readings include a
variety of themes reflecting the intellectual, cultural and religious thinking of the times.
Prerequisite: One of LAT 200, 201, 324 or equivalent or permission of instructor.

Latvian (LATV)

LATV 100 Basic Latvian I
4 hrs.
Introduction to the structure of the Latvian language and its various levels. Programmed
and individual exercises in phonetics and spoken Latvian. Principles of Latvian
orthography. Controlled vocabulary building. Basic sentence structures. Introduction
to constructional and semantic idioms and their usage. Exercises in various grammatical
aspects.
LATV 101 Basic Latvian II
4 hrs.
Continuation of 100. Prerequisite: LATV 100 or equivalent.
LATV 200 Intermediate Latvian I
4 hrs.
Continuation of 101, with greater attention to achieving self-reliance in conversation and to
increasing reading and writing skills with the help of a dictionary. Analysis of the structure
of Latvian; vocabulary building and uses of idioms; exercises in spoken and written Latvian;
reading selections in various topics; short compositions in Latvian. Prerequisite: LATV 101 or equivalent.
LATV 201 Intermediate Latvian II
4 hrs.
Continuation of 200. Individualized assistance at all levels of the language structure.
Development of more advanced reading and writing skills. Oral and written reports on various
topics. Prerequisite: LATV 200 or equivalent.
LATV 316 Latvian Composition
3 hrs.
Intensive practice in writing Latvian, in order to improve the student’s ability to express him/ herself effectively and to develop an individual style of composition. Recognition and production of various language usages and styles. Problems and practice of translation. Individual writing projects. Prerequisite: LATV 201 or equivalent.
LATV 317 Latvian Conversation
3 hrs.
Emphasis upon increasing the student’s command of spoken Latvian. Prerequisite: LATV 200 or equivalent.
LATV 320 Latvian Phonology
1 hr.
Study of the phonological system of Modern Latvian, including study and practice to correct
typical difficulties encountered by students of Latvian with Anglo-American patterns of
pronunciation. Prerequisite: LATV 200 or equivalent.
LATV 322 Life and Culture of Latvia
3 hrs.
A study of selected aspects of Latvian life and culture and their historical settings. Prerequisite:
LATV 200 or equivalent.
LATV 325 Introduction to the Study of Latvian
Literature
3 hrs.
Variable topics: e.g. various genres of Latvian folk literature and various periods of 19th and
20th century Latvian literature. Topics will be announced in the Schedule of Classes. Course
may be repeated for different topics. Prerequisite: LATV 201 or equivalent.
LATV 477 Foreign Study
1-16 hrs. Fall-Winter; 1-8 hrs. Spring-Summer
Student participation in departmentally approved program of study abroad. Repeatable for credit up to 32 credit hours. Prerequisite: Prior permission of departmental adviser and chairperson.
LATV 515 Methods of Teaching Latvian
2 hrs.
Evaluation of existing Latvian grammars. Examination of different language teaching methods. Psychological and sociological aspects of teaching at various levels in the Latvian community schools. Latvian teacher certification program. Opportunities to tutor beginning Latvian students, to engage in student teaching in the Kalamazoo Latvian School, and/or to work on a Latvian teaching-matериалs project. Prerequisite: LATV 201 or equivalent.
LATV 550 Independent Study in Latvian
1-3 hrs.
Directed individual study of a specific topic in a Latvian language, literature, or culture area. Departmental approval required for admission. Repeatable for credit. Prerequisite: Instructor's permission.
LATV 551 Advanced Latvian Grammar and
Composition
3 hrs.
Intensive review of Latvian structure and practice in composition. Prerequisite: LATV 316 or equivalent.
LATV 560 Studies in Latvian Literature
3 hrs.
Topic varies according to genre, author, or period and will be announced. May be repeated for credit under a different topic. Prerequisite: Instructor’s permission.
LATV 597 Seminar in Latvian Linguistics
2-4 hrs.
Each seminar will deal with a selected topic relating to Latvian linguistics, e.g.: the
development of the Latvian literary language—from folk literature to the present-day idiom.
May be repeated for credit with a different topic. Prerequisite: Instructor’s permission.

Russian (RUSS)

RUSS 100 Basic Russian
4 hrs.
Fundamentals of Russian with audiolingual emphasis.
RUSS 101 Basic Russian
4 hrs.
Continuation of RUSS 100. Prerequisite: RUSS 100 or equivalent.
RUSS 104 Scientific Russian
4 hrs.
Basic grammar and practice in translation of scientific and technical material from Russian to
English. Course is intended for undergraduates who are declared majors in physical or social
sciences and desire a knowledge of Russian for reading purposes only. Course is open on a
non-credit basis to graduate students and interested faculty and staff.
RUSS 200 Intermediate Russian
4 hrs.
Level two Russian. Review and furthering of oral and reading skills based upon increasingly
advanced oral and written exercises. Prerequisite: RUSS 101 or equivalent.
RUSS 201 Intermediate Russian
4 hrs.
Continuation of 200. Prerequisite: RUSS 200 or equivalent.
RUSS 310 Russian Civilization
3 hrs.
A study of selected aspects of Russian life and culture and their historical settings. Course
taught in English and open to all students.
RUSS 316 Russian Composition
4 hrs.
Emphasis on increasing the student’s command of written Russian. Prerequisite: RUSS 201 or equivalent, required for minors.
RUSS 550 Independent Study in Russian
1-3 hrs.
Directed individual study of a specific topic in a Russian literary or linguistic area. Departmental approval required for admission. Prerequisite: One 500-level course.

Spanish (SPAN)

(Courses described in italics are approved for General Education.)
SPAN 100 Basic Spanish I
4 hrs.
Fundamentals of Spanish with audiolingual emphasis.
SPAN 101 Basic Spanish II
4 hrs.
Continuation of 100. Prerequisite: SPAN 100 or equivalent.
SPAN 200 Intermediate Spanish I
4 hrs.
The development of spoken and written expression in the Spanish language with an emphasis on grammar review. Prerequisite: SPAN 101 or two years of high school Spanish, or equivalent.
SPAN 201 Intermediate Spanish II
4 hrs.
The continued development of spoken and written expression in the Spanish language through readings and discussions of civilization and culture materials. Prerequisite: SPAN 200 or equivalent.
SPAN 301 Spanish Composition
3 hrs.
Emphasis upon increasing the student’s command of written Spanish. Prerequisite: SPAN 201 or equivalent. (SPAN 301 may be taken concurrently with SPAN 201.)
SPAN 317 Spanish Conversation
3 hrs.
Emphasis upon increasing the student’s command of spoken Spanish. Prerequisite: SPAN 201 or equivalent. (SPAN 317 may be taken concurrently with SPAN 201.)
SPAN 322 Life and Culture of Spain
3 hrs.
A study of Spanish civilization in terms of its geography, history, and art, and how these factors illuminate the character and tradition of the Spanish people. Prerequisite: SPAN 316 and 317 or equivalent (316 and 317 may be taken concurrently with 322 with permission of Spanish adviser).

SPAN 323 Life and Culture of Latin America
3 hrs.
A study of Latin-American life and culture based on ethnic, historical, social, religious, and literary considerations. Prerequisites: SPAN 316 and 317 or equivalent (316 and 317 may be taken concurrently with 323 with permission of Spanish adviser).

SPAN 325 Introduction to the Study of Spanish Literature
3 hrs.
An appreciation of Spanish literature through reading and critical interpretation of selected works of various literary types. Prerequisites: SPAN 316 and 317 or equivalent.

SPAN 477 Foreign Study
1-16 hrs. Fall-Winter; 1-8 hrs. Spring-Summer
Student participation in departmentally approved program of study abroad. Repeatability for credit up to 32 credit hours. Prerequisite: Prior permission of departmental adviser and chairperson.

SPAN 510 Studies in Hispanic Culture
3 hrs.
An intensive study of various aspects of Spanish and Spanish American culture. Emphasis is on cultural understanding as an avenue to increased proficiency in the Spanish language. Since specific topics will vary each semester, this course may be repeated for credit. Prerequisites: SPAN 316, 317, either 322 or 323, plus one additional course at the 300 or 500 level.

SPAN 526 Survey of Spanish Literature to the 18th Century
3 hrs.
A survey of Spanish literature from its origin to, and including, the seventeenth century. Prerequisites: SPAN 316, 317, and 325.

SPAN 527 Survey of Spanish Literature from the 18th Century to the Present
3 hrs.
A survey of Spanish literature from the eighteenth century to the present. Prerequisites: SPAN 316, 317, and 325.

SPAN 528 Survey of Spanish American Literature to Modernismo
3 hrs.
A survey of Spanish American literature from its origin to the era of Modernismo (late 19th century). Prerequisites: SPAN 316, 317, and 325.

SPAN 529 Survey of Spanish American Literature from Modernismo to the Present
3 hrs.
A survey of Spanish American literature from late 19th century to the present. Prerequisites: SPAN 316, 317, and 325.

SPAN 550 Independent Study in Spanish
1-3 hrs.
Directed, individual study of a specific topic in a Spanish literary or linguistic area. Departmental approval required for admission. Repeatability for credit. Prerequisite: One 500-level literature course in the major; a minimum grade point average of 3.0 in the major. Not open to minors.

SPAN 552 Advanced Spanish Grammar and Composition
3 hrs.
An advanced study of the intricacies and problems of Spanish grammar, syntax, and style with attention to improving written expression in Spanish at an advanced level. Prerequisites: SPAN 316 and 317, and one additional 300-level course. At least 3 hours of SPAN 527, 528, 529, or 552 are recommended.

SPAN 553 Advanced Spanish Conversation
3 hrs.
Intensive practice to reinforce and expand the basic oral communication skills and to develop flexible and idiomatic oral expression. Prerequisites: SPAN 316, 317, and one additional 300-level course. At least 3 hours of SPAN 527, 528, 529, or 552 are recommended.

SPAN 560 Studies in Spanish Literatures
3 hrs.
Topics vary according to genre, author, or period and will be announced. Each of these courses carries separate credit, although all are listed under 560. Thus, a student may take any or all of the offerings at various times. Prerequisites: 3 hours of SPAN 526, 527, 528, 529, or departmental permission. Representative topics which may be treated in this area include: Cervantes—Don Quixote and other works of Cervantes, together with his life and thought. Seventeenth Century Theater—Main works of Lope de Vega through Calderon de la Barca. Nineteenth Century—The Romantic Movement. Nineteenth Century Novel—Development of the regional novel from Fermin Caballerio through Blasco Ibanez. Generation of 98—Thought and works of typical representatives such as Unamuno, Azorin, Banja, and A. Machado. Contemporary Theater—Evolution and analysis of the characteristics. Spanish-American Short Story—Significant short stories along with the cultural and social background. Contemporary Spanish-American Novel—The new Spanish-American novel along with the cultural and social background.

Linguistics Programs

Linguistics Major and Minor

I. Core Courses in Linguistics (20 hrs. required for both majors and minors)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>Linguistics</td>
<td></td>
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<tr>
<td>105 The Nature of Language</td>
<td>4</td>
</tr>
<tr>
<td>321 Phonology and Morphology</td>
<td>4</td>
</tr>
<tr>
<td>331 Syntax and Semantics</td>
<td>4</td>
</tr>
<tr>
<td>421 Development of Language: History and Dialects</td>
<td>4</td>
</tr>
<tr>
<td>579 Seminar in Linguistics</td>
<td>2-4</td>
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</tbody>
</table>

II. Elective Courses in Linguistics (Majors must take at least 4 hrs.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
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</thead>
<tbody>
<tr>
<td>Linguistics</td>
<td></td>
</tr>
<tr>
<td>370 Culture and Communication</td>
<td>3</td>
</tr>
<tr>
<td>371 English Language</td>
<td>4</td>
</tr>
<tr>
<td>372 Development of Modern English</td>
<td>4</td>
</tr>
<tr>
<td>373 Reading and Writing as Psychological Processes</td>
<td>4</td>
</tr>
<tr>
<td>572 American Dialects</td>
<td>4</td>
</tr>
<tr>
<td>574 Linguistics for Teachers</td>
<td>4</td>
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</tbody>
</table>

III. Cognate Courses in Other Departments (Mayors may take up to 6 hrs.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>Anthropology</td>
<td></td>
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<tr>
<td>370 Culture and Communication</td>
<td>3</td>
</tr>
<tr>
<td>Communication</td>
<td></td>
</tr>
<tr>
<td>371 English Language</td>
<td>4</td>
</tr>
<tr>
<td>372 Development of Modern English</td>
<td>4</td>
</tr>
<tr>
<td>373 Reading and Writing as Psychological Processes</td>
<td>4</td>
</tr>
</tbody>
</table>

Both majors and minors are required to consult with the adviser, 410 Sprau Tower, to receive a signed recommendation for their program. The adviser is authorized to grant a limited number of substitutions for "core" requirements. Only those linguistics courses in which a "C" or better is obtained may be counted toward a major or minor.

Linguistics is suggested as a supporting major or minor for majors in anthropology, communication, English, French, German, philosophy, psychology, sociology, Spanish, and speech pathology and audiology. Linguistics has been approved by the State Board of Education as a minor or second major in the secondary education curriculum, as a second major in the junior high school curriculum, and as a minor in the elementary curriculum.

A critical language minor is available for those undergraduates who wish to specialize in one of a limited number of neglected languages. This minor is open only to those persons who are not in an Education major. Interested students must consult with the critical language supervisor to determine which languages are eligible and to receive a signed recommendation for their program.
Credit by Examination

Contact the critical languages supervisor in complete the requirements for the critical curriculum and are not native, fluent, and

The Department of Languages and Linguistics

Eligible Languages

The eligibility of languages varies from year to year. Languages currently scheduled by name are automatically eligible. The eligibility of others depends on available resources. Contact the critical languages supervisor in Linguistics for up to date information.

Linguistics Majors and Minors

Undergraduate majors and minors in linguistics, who are already required to take an introductory linguistics course for their program, must take a literacy course in the given language (315 or 316) in order to complete the requirements for the critical language minor.

Credit by Examination

Undergraduate students who feel that they possess the equivalent of 103, 101, 200, 201, 315, or 316 may "comp out" of these courses for credit, provided that they pay the fees and pass an examination with a grade of "C" or better.

Integrated Language Arts Minor

The Department of Languages and Linguistics is one of five participating departments in the integrated language arts minor—a program designed particularly for preserve elementary school teachers. The program provides opportunities for a wide variety of individual interests and alternative learning styles. For a full description of the program consult its listing under the "Interdisciplinary Programs" section of the College of Arts and Sciences or its listing in the College of Education or the College of Health and Human Services.

Critical Language Minor

20 hours

I. Introductory Linguistics Course

(Prerequisite: 100) (4 hrs.)

LING 100 Basic Critical Languages I

AND

LING 101 Basic Critical Languages II

II. Basic Courses

(both in the given language) (8 hrs.)

LING 100 Basic Critical Languages I (4 hrs.)

AND

LING 101 Basic Critical Languages II (Prereq. 100) (4 hrs.)

III. Intermediate Courses

(both in the given language) (8 hrs.)

LING 200 Intermediate Critical Languages I (Prereq. 101) (4 hrs.)

AND

LING 201 Intermediate Critical Languages II (Prereq. 200) (4 hrs.)

IV. Literacy Courses

(Optional—see below) (4 hrs.)

LING 315 Reading Critical Languages (Prereq. 201) (4 hrs.)

LING 316 Writing Critical Languages (Prereq. 201) (4 hrs.)

General Information

Admission to the Program

Undergraduate students (including linguistics majors and minors) may be admitted to the critical language minor at any level, provided that they are not in a teacher education curriculum and are not native, fluent, and literate speakers of the language.

Linguistics Courses (LING)

(Courses described in italics are approved for General Education.)

LING 100 Basic Critical Languages I

4 hrs.

Study of a critical language at the elementary level with emphasis on conversation. The writing system will be introduced at an appropriate time, depending on the nature of the individual language.

LING 101 Basic Critical Languages II

4 hrs.

Continuation of 100. Prerequisite: LING 100 or equivalent.

LING 105 The Nature of Language

4 hrs.

A broad introduction to the nature and development of language in human society and to the interdisciplinary aspects of current studies of language and language behavior.

LING 111 Standard American English: Intermediate

4 hrs.

Intermediate-level instruction in oral and written Standard American English for speakers of other languages. An attempt will be made to provide individual tutoring where necessary. Credit/No Credit only.

LING 112 Standard American English: Advanced

4 hrs.

Advanced-level instruction in oral and written Standard American English for speakers of other languages. A continuation of LING 111, with emphasis on advanced reading and writing skills. Prerequisite: LING 111 or equivalent. Credit/No Credit only.

LING 200 Intermediate Critical Languages I

4 hrs.

Continuation of LING 101, with greater attention to achieving self-reliance in conversation and to increasing reading and writing skills with the help of a dictionary. Prerequisite: LING 101 or equivalent.

LING 201 Intermediate Critical Languages II

4 hrs.

Continuation of 200. Prerequisite: LING 200 or equivalent.

LING 315 Reading Critical Languages

4 hrs.

Intensive practice in reading literature, newspapers, and other literary materials in the critical language, including sources from the student’s major field of study. Prerequisite: LING 201 or equivalent.

LING 316 Writing Critical Languages

4 hrs.

Intensive practice in writing a critical language to improve the student’s ability to express himself/herself effectively and to develop an individual style of composition. Prerequisite: LING 201 or equivalent.

LING 321 Phonology and Morphology

4 hrs.

An introduction to the study of sound systems (phonology) and word systems (morphology) and to the principles and methods of their analysis and description. Prerequisite: One linguistically-related course.

LING 331 Syntax and Semantics

4 hrs.

An introduction to the study of sentence systems (syntax) and meaning systems (semantics) and to the principles and methods of their analysis and description. Prerequisite: One linguistically-related course.

LING 421 The Development of Language: History and Dialects

4 hrs.

An examination of the processes of language change and dialect development and the principles which govern the historical and comparative study of languages and dialects. Prerequisite: one linguistically-related course.

LING 500 Introduction to Linguistics

4 hrs.

An introduction to modern linguistic theory and to the application of that theory to linguistically-related disciplines.

LING 511 Methods of Teaching English as a Second Language

4 hrs.

Study of the application of linguistics and other disciplines to the teaching of Standard American English to speakers of other languages, with emphasis on current methods and materials for instruction and testing. Course work will include tutorial experience.

LING 512 Principles of Teaching English as a Second Language

4 hrs.

Study of the linguistic theory and historical development of the teaching of English to speakers of other languages, as well as an examination of second language acquisition and the various aspects of bilingualism. Prerequisite: an introductory course in linguistics.

Courses By Topic

General Linguistics Courses

105 The Nature of Language

321 Phonology and Morphology

331 Syntax and Semantics

421 The Development of Language: History and Dialects

500 Introduction to Linguistics

511 Methods of Teaching English as a Second Language

512 Principles of Teaching English as a Second Language

515 Methods of Teaching Critical Languages

540 Generative Grammar

551 Psycholinguistics

552 Sociolinguistics

596 Study of a critical language at the elementary level with emphasis on conversation. The writing system will be introduced at an appropriate time, depending on the nature of the individual language.

598 Readings in Linguistics

English as a Second Language Courses (for foreign students)

111 Standard American English: Intermediate

112 Standard American English: Advanced

Critical Languages Courses

(LING)

(A "critical" language is a foreign language which is not described in the Undergraduate Catalog as a regular offering in Modern and Classical Languages. Critical language credit can be used to satisfy most undergraduate foreign language requirements.)

100 Basic Critical Languages I

101 Basic Critical Languages II

200 Intermediate Critical Languages I

201 Intermediate Critical Languages II

315 Reading Critical Languages

316 Writing Critical Languages

596 Study of a critical language at the elementary level with emphasis on conversation. The writing system will be introduced at an appropriate time, depending on the nature of the individual language.

598 Readings in Linguistics

LING 200 Intermediate Critical Languages I

4 hrs.

Continuation of LING 101, with greater attention to achieving self-reliance in conversation and to increasing reading and writing skills with the help of a dictionary. Prerequisite: LING 101 or equivalent.

LING 201 Intermediate Critical Languages II

4 hrs.

Continuation of 200. Prerequisite: LING 200 or equivalent.

LING 315 Reading Critical Languages

4 hrs.

Intensive practice in reading literature, newspapers, and other literary materials in the critical language, including sources from the student’s major field of study. Prerequisite: LING 201 or equivalent.

LING 316 Writing Critical Languages

4 hrs.

Intensive practice in writing a critical language to improve the student’s ability to express himself/herself effectively and to develop an individual style of composition. Prerequisite: LING 201 or equivalent.

LING 321 Phonology and Morphology

4 hrs.

An introduction to the study of sound systems (phonology) and word systems (morphology) and to the principles and methods of their analysis and description. Prerequisite: One linguistically-related course.

LING 331 Syntax and Semantics

4 hrs.

An introduction to the study of sentence systems (syntax) and meaning systems (semantics) and to the principles and methods of their analysis and description. Prerequisite: One linguistically-related course.

LING 421 The Development of Language: History and Dialects

4 hrs.

An examination of the processes of language change and dialect development and the principles which govern the historical and comparative study of languages and dialects. Prerequisite: one linguistically-related course.

LING 500 Introduction to Linguistics

4 hrs.

An introduction to modern linguistic theory and to the application of that theory to linguistically-related disciplines.

LING 511 Methods of Teaching English as a Second Language

4 hrs.

Study of the application of linguistics and other disciplines to the teaching of Standard American English to speakers of other languages, with emphasis on current methods and materials for instruction and testing. Course work will include tutorial experience.

LING 512 Principles of Teaching English as a Second Language

4 hrs.

Study of the linguistic theory and historical development of the teaching of English to speakers of other languages, as well as an examination of second language acquisition and the various aspects of bilingualism. Prerequisite: an introductory course in linguistics.
LING 515 Methods of Teaching Critical Languages
2 hrs.
Study of the application of linguistics to the teaching of one or more "critical" languages. Emphasis will be on modern and traditional methods and materials for instruction and testing. Course work will include tutorial experience. May be repeated for credit for a different language. Prerequisite: LING 201 or equivalent.

LING 540 Generative Grammar
4 hrs.
An examination of the theories of Transformational Grammar and Generative Semantics, and a study of their origins, development, modification, and applications. Prerequisite: LING 500 or equivalent.

LING 551 Psycholinguistics
4 hrs.
A study of linguistic systems as they connect language and thought—and relate competence to performance—in the acquisition, production, and perception of language. Prerequisite: LING 500 or equivalent.

LING 552 Sociolinguistics
4 hrs.
A systematic study of the linguistic correlates of social behavior and the influence of society on the nature of language.

LING 597 Seminar in Linguistics—Variable Topics
2-6 hrs.
Each seminar will deal with a selected topic relating to language and/or linguistics. Since content will vary from semester to semester, students are advised to check course descriptions in the Department office. The Department will welcome suggestions for seminar topics from students. Prerequisite: major or minor status or permission of instructor.

LING 598 Readings in Linguistics
1-4 hrs.
An opportunity for advanced students with good scholastic records to pursue the independent study of a linguistic subject not specifically covered by any of the courses in the Linguistics program. Repeatable for credit. Prerequisite: Permission of instructor and chairperson.

Translation Program

Minor in Translation

Admission to the program and prerequisites
1. The minor in translation requires the completion of the courses or their equivalents in one of the following languages as prerequisites at specific levels of the program:
   - In French:
     316 French Composition
     317 French Conversation
     328 Introduction to French Prose
     551 Advanced French Grammar and Composition
   - In German:
     316 German Composition
     317 German Conversation
     325 Introduction to the Study of German Literature
     552 Advanced German Composition
   - In Latvian:
     316 Latvian Composition
     317 Latvian Conversation
     325 Introduction to the Study of Latvian Literature
     551 Advanced Latvian Grammar and Composition
   - In Spanish:
     316 Spanish Composition
     317 Spanish Conversation
     325 Introduction to the Study of Spanish Literature
     552 Advanced Spanish Grammar and Composition

2. The prerequisite Language courses must have been completed with a "C" average prior to enrolling in the program.

3. Translation courses (TRNS) may not be counted toward a major or minor in Foreign Languages.

4. Students with a strong background in one foreign language will be encouraged to begin study of a second foreign language.

5. Students will be expected to demonstrate the ability to type at a reasonable speed.

Required Courses (21 hours)
LING 105 The Nature of Language . . .4 hrs.
ENGL 305 Practical Writing . . .4 hrs.
TRNS 310 Introduction to Translation 3 hrs.
TRNS 510 Translation Seminar . . .4 hrs.
TRNS 590 Translation Practicum (2 X 3 hrs.) . . .6 hrs.

Translation Courses (TRNS)
TRNS 310 Introduction to Translation 3 hrs.
Survey of the history and theories of translation. Discussion of the importance of translation in international commerce, international political organizations, scientific research, and the transfer of technology and culture. Other topics include the tools of the trade, institutions for advanced training, employment opportunities, free-lance work, and rate of compensation.

TRNS 510 Translation Seminar 4 hrs.
Intensive practice in translation, primarily of non-literary documents, into English. The course will also include some practical work in lexicography, error analysis, translation quality assessment, and general problem solving. Prerequisites: LING 105, ENGL 305, TRNS 310, FREN 316, 317, 328, 551, or GER 316, 317, 325, 552, or LATV 316, 317, 325, 551, or SPAN 316, 317, 325, 552.

TRNS 590 Translation Practicum 3-6 hrs.
Under the direction of a faculty adviser, a student will serve an internship in the translation department of a major company. Work under the supervision of a professional translator or in a translation agency, complete a substantial and useful translation project on campus, or attend a series of translation workshops. Off-campus work will be evaluated jointly by institutions or individuals supervising the internship and the faculty adviser. On-campus projects will be evaluated by a panel of faculty members. Specific assignments will be arranged in consultation with the adviser during the semester preceding the one in which the student expects to enroll in 590. TRNS 590 may be taken in two consecutive semesters (16 contact hours per week, 3 credit hours per semester, total of 6 credit hours) or in a single semester (32 contact hours per week, 6 credit hours). Prerequisite: TRNS 510.
### Mathematics and Statistics

**Joseph T. Buckley, Chair**

Demissie Alemayehu

Youcef Alavi

Robert Berko

Dwayne Channell

Gary Chantarid

A. Bruce Clarke

Paul Eeningburg

Karen Geuther

Anthony Gioia

Donald Goldsmith

Christian Hirsch

Philip Haen

S. F. Kapoor

Robert Lang

Joseph McKean

Ruth Meyer

Daniel Mihalko

Ortrud Oellemann

Dennis Pence

John W. Petro

James H. Powell

James Riley

Erik A. Schreiner

Allen Schwerik

Robert Sechler

Gerald Severs

Arthur Stoddart

Michael Stolte

Jay Treffman

Walter Turner

Arthur White

Kung Wei Yang

The Mathematics and Statistics Department offers a wide variety of courses and programs in both theoretical and applied areas. There are four majors available: Applied, General, Secondary Teaching, and Statistics. Minors include the General Minor, Applied Statistics Minor, Statistics, Secondary Teaching of Mathematics, and the Science and Mathematics Teaching Minor. These majors and minor programs incorporate emphasis on computer methods, mathematical modeling, and problem solving.

The various mathematics and statistics majors all require two semesters of calculus as well as introductory computer science courses. Students may begin coursework in these areas while deciding on a branch of mathematics in which to specialize.

During the first year interested students should contact Dr. James Powell, associate chair, or Barbara Treadwell, student advisor, to the chair, through the Mathematics and Statistics Department. Phone (616) 383-6165 or write: Mathematics and Statistics Department, Western Michigan University, Kalamazoo, MI 49008. All majors must contact a faculty adviser in mathematics and statistics during their second year of study. All minors, except General Math minors, must contact an adviser.

At most, one course with a grade below "C" can be applied toward a major or minor in Mathematics or Statistics.

### Mathematics Major Options

#### Applied Mathematics Option

There is a growing need for people who combine knowledge of mathematics and science to formulate and solve practical problems. The intent of the Applied Mathematics Option is to provide a broad range of computational and analytical skills, practice in mathematical modeling and some fundamental knowledge of a scientific discipline. Computational and applied mathematicians are employed in a variety of positions in industry, business, and government. Students must complete a minor in one of Biomedical Sciences, Chemistry, Computer Science, Physics, or Statistics. Students should select their minor in the area in which they intend to apply their mathematical talents and then they should select electives that are particularly suited to the problems in that area.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH 122</td>
<td>Calculus I</td>
<td>4</td>
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<tr>
<td>MATH 123</td>
<td>Calculus II</td>
<td>4</td>
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<tr>
<td>MATH 230</td>
<td>Elementary Linear Algebra</td>
<td>4</td>
</tr>
<tr>
<td>MATH 272</td>
<td>Vectors and Multivariate Calculus</td>
<td>4</td>
</tr>
<tr>
<td>MATH 274</td>
<td>Introduction to Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>MATH 310</td>
<td>Discrete Mathematical Structures</td>
<td>3</td>
</tr>
<tr>
<td>MATH 314</td>
<td>Mathematical Proofs</td>
<td>4</td>
</tr>
<tr>
<td>MATH 364</td>
<td>Statistical Methods</td>
<td>4</td>
</tr>
<tr>
<td>MATH 402</td>
<td>Mathematical Modeling</td>
<td>3</td>
</tr>
<tr>
<td>MATH 570</td>
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<tr>
<td>MATH 574</td>
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</tbody>
</table>

#### Cognate Science Requirements:

- **CS**: 11 Computer Programming I | 3
- **CS**: 201 Programming in FORTRAN | 2
- **CS/MATH**: 506 Scientific Programming | 3
- **PHYS**: 210 Mechanics and Heat | 4
- **PHYS**: 211 Electricity and Light | 4
- **CHEM**: 101 or 102 General Chemistry | 4

**Note**: CHEM 101 or 102 General Chemistry will satisfy the Area III General Education requirements in the Distribution Program. MATH 507 may be substituted for MATH 506 in the above "Cognate Science Requirements" and better prepared students are encouraged to do so. However, MATH 507 cannot be counted both as a mathematics elective and as a cognitive science requirement.

**Students must complete a minor in one of the following areas**: Biomedical Sciences, Chemistry, Computer Science, Physics, or Statistics. The courses listed above under "Cognate Science Requirements" may also be used to fulfill requirements for the minor where applicable.

- **MATH**: 122
- **MATH**: 123
- **MATH**: 230
- **MATH**: 231
- **MATH**: 314
- **MATH**: 330
- **MATH**: 340
- **MATH**: 350
- **MATH**: 364
- **MATH**: 440
- **MATH**: 550
- **One of MATH 490, 506, 540, 570, 580**: 3

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### Statistics Major

The field of statistics is concerned with collection of numerical data, with various descriptive and inferential methods of analyzing data and with proper interpretation of the results. Statisticians frequently work in government and industry as part of a team of specialists, in areas such as business, biology, pharmaceuticals, demography, economics, and the health sciences. Shortages of qualified statisticians are anticipated through the next decade.

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<td>MATH 362</td>
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<td>MATH 391</td>
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<tr>
<td>MATH 460</td>
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<tr>
<td>MATH 567</td>
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</tbody>
</table>

**Plus CS 111 and CS 201, and MATH 506 or CS 306, and MATH 506 (5-8 hrs.). A minor in**

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### General Mathematics Option

The General Mathematics Option is a flexible program that may be combined with minors in diverse areas such as physics in the natural sciences, economics in the social sciences, or even be used as a base for law school. This option also serves as excellent preparation for graduate study in mathematics. A student in this program should develop, in addition to a broad background in mathematics, an ability for communicating mathematics and for rigorous logical thinking.

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<td>MATH 440</td>
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<tr>
<td>MATH 570</td>
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<td>MATH 574</td>
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**Three of MATH 274, 362, 364, 402, 408, 490, 506, 510, 530, 572, 574, 580 (at least one at 400 level or above)** |

**Plus CS 111**

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### Secondary Teaching Option

The Secondary Teaching Option, which combines theoretical mathematics with teaching techniques, is designed for students planning to teach in a junior or senior high school. With the current national focus on the improvement of mathematics and science education, this program offers a timely and attractive option.

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<td>MATH 340</td>
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<td>MATH 440</td>
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<tr>
<td>MATH 550</td>
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<td>3</td>
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<tr>
<td>One of MATH 490, 506, 540, 570, 580</td>
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### Statistics

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<td>MATH 460</td>
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<tr>
<td>MATH 567</td>
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</tbody>
</table>

**Two of MATH 563, 566, 568, 570 | 6**

**Plus CS 111 and CS 201, and MATH 506 or CS 306, and MATH 506 (5-8 hrs.). A minor in**
Mathematics Minor Options

General Mathematics Minor Option
Students interested in the General Mathematics Minor Option may plan their program using the information below. An adviser’s approval is not necessary unless a change in the requirements is requested.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MATH 122</td>
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<tr>
<td>MATH 123</td>
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<tr>
<td>MATH 230</td>
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<tr>
<td>MATH 237</td>
<td>4</td>
</tr>
<tr>
<td>Computer Science courses: One of CS 105, 106, 111, 306</td>
<td>1-3</td>
</tr>
<tr>
<td>Electives</td>
<td>6-8</td>
</tr>
</tbody>
</table>

Two of the following: MATH 272, 274 (not if 374 is elected), 310 or 314, 330, 340, 362 or 364, 402, 498, 440 or 445, 506, 507

Substitutions or exceptions require approval of departmental adviser. Some electives have other prerequisites.

Secondary Teaching Minor Option

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH 122</td>
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<td>MATH 230</td>
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<td>MATH 250</td>
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<tr>
<td>MATH 314</td>
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<tr>
<td>MATH 350</td>
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</table>

Approved electives (MATH 330 or 340) | 2-3 |

Statistics Minor Option

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MATH 260</td>
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<tr>
<td>MATH 364</td>
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<tr>
<td>MATH 366</td>
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<td>MATH 567</td>
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<td>MATH 568</td>
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<tr>
<td>CS 306</td>
<td>2</td>
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</tbody>
</table>

Approved Elective: 3-4

The elective would normally be selected from the following list of courses: MATH 563, 566, 567 and 568. An approved introductory course in statistics may be substituted for either 260, 364 or 366.

Applied Statistics Minor Option

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CS 306</td>
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<tr>
<td>MATH 366</td>
<td>4</td>
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<tr>
<td>MATH 367</td>
<td>4</td>
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<tr>
<td>Two of MATH 563, 566, 568</td>
<td>6</td>
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</tbody>
</table>

Middle School and Junior High School Teaching Minor Option

Students in a Middle School and Junior High School curriculum must contact a mathematics adviser for information on available mathematics programs.

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH 150</td>
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<tr>
<td>MATH 151</td>
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<tr>
<td>MATH 265</td>
<td>4</td>
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<tr>
<td>MATH 452</td>
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Mathematics and Statistics Courses (MATH)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH 552</td>
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</tr>
<tr>
<td>MATH 553</td>
<td>2</td>
</tr>
<tr>
<td>MATH 595</td>
<td>2</td>
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</tbody>
</table>

Science and Mathematics Teaching Minor

The Department of Mathematics and Statistics participates in the Science and Mathematics Teaching Minor for students in the elementary curriculum. For a full description of the program, consult its listing under the “Interdisciplinary Programs” section in the College of Arts and Sciences.

Honors in Mathematics

Qualified students may plan a program to graduate with honors in mathematics or statistics. The requirements are:

1. Grade point average of at least 3.7 in mathematics and statistics courses
2. Overall grade point average of at least 3.25
3. Completion of two of the following:
   - an honors seminar (can be the Putnam Seminar)
   - an upper-level theoretical course
   - an approved independent study project

Interested students should see the academic chair in their junior year or early in their senior year to plan an “honors program”.

Putnam Seminar

The Putnam Seminar is a problem-solving seminar offered under the course number MATH 390. Under the direction of a faculty member students practice techniques for solving very challenging problems. Students in the seminar participate in the William Lowell Putnam national intercollegiate mathematics competition.

Mathematics and Statistics Courses (MATH)

Students who fail to earn a “C” or better grade in a prerequisite course will not be permitted to enroll in the next sequence course.

(Courses described in italics are approved for General Education.)

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH 101</td>
<td>2</td>
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<tr>
<td>MATH 102</td>
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</table>

MATH 101 Trigonometry

2 hrs.

Basic introductory course in trigonometry. Topics include angles and their measurement, trigonometric functions and their graphs, triangle computations, identities, solution of equations and inequalities, inverse trig function. Students cannot receive full credit for both MATH 101 and 118. Prerequisite: Three years of college preparatory mathematics and satisfactory score on placement test, or MATH 111.

MATH 109 Computational Skills

2 hrs.

A mastery-based remedial course designed to sharpen computational skills involving whole numbers, fractions, decimals, percents, signed numbers and simple geometric figures. These skills are used in solving word problems. All entering students must take an exam on this material unless exempted on the basis of ACT Mathematics score. Students who do not pass the exam are required to take this course and enrollment in this course is restricted to these students. Credit for the course will not apply to the number of credits needed for graduation.

MATH 110 Algebra I

3 hrs.

A course in algebra at the level usually covered in high school. Review and practice with basic algebraic skills. Topics include arithmetic foundations of algebra, properties of real numbers, linear equations and inequalities, and systems of linear equations. This is a continuous progress, mastery-based course. Credit for MATH 110 will not be granted to anyone having already received credit with grade of “C” or better in any of MATH 101, 116, 118, 122, or 200 or equivalent transferable courses. Prerequisite: MATH 109 or satisfactory score on placement test.

MATH 111 Algebra II

3 hrs.

A continuation of MATH 110. Topics include polynomials, fractional and radical equations, logarithmic and exponential functions, complex numbers, quadratic equations, and systems of quadratic equations. Credit for MATH 111 will not be granted to anyone having already received credit with a grade of “C” or better in any of MATH 101, 116, 122, 200 or equivalent transferable courses. Prerequisite: MATH 110, or 1 year of high school algebra and satisfactory score on placement test.

MATH 116 Finite Mathematics with Applications

3 hrs.

This course is designed to give the student a background in the elements of finite mathematics. Included will be a discussion of: sets, relations and functions, systems of linear equations and inequalities, vectors and matrices, concepts of probability, random variables and distribution functions; applications of linear algebra and probability. Prerequisite: MATH 110, or 2 years of college preparatory mathematics and satisfactory score on placement test.

MATH 118 Precalculus Mathematics

4 hrs.

This course is designed to provide the student with basic algebraic and trigonometric concepts necessary for calculus. Topics include: real numbers, inequalities, coordinate systems, functions, polynomials, solutions of polynomial equations, exponential and logarithmic functions, trigonometry and trigonometric functions. Prerequisite: MATH 111, or at least 3 years of college preparatory mathematics and satisfactory score on placement test. Students cannot receive full credit for both MATH 101 and 118.

MATH 122 Calculus I

4 hrs.

The first of a two-semester sequence in differential and integral calculus. Functions, limits, continuity, techniques and applications of differentiation, integration, trigonometric, logarithmic and exponential functions. Prerequisite: MATH 118, or at least 3½ years of college preparatory mathematics, including trigonometry and satisfactory score on placement test. Students cannot receive full credit for MATH 122 and 200.

MATH 123 Calculus II

4 hrs.

A continuation of Calculus I. Techniques and applications of integration, trigonometric functions, sequences and series, indeterminate forms, improper integrals, applications to elementary differential equations. Prerequisite: MATH 122, (CS 105 or 106 recommended). Students will not receive full credit for MATH 123 and 200.
A terminal one semester course in calculus with satisfactory score on placement test. Students 3 hrs.
in the MATH122-123 sequence. Prerequisite: Vectors and geometry in two and three dimensions, systems of linear equations, matrix algebra, linear transformations in $\mathbb{R}^2$ and $\mathbb{R}^3$, generalizations to the vector spaces $\mathbb{R}^n$, inner products, determinants. Some emphasis on proofs. Prerequisite: MATH 122 (MATH 123 recommended).

MATH 230 Elementary Linear Algebra 4 hrs.
Vectors and geometry in two and three dimensions, systems of linear equations, matrix algebra, linear transformations in $\mathbb{R}^2$ and $\mathbb{R}^3$, generalizations to the vector spaces $\mathbb{R}^n$, inner products, determinants. Some emphasis on proofs. Prerequisite: MATH 122 (MATH 123 recommended).

MATH 230 Elementary Linear Algebra 4 hrs.
Vectors and geometry in two and three dimensions, systems of linear equations, matrix algebra, linear transformations in $\mathbb{R}^2$ and $\mathbb{R}^3$, generalizations to the vector spaces $\mathbb{R}^n$, inner products, determinants. Some emphasis on proofs. Prerequisite: MATH 122 (MATH 123 recommended).

MATH 230 Elementary Linear Algebra 4 hrs.
Vectors and geometry in two and three dimensions, systems of linear equations, matrix algebra, linear transformations in $\mathbb{R}^2$ and $\mathbb{R}^3$, generalizations to the vector spaces $\mathbb{R}^n$, inner products, determinants. Some emphasis on proofs. Prerequisite: MATH 122 (MATH 123 recommended).

An introduction to ways in which computers and microcomputers can be used to enhance and extend the learning of mathematical topics in grades 7-12. Emphasis will be on the use of computers as a problem-solving tool. Prerequisite: Satisfactory completion of the University Computer Literacy Requirement and MATH 123.

An introduction to ways in which computers and microcomputers can be used to enhance and extend the learning of mathematical topics in grades 7-12. Emphasis will be on the use of computers as a problem-solving tool. Prerequisite: Satisfactory completion of the University Computer Literacy Requirement and MATH 123.

MATH 260 Elementary Statistics 4 hrs.
The purpose of this course is to introduce students to the rudiments of statistics. Basic concepts, rather than detailed derivation, are stressed. Topics include: probability, discrete and random variables, means and variances, binomial, hypergeometric, normal, chi-square, F distributions, interval estimates, tests of hypotheses. Students can receive credit for only one of 260, 364, 366. Prerequisite: MATH 200 or 122.

MATH 261 Engineering Statistics 3 hrs.
Introduction to statistical methodology, emphasizing applications in engineering. Topics include descriptive and inferential statistics, least squares curve fitting, correlation, and analysis of variance. Prerequisite: MATH 123 and a course in the use of computers. Cross listed with IE 261.

MATH 265 Probability and Statistics for Elementary Teachers with Computer Applications 4 hrs.
The topics in this course will include the organization of statistical measures, probability and decision making, testing hypotheses, and correlation. Students will learn a programming language and subsequently use computer techniques to assist in data analysis. The problems of teaching probability and statistics to elementary school children will be considered. Prerequisite: MATH 151.

MATH 272 Vector and Multivariate Calculus 4 hrs.
Vector calculus, functions of several variables, partial differentiation, multiple integration. Prerequisite: MATH 123.

MATH 274 Introduction to Differential Equation 3 hrs.
Techniques of solving differential equations. Prerequisite: MATH 123.

MATH 310 Discrete Mathematical Structures 3 hrs.
Sets, functions, relations, graphs, digraphs, trees, mathematical induction and other proof techniques, counting techniques, Boolean algebra and asymptotic analysis of algorithms. The relationship of these concepts with computer science will be emphasized. MATH 310 and 314 may not both be used for the same major or minor. Prerequisites: MATH 230 or 374, and an introductory programming course.

MATH 314 Mathematical Proofs 3 hrs.
The prime objective of this course is to involve the students in the writing and presenting of mathematical proofs. The topics in this course will include logic, types of proof, sets, functions, relations, mathematical induction, proofs in an algebraic setting such as divisibility properties of the integers, proofs in an analytic setting such as limits and continuity of functions of one variable. Additional topics may include elementary cardinal number theory, paradoxes and simple geometric axiom systems. MATH 314 and 310 may not both be used for the same major or minor. Prerequisite: MATH 123, and 230 or 374.

MATH 330 Modern Algebra 4 hrs.
Introduction to groups, rings, integral domains, fields. Emphasis will be placed on the integers and polynomial rings over a field. Prerequisite: MATH 314 or consent of instructor.

MATH 340 Fundamental Concepts of Geometry 3 hrs.
A critical re-examination of plane and solid euclidean geometry followed by euclidean geometry of four dimensions and noneuclidean geometry. Prerequisite: MATH 314.

MATH 350 Teaching of Junior High Mathematics 2 hrs.
In this course consideration is given to curriculum problems and trends in junior high school mathematics and to specific problems of teaching mathematics effectively to junior high school pupils. Activity and laboratory approaches for teaching mathematics will be emphasized. Prerequisite: MATH 314 or consent of instructor.

MATH 361 Probability for Engineers 3 hrs.
Introduction to probability emphasizing applications in engineering. Use of discrete and continuous random variables common to engineering problems. Random processes used in engineering models. Prerequisite: MATH 272. Cross listed with IE 361.

MATH 362 Probability 4 hrs.
Discrete probability spaces, conditional probability, discrete and continuous random variables, expectations, moment generating functions, special distributions. Prerequisite: MATH 123.

MATH 364 Statistical Methods 4 hrs.
This course treats both the theory and applications of statistical. Topics include: empirical distributions, discrete probability, random variables and probability distributions, special distributions, the central limit theorem, sampling distributions, point and interval estimation, hypothesis testing, confidence interval estimation, correlation and regression, the design of experiments. Students can receive credit for only one of MATH 260, 364, 366. Prerequisite: MATH 123.

MATH 366 Introduction to Statistics 4 hrs.
An introductory course in statistics for upper level students possessing a limited mathematics background. The emphasis is on the use of statistical tools rather than on their theoretical development. Topics will include probability distributions, means and variances, interval estimates, tests of hypotheses, correlation and regression. This course will not count toward a mathematics major. Students can receive credit for only one of MATH 260, 364, 366.

MATH 374 Introduction to Linear Algebra and Differential Equations 4 hrs.
This course covers elementary linear algebra and differential equations, applying techniques of linear algebra to the solution of differential equations. Topics chosen from: first order equations and applications, matrices, vector spaces, linear transformations, linear differential equations, systems of differential equations, and series solutions. Students cannot receive credit for both 274 and 374, or 230 and 374. Prerequisite: MATH 272.

MATH 390 Undergraduate Seminar 1 hr.
This seminar features student participation covering mathematical topics not normally included in regular major programs. May be repeated for credit. Prerequisite: permission of the Department.

MATH 391 Statistical Consulting 1 hr.
Provides undergraduates with the opportunity to observe and participate with statistical consultants on real projects. Students are exposed to the statistical consulting experiences from data manipulation and analysis to the design of the statistical aspects of a project and from interaction with a client to the production of
MATH 506 Scientific Programming
3 hrs.
An introduction to solving scientific and engineering problems on computers. The topics include root-finding, matrix calculations, numerical integration and the numerical solution of differential equations. The FORTRAN language and various library software packages will be used. Prerequisite: MATH 230 or MATH 374, and CS 201 or CS 306. Jointly listed with Computer Science.

MATH 507 Numerical Analysis I
3 hrs.
The analysis and use of numerical algorithms for the solution of nonlinear equations, systems of linear equations, interpolation, numerical differentiation and integration. Prerequisite: MATH 230, MATH 272 and MATH 274 or MATH 374 and MATH/CS 506. Cross listed with Computer Science.

MATH 510 Applied Matrix Algebra
3 hrs.
An introduction to the study of methods to solve linear systems of equations, least squares approximation problems, and eigenvalue problems. Topics covered include the algebra of real and complex matrices, with particular emphasis on LU-decompositions, QR-decompositions, singular value decompositions, generalized inverses, Hermitian symmetric matrices, positive definite matrices and the Spectral Theorem. Applications from multivariate calculus will be discussed. Prerequisites: either MATH 230 and MATH 272, or MATH 374.

MATH 530 Linear Algebra
3 hrs.
Properties of finite dimensional abstract vector spaces, linear transformations, and matrix algebra are studied. Prerequisite: MATH 330.

MATH 540 Advanced Geometry
3 hrs.
Topics to be selected from projective geometry, algebraic geometry, differential geometry, or non-euclidean geometry. Prerequisite: Consent of instructor.

MATH 550 Teaching of Secondary Mathematics
3 hrs.
In this course consideration is given to curriculum problems and trends in secondary school mathematics and to specific problems of teaching mathematics effectively to secondary school students. This course may be taken in conjunction with ED 301 through participating in the Cooperative Mathematics Program conducted during winter semester. Contact the departmental office at least one semester in advance for additional information. Prerequisite: MATH 330 and 350.

MATH 552 Teaching of Elementary Mathematics
3 hrs.
Consideration is given to curriculum problems and trends in elementary school mathematics and to specific problems of teaching mathematics effectively to elementary school children. Computer terminology and applications of computers in elementary mathematics classrooms will be integral parts of this course. Prerequisite: MATH 265 or consent of department.

MATH 553 Participation in Elementary Mathematics Teaching
2 hrs.
Students will work cooperatively with an elementary school teacher in an elementary classroom in various aspects of helping children learn mathematics. The course will provide the prospective elementary teacher with an opportunity to work with small groups of young children and to observe them in mathematics learning. The student will be required to maintain a journal and meet weekly with a staff member supervising the course. Can be elected on Credit/No Credit basis only. Prerequisite: MATH 552.

MATH 560 Applied Probability
3 hrs.
A first course in probability for upper division and graduate students interested in applications. Topics will include: probability spaces, expectation, moment generating functions, central limit theorem, special discrete and continuous distributions, reliability and production problems, and Markov chain methods. Prerequisite: MATH 272.

MATH 561 Applied Multivariate Statistical Methods
3 hrs.
An applied treatment of multivariate procedures is presented. Classical procedures such as Hotelling's $T^2$-squared methods are discussed for the one and two sample problems and MANOVA for standard designs. Topics that will be accentuated are principal components, discriminant analysis, and factor analysis. Emphasis will be on graphical methods and applications. Prerequisites: An introductory course in statistics and a course in linear algebra.

MATH 562 Statistical Analysis I
4 hrs.
The first course in the sequence 562, 566 or applied statistics which combines both theory and applications. Topics include: elementary theory of estimation and hypothesis testing, the use of the normal, binomial, chi-square, F and t distributions in statistics problems involving means and variances, simple linear regression and correlation; one way analysis of variance, and fixed effects models. Prerequisite: MATH 560 or 362.

MATH 563 Sample Survey Methods
3 hrs.
This course consists of a broad overview of the techniques of survey data collection and analysis and contains a minimum of theory. Topics may include: simple random, stratified, systematic, single-state cluster, and two-stage cluster sampling; ratio and regression estimation; subpopulation analyses; problems of nonresponse; surveys of sensitive issues; minimization of survey costs; sample size determination. Real surveys are discussed and actual survey data are analyzed. Prerequisite: An introductory statistics course and consent of instructor.

MATH 564 Introduction to Statistical Computing
2 hrs.
An introduction to the use of statistical computer software. The emphasis will be on how to use existing software effectively. Statistical packages discussed will include MINITAB, SAS, SPSS, and BMDP. Statistical work treated will include: data entry, editing, statistical analysis of the one and two sample problems, analysis of variance, and regression analysis. Prerequisites: WMU’s computer literacy requirement and an introductory statistics course.

MATH 566 Nonparametric Statistical Methods
3 hrs.
This course presents a broad overview of statistical methods commonly referred to as nonparametric or distribution free methods. Topics include: inferences for proportions, contingency tables, goodness of fit problems, estimation and hypothesis testing based on ranking methods, measures of rank correlation,
efficiency. Emphasis will be on the application of nonparametric statistical methods to data from many different applied fields. Prerequisite: An introductory statistics course.

MATH 567 Statistical Design and Analysis of Experiments
4 hrs.
A course in experimental design and the analysis of variance with particular emphasis on industrial experiments. Topics include: complete randomized, randomized complete block, latin square, and split-plot designs; orthogonal contrasts and polynomials; multiple comparisons; factorial arrangement of treatments, confounding, fractional replication. The course is molded around the complete analysis of good applied problems. Prerequisite: An introductory statistics course.

MATH 568 Regression Analysis
3 hrs.
An applied course in regression analysis; simple and multiple linear regression; resolution of fit of a model, including residual analysis; precision of estimation, and tests of general hypotheses; model building; step-wise regression; use of indicator variables; non-linear regression. Prerequisite: An introductory statistics course.

MATH 570 Advanced Calculus
3 hrs.
Properties of real numbers, Cauchy sequences, series, limits, continuity, differentiation, Riemann integral, sequences and series of functions. Prerequisites: MATH 272 and 314 (330 recommended).

MATH 572 Vector Calculus and Complex Variables
4 hrs.
Functions of several variables, implicit and inverse functions, Jacobians, multiple integrals, Green’s Theorem, divergence, curl, the Laplacian, Stoke’s Theorem, analytic functions, Laurent expansions, residues, argument principle, and conformal mapping. Prerequisites: MATH 230, 272 and 274 or 374.

MATH 574 Advanced Differential Equations
3 hrs.
Series solutions at ordinary and singular points of linear ordinary equations, Bessel and Legendre functions, self-adjoint boundary value problems, Fourier series, solution of partial differential equations by separation of variables. Prerequisites: MATH 230, 272, and 274 (or MATH 374).

MATH 580 Number Theory
3 hrs.
Diophantine equations, congruences, quadratic residues, and properties of number-theoretic functions. Prerequisite: MATH 330.

MATH 595 Seminar in Elementary Mathematics Education
1-3 hrs.
Current curriculum problems in the area of elementary mathematics education are identified and discussed. Students are required to identify a problem and give both an oral and written report on research in that area. Prerequisite: MATH 552.

MATH 599 Independent Study in Mathematics
1-3 hrs.
Advanced students with good scholastic records may elect to pursue independently the study of some topic having special interest for them. Topics are chosen and arrangements are made to suit the needs of each particular student. Prerequisite: Approval of chairperson of Department.

MEDIEVAL INSTITUTE PROGRAM
See “Interdisciplinary Programs” in the College of Arts and Sciences.

PHILOSOPHY
Michael Pritchard, Chair
John Dilworth
Joseph Ellin
Arthur Falk
Richard Puleski
Gregory Sheridan
Dale Westphal

Students majoring in philosophy may go into teaching, law, medicine, journalism, government, computer programming, business or any number of other careers. Philosophy is attractive to those who are prepared to search for understanding for its own sake, who do not expect ready-made answers or easy solutions, and who are willing to subject their assumptions to critical scrutiny. Prospective philosophy teachers, whether at the university, junior college, or even high school level, should anticipate continuing for an advanced degree.

Appropriate courses and/or independent studies in philosophy can serve the purpose of helping to unify or “cap off” a wide variety of concentrations for those students who select the university’s “student planned curriculum,” described in the General Information section of this catalog. The Philosophy Department encourages these concentrations and members of the staff will be happy to serve as advisers to students wishing to construct concentrations that involve philosophy.

The Philosophy Department offers courses located on the fifth floor of Friedmann Hall. Students are invited to visit the department office and the offices of faculty at any time. Office hours are posted beside each instructor’s door.

Before preregistration each term, the faculty prepare brief written descriptions of the courses to be offered. These descriptions are posted on the department bulletin board outside the department office and additional copies may be obtained in the office. The department also announces its tentative course offerings a year in advance. Hence before preregistration for the semester, the student can know which courses will probably be offered in the following fall, winter, spring, and summer.

Robert Friedmann
Philosophy Prize
A prize, normally $50, named in honor of Dr. Friedmann, the first person to teach philosophy at Western, is awarded annually to an outstanding senior philosophy student.

Honors Program
Applications to the departmental honors program are invited from qualified students. A student wishing to enter the program must submit a proposal for independent research to a faculty committee. Normally, the honors candidate works in close association with a professor of his/her choice and submits a paper (or other project of philosophic merit) to the department. To achieve honors in philosophy, the candidate’s academic record must be of high quality and the project must be outstanding. Interdisciplinary work involving faculty from other departments is encouraged.

Normally, but not necessarily, the honors student is a senior major; in exceptional cases non-seniors or non-majors may be considered.
Philosophy Major
Because the Department of Philosophy believes that there is no single "correct" approach to the study of philosophy, but that, as much as possible, each student under the guidance of a faculty member should design a program in accordance with his/her interests, ability, and intellectual maturity, there are no required courses in philosophy. Instead, students majoring in philosophy must plan their program with a faculty adviser. Every faculty member serves as a student adviser and normally students may select any adviser they prefer. The adviser works closely with the student in planning a program of studies and helps the student make an informed and intelligent choice of courses.

The student should select an adviser as soon as he/she is fairly certain that he/she intends to major in philosophy. Normally this would not occur until after he/she has taken at least one, and possibly two philosophy courses. Every major must choose and consult with an adviser no later than the completion of 12 hours of philosophy courses. No hours beyond the 12th will be credited towards a Philosophy major unless the approval of an adviser has been obtained. Students are encouraged to see their advisers frequently, but consultation should occur at least once each academic year.

A major consists of a minimum of 28 hours in philosophy. PHIIL 100 and 200 cannot both be taken towards a major or minor.

Cognates: Appropriate courses in other departments may be used towards a philosophy major (not a minor) up to a maximum of four hours. Consult with the department chairperson.

Professional and Applied Ethics Concentration
Philosophy majors who have a special interest in the study of ethics may have their major identified as a Professional and Applied Ethics Concentration, provided that the following course requirements are met:

1. A minimum of 28 hours in Philosophy
2. ONE of the following (4 hrs.): PHIIL 200, 220, 300, 301
3. Two of the following (8 hrs.): PHIIL 201, 303, 310, 311, 313, 314, 534
4. PHIIL 510 Professional Ethics (4 hrs.)

The remaining credit hour requirements may be satisfied in a variety of ways. The student may complete the minor by doing additional course work within the Department of Philosophy. Any courses, including PHIIL 498: Independent Study, are applicable. Also, the student may apply up to four credit hours from an ethics-related course in another department, subject to approval of the Department of Philosophy.

Students Not Majoring or Minoring in Philosophy
Students not majoring or minoring in philosophy find that philosophy adds intellectual depth to their major field of study. Philosophy by its nature touches on many areas of life and thought, frequently from a perspective that students find valuable and exciting. Non-majors often consider their philosophy courses an essential element in their general intellectual growth.

In recognition of this, the department offers a wide range of courses for non-majors/minors. Students interested in a general introduction to philosophy should consider PHIIL 100 or 200, students interested in a philosophical approach to a more specialized area should consider PHIIL 201, 220, or some upper-level cognate.

Students interested in a more technical appreciation of the central problems of philosophy should consider such courses as PHIL 332 (Theory of Knowledge) and PHIL 333 (Metaphysics). Many students will find it advisable to begin with either PHIIL 100, 200 or 201, and then continue on the upper level.

Repeating Courses for Credit
Since philosophy courses may vary widely in content from year to year, a student may be occasionally justified in repeating a course for credit. Students who wish to do so must obtain permission of the instructor before they register. If the student requests, the department will have the student's record indicate that the course when repeated differed substantially in content from the identically numbered course previously completed.

Philosophy Courses (PHIL)
(Courses described in italics are approved for General Education.)

INTRODUCTORY COURSES
PHIL 100 Critical Thinking and Writing
4 hrs.
A seminar for students who wish to improve their ability to think analytically, argue logically, and express a train of thought carefully and cogently in writing. There will be frequent writing assignments which will focus on issues raised by readings of broad philosophical interest. Class time will be about equally divided between discussion of the readings and critical analysis of the student's own writings. Fulfills the University Intellectual Skills college level writing requirement.

PHIL 200 Introduction to Philosophy
4 hrs.
An introduction to the nature of philosophy by a consideration of major types of philosophical questions, such as the nature of truth, belief, the existence of God, what is the good life, the nature of knowledge, the problem of justice and verification. Selected texts from representative philosophers are used to define the questions and to present typical answers.

PHIL 201 Introduction to Ethics
4 hrs.
An introduction to the philosophical study of morality. Deals with questions such as: What is the good life? Why should I be moral? What is the meaning of right and wrong?

PHIL 220 Elementary Logic
4 hrs.
A study of the rules and techniques of deductive reasoning and the sources of some common fallacies. Topics included are syllogisms and the logic of propositions. Open to first-year students.

300-LEVEL COURSES
Each semester detailed course descriptions are posted outside room 5011 Friedmann Hall prior to pre-registration. If you are in doubt about whether you have adequate background for taking a course, talk with the instructor.

PHIL 300 Ancient and Medieval Philosophy
4 hrs.
A study of the history of selected philosophical topics up to the sixteenth century. Great thinkers, such as Plato, Aristotle, Augustine, and Aquinas will be emphasized.

PHIL 301 History of Modern Philosophy
4 hrs.
An survey of modern philosophy from the Renaissance through Kant, with emphasis on Descartes, Leibnitz, Locke, Berkeley, Hume, and Kant.

PHIL 303 Existentialist Philosophies
4 hrs.
A concentrated study of leading thinkers in modern philosophical existentialism: Kierkegaard, Nietzsche, Jaspers, Sartre, and Camus.

PHIL 307 Phenomenology
4 hrs.
A systematic study of the origins and developments of the phenomenological movement. The writings of several major phenomenologists will be considered, e.g. Husserl, Heidegger, Merleau Ponty, etc.

PHIL 310 Moral Philosophy
4 hrs.
A study of some basic problems in moral philosophy. Special attention is given to the question of the relationship between the justification of actions, and motives, excuses, intentions, consequences. Contemporary works are emphasized.

PHIL 311 Political Philosophy
4 hrs.
An examination of fundamental problems arising from political and social relationships. The main emphasis is on such political concepts as liberty, equality, human rights and justice. Topics that might be considered include, but are not necessarily restricted to: the nature and basis of political authority and obligation; civil disobedience; tolerance and dissent; the aims of political institutions, law and morality.
PHIL 312 Philosophy of Art
4 hrs.
An analysis of the nature of art and aesthetic experience, and its significance in human life. The course may cover all forms of art, or concentrate on a few, for instance, literature, drama and music.

PHIL 313 Philosophy of Law
4 hrs.
This course considers the nature of law and the states, policies and limitations of a legal system. The connections between law and justice, law and freedom, and law and morality will be examined.

PHIL 314 Philosophy and Public Affairs
4 hrs.
A philosophical examination of principles and values underlying contemporary social issues. The course will focus on specific issues such as racial and sexual equality, abortion, privacy, censorship, violence, and goals and methods of social change, as well as social movements such as Marxism, the women's movement, and various utopian ideals. Topics to be announced in the Schedule of Classes.

PHIL 320 Introduction to Formal Logic
4 hrs.
The study of general methods of analyzing and validating deductive reasoning. Arguments expressed in everyday language are analyzed and translated into the symbolic notation of logic, and calculations are performed in this notation to check the validity of the arguments. The course may include a brief consideration of the application of logic to computers. Open to qualified first-year students.

PHIL 324 Philosophy of the Sciences
4 hrs.
A critical examination of the concepts, methods, presuppositions and conclusions of the natural and social sciences.

PHIL 325 Decision Theory
4 hrs.
Can there be a formal theory of what it is to be rational in one's beliefs and actions? This course is an introduction to decision theory, which claims to be just such a theory of rationality. Attention will be given to both its mathematical development and the issues it raises in the philosophy of science, the theory of knowledge, and action theory. No prerequisite.

A working knowledge of high school algebra is assumed.

PHIL 332 Theory of Knowledge
4 hrs.
An examination of basic problems concerning knowledge and belief, discussing traditional approaches but stressing recent analyses. Possible topics: skepticism and certainty, knowing and believing, perception, memory, "a priori" vs. "a posteriori" knowledge, self-knowledge, knowledge of others.

PHIL 333 Metaphysics
4 hrs.
A study of basic metaphysical questions, discussing traditional solutions but emphasizing recent approaches. Questions will be selected from such topics as: substances, qualities and relations, universals and particulars, identity, space and time, causation, mind and body, persons, free will.

PHIL 334 Philosophical Problems of Psychology
4 hrs.
Problems in the philosophy of mind with emphasis on recent analysis and solutions. Among the possible topics are the definition of "mind" and its relation to "the body," to "behavior," and to "experience," teleological and mechanistic explanations of behavior, including behaviorism, and functionalism, machine-models of thinking, "thinking machines," robots, servomechanisms and the concept of a person, privacy of one's own mind and one's knowledge of other minds; consciousness of self and of world, free will and determinism.

ADVANCED COURSES

PHIL 470 Seminar in Philosophy—Variable Topics
2-4 hrs.
Seminars deal with selected advanced topics in philosophy. Since content varies from semester to semester, students are advised to check course descriptions which are available in the department office. Suggestions for seminar topics from students are welcomed. Seminars may be set up to be taken for variable credit and to last more or less than a semester's length.

PHIL 498 Independent Study
2-4 hrs.
Independent study is for those students who have attained a degree of competence in philosophy and wish to embark upon a project to be carried out without the usual close guidance of the instructor in the classroom. Independent study may not be elected as a substitute for a regularly scheduled course. Prerequisite: Permission of the instructor with whom the student wishes to work.

PHIL 510 Professional Ethics
4 hrs.
A philosophical examination of the foundations of ethics in the professions. Topics to be considered include the professions and professionalism, relationships between professional and ordinary ethics, social responsibilities of the professions, professional/client relationships, regulation of the professions, and codes of ethics.

PHIL 520 Mathematical Logic
3 hrs.
This course covers the basic ideas in modern mathematical logic. First the fundamentals of the propositional and quantificational calculi (including the symbolization of English sentences) are discussed. Next comes a study of the basic features of formal languages and axiomatic theories with special emphasis on the notions of formal proofs in, and models for, such systems. Finally, the course includes an introduction to the metamathematics of formal theories through a study of such topics as consistency and completeness, the deduction theorem, recursive functions, the Godel and Church theorems, decidable vs. undecidable theories. Prerequisite: MATH 310 or MATH 314, or permission of instructor.

PHIL 534 Moral and Philosophical Foundations of Health Care
4 hrs.
In this course philosophical reflection and biological science are combined in a critical examination of the nature and purpose of the health sciences. Topics to be considered include: the aims of the health sciences; the interplay of fact and value in health care; competing images of humankind embedded in health science, patient autonomy, dignity, and medical paternalism. This is a cross-college interdisciplinary course which is team taught with faculty from the General Studies Science Area.

PHIL 570 Philosophical Topics
1-4 hrs.
An examination of special philosophical topics. Topics to be listed in the Schedule of Classes.
Students planning to work in industry are advised to take PHYS 344 Microprocessor Electronics. It is strongly recommended that students planning to enter graduate school also take PHYS 541 Electricity and Magnetism II. A suggested course of study for the ASC Physics major is as follows:

**First Semester (16-17 hours)**
- MATH 122 4
- CHEM 101 or 102 4
- General Education 3-4
- PHYS 560 Quantum Mechanics 3
- Physical Education 1

**Second Semester (16-17 hours)**
- MATH 123 4
- PHYS 210 4
- CHEM 120 4
- General Education 3-4
- Physical Education 1

**Third Semester (16 hours)**
- MATH 272 4
- PHYS 211 4
- General Education 4
- Elective 4

**Fourth Semester (15 hours)**
- MATH 274 or 374 3
- PHYS 342 4
- General Education 4
- Elective 4

**Fifth Semester (17 hours)**
- MATH 574 3
- PHYS 330 3
- PHYS 520 4
- General Education 4
- Elective 3

**Sixth Semester (17 hours)**
- MATH 572 4
- PHYS 540 3
- PHYS 560 3
- General Education 4
- Elective 3

**Seventh Semester (15-16 hours)**
- CS 306 or 506 2-3
- PHYS 562 4
- PHYS 563 3
- General Education 4
- Elective 3

**Eighth Semester (15 hours)**
- PHYS 564 3
- PHYS 566 3
- Electives 9

**Secondary Education Physics Major**

The courses required for the SED Physics major are:

- PHYS 105 General Astronomy 4
- PHYS 210 Mechanics and Heat 4
- PHYS 211 Electricity and Light 4
- PHYS 212 Introductory Modern Physics 4
- PHYS 342 Electronics 4
- PHYS 352 Optics 4

Two additional physics courses numbered above 300 are also required. PHYS 308 does not carry credit towards the major but is a required course for those in secondary education. Refer to the College of Education section of the bulletin for additional curriculum requirements for this program.

A suggested course of study for the SED physics major is as follows:

**First Semester (16-17 hours)**
- MATH 122 4
- PHYS 105 4
- CHEM 101 or 102 4
- General Education 3-4
- Physical Education 1

**Second Semester (16-17 hours)**
- MATH 123 4
- PHYS 210 4
- CHEM 120 4
- General Education 3-4
- Physical Education 1

**Third Semester (15-16 hours)**
- MATH 272 4
- PHYS 211 4
- General Education 4
- Elective 3-4

**Fourth Semester (15 hours)**
- MATH 274 or 374 3
- PHYS 212 4
- General Education 4
- ED 250 4

**Fifth Semester (16-17 hours)**
- PHYS Elective 3-4
- CS 306 2
- ED 301 3
- General Education 4
- Elective 3-4

**Sixth Semester (15 hours)**
- PHYS 308 3
- PHYS 342 4
- General Education 4
- Elective 4

**Seventh Semester (17 hours)**
- PHYS 330 3
- PHYS Elective 3
- ED 322 3
- General Education 4
- Electives 3

**Eighth Semester (14 hours)**
- ED 410 3
- ED 450 3
- Directed 470 1
- Teaching 1

**Geophysics Major**

The required courses for a geophysics major are:

- PHYS 210 4
- PHYS 211 4
- PHYS 212 4
- PHYS 342 or 344 3-4

One of the following three:

- PHYS 330 3
- PHYS 362 4
- PHYS 540 3

Plus the following:

- GEOL 130 4
- GEOL 131 4
- GEOL 301 3
- GEOL 430 3
- GEOL 560 3
- CHEM 101 or 102 4
- MATH 122 4
- MATH 123 4
- MATH 272 4
- MATH 374 4
- CS 306 2
- MATH/CIS 506 3

In addition, a student is required to take three electives from upper-level geology, physics, and engineering courses to be chosen with the consent of the adviser. A field course in geology (6-8 hrs.) is strongly recommended.
ASC Physics Minor

The courses required for the ASC physics minor are:

PHYS 210 Mechanics and Heat 4
PHYS 211 Electricity and Light 4
PHYS 212 Introductory Modern Physics 4

In addition, three physics courses numbered above 300 are required.

Secondary Education Physics Minor

The courses required for the SED physics minor are:

PHYS 210 Mechanics and Heat 4
PHYS 211 Electricity and Light 4
PHYS 212 Introductory Modern Physics 4
PHYS 342 Electronics 4
PHYS 352 Optics 4

With consent of the department, PHYS 110 and 111 may be substituted for 210 and 211 in the ASC and SED minor programs.

Science and Mathematics Teaching Minor

The Department of Physics participates in the Science and Mathematics Teaching Minor for students in the elementary education curriculum. For a full description of the program, consult its listing under the “Interdisciplinary Programs” section in the College of Arts and Sciences.

Physics Courses (PHYS)

(Courses described in italics are approved for General Education)

PHYS 101 Principles of Photography 2 hrs.
This course is designed for students who want a basic course that explains the principles of photography, demonstrates techniques for amateurs, and familiarizes the student with available cameras and camera equipment. Topics include the nature of light, optics, color, cameras, film and paper exposure, the latent image, development, lighting, and composition. Demonstrations in class include developing film, black and white enlarging, toning, printing color negatives and slides, and basic portraiture. No darkroom facilities are available for students registering for the course. This course may not be applied toward either a major or minor in physics.

PHYS 102 Physics and the Environment 3 hrs. Fall
The objective of this course is to provide the student with an understanding of some of the physical principles which underlie selected environmental problems. Topics covered include the physical aspects of air pollution, the energy problem, and radioactivity. The course consists of three lectures per week. No previous training in physics is required. This course may not be applied toward either a major or minor in physics.

PHYS 104 Introductory Astronomy 3 hrs. Fall, Winter
The aim of the course is to present the development of knowledge about the solar system, the stars, the galaxies, and the origin and evolution of the universe. Emphasis will be placed on the methods and tools of the astronomer, on the major principles and their applications, and on the challenging problems of the space age. Mathematics will be restricted to the simplest aspects of arithmetic and high school algebra. The course consists of three lectures per week. Some evening observation sessions will be offered during the semester. Students majoring in the physical sciences or mathematics are advised to take PHYS 105.

PHYS 105 General Astronomy 4 hrs. Fall
The aim of the course is to present the development of knowledge about the solar system, the stars, the galaxies and the origin and evolution of the universe. Emphasis will be placed on the methods and tools of the astronomer, on the major principles and their applications, and on the challenging problems of the space age. Algebra and trigonometry are required to do the laboratory experiments. Three lecture-recitations and two hours of evening observation and laboratory per week are required. While PHYS 105 and PHYS 104 have common lecture sections, the students in PHYS 105 may expect additional assignments. Recommended for majors and minors in mathematics and/or a physical science. A student may not receive credit for both 104 and 105.

PHYS 106 Elementary Physics 4 hrs. Fall, Winter
This course surveys physics from mechanics to modern physics in one semester. It is designed for students in curricula requiring four credit hours at the level of general college physics. The course consists of four lectures and one two-hour laboratory per week. A student may not receive credit for both 106 and either 110 or 210.

PHYS 110 General Physics I 4 hrs. Fall, Winter, and Spring
A general college physics course in the principles and practical application of mechanics, sound, and heat. Recommended for students in curricula other than science and engineering. The course consists of four lectures and a two-hour laboratory per week. Many schools of engineering will not accept PHYS 110-111 for transfer credit.

PHYS 111 General Physics II 4 hrs. Fall, Winter, and Summer
This course follows PHYS 110 and consists of studies in electricity, magnetism, light and atomic and nuclear physics. Prerequisite: PHYS 110.

PHYS 130 Social Issues and Physical Science (see General Studies)

PHYS 210 Mechanics and Heat 4 hrs. Fall, Winter, and Spring
This first course of a sequence of three in general college physics employing calculus deals with mechanics and heat. It is required of physics majors, engineering students, and future physics teachers, and strongly recommended for majors in other sciences. The course consists of four lectures and a two-hour laboratory per week. Prerequisite: MATH 123 concurrently or consent of instructor. Open to qualified first year students. A student may not receive credit for both PHYS 110 and PHYS 210.

PHYS 211 Electricity and Light 4 hrs. Fall, Winter, and Summer
This course follows 210 and consists of studies in electricity, magnetism, and light. Prerequisite: PHYS 210 or consent of instructor. A student may not receive credit for both PHYS 111 and PHYS 211.

PHYS 212 Introductory Modern Physics 4 hrs. Fall, Winter
This course, with PHYS 210 and PHYS 211, completes the sequence making up the introductory course in physics with calculus. Topics include special relativity, quantum physics, and atomic and nuclear structure. The course consists of three lectures and a three-hour laboratory period per week. Prerequisite: PHYS 211 or consent of instructor.

PHYS 214 Mechanics and Heat Problems 1 hr. Fall
This course is intended for those who have had PHYS 110 General Physics I, or its equivalent at another school, and who need to show credit in PHYS 210 and Heat. The emphasis is on problem solving using calculus with the mathematical rigor required in PHYS 210. This course plus PHYS 110 is equivalent to PHYS 210. Prerequisites: PHYS 110 General Physics I or equivalent, MATH 123 concurrently, or consent of instructor.

PHYS 215 Electricity and Light Problems 1 hr. Winter
This course is for those who have had PHYS 110 General Physics II, or its equivalent at another school, and who need to show credit in PHYS 210. This course plus PHYS 211 is equivalent to PHYS 211. Prerequisites: PHYS 111 General Physics II or equivalent, MATH 123, or consent of instructor.

PHYS 308 Teaching of Physical Science 3 hrs. Winter
This course deals with problems of teaching high school chemistry, physics, and physical science. The main emphasis is on effective methods of instruction. Practical methods of selection, maintenance, and construction of apparatus are also considered. Prerequisites: One year of college chemistry and one year of college physics. Does not carry credit towards physics major or minor but is a required course for those in secondary education.

PHYS 312 Recent Developments in Physics 3 hrs.
This course is designed to acquaint the student with the new and exciting developments in selected areas of Physics and Astrophysics. The course content will change from year to year to include the latest advances in High Energy Physics, Nuclear Physics, Astrophysics, Solid State Physics, and Optics. The treatment is largely descriptive with minimal mathematics. Prerequisite: PHYS 212 or the consent of instructor.

PHYS 330 Thermodynamics and Kinetic Theory 3 hrs. Fall
Classical equilibrium thermodynamics is developed from the macroscopic viewpoint. Postulates, empirically founded, are put forth and the consequences are derived and applied to systems of interest in physics and chemistry. Introductory kinetic theory with selected topics is also included, as is an introduction to quantum statistics. Prerequisite: PHYS 211.

PHYS 340 Biomedical Instrumentation 3 hrs. Winter
This course is designed for students majoring in biomedical sciences, especially medical technology. The major emphasis is placed on electronics and its applications in the biomedical sciences. Two lectures and a two-hour lab per week. Prerequisite: PHYS 106 or equivalent.

PHYS 342 Electronics 4 hrs. Winter
This course deals with analysis of the more important transistor and integrated circuits and
includes practical experience in the laboratory. There are three lectures and one 3-hour laboratory per week. Prerequisite: PHYS 211.

**PHYS 344 Microprocessor Electronics**

3 hrs. Fall

This introductory course explores the use of modern instrumentation in physics; the use of computers, computer circuits, and basic techniques for physical measurement are included. One lecture and four hours of laboratory weekly. Prerequisite: PHYS 211.

**PHYS 352 Optics**

4 hrs. Fall

This is a course in geometrical and physical optics in which the main topics discussed are: reflection, refraction, aberrations, optical instruments, wave motion, interference, diffraction, polarization, double refraction, lasers, holography. Three lectures and one 3-hour laboratory per week. Prerequisite: PHYS 211.

**PHYS 498 Special Problems**

1-3 hrs.

In this course a student works on a laboratory project or a reading project under the direction of a staff member. Prerequisite: Consent of instructor.

**PHYS 520 Analytical Mechanics**

3 hrs. Fall

The topics studied include the dynamics of a single particle and the motion of a system of interacting particles. Techniques of vector analysis are used frequently, and conservation laws are developed and applied. The Lagrangian formulation of mechanics is introduced. Prerequisites: PHYS 211 and either MATH 274 or 374. The mathematics course may be taken concurrently.

**PHYS 540 Electricity and Magnetism I**

3 hrs. Winter

This is a theoretical course providing a thorough investigation of electric and magnetic fields. The application of theorems of Stokes and Gauss are emphasized, and Maxwell’s equations are developed. Prerequisites: PHYS 211 and either MATH 274 or 374, or consent of instructor.

**PHYS 541 Electricity and Magnetism II**

3 hrs. This course is a continuation of PHYS 540 and is elective for majors wishing advanced work in field theory. Maxwell’s equations and their applications to topics such as time-dependent fields, wave guides, and radiation will form the principal topics of the course. Prerequisite: PHYS 540.

**PHYS 560 Quantum Mechanics**

3 hrs. Winter

In this course the development of quantum mechanics is traced, and simple applications of the theory are discussed. Topics include cavity radiation, the photoelectric effect, de Broglie waves, the Rutherford-Bohr atom, the uncertainty principle, the Schrödinger equation with solutions, the coupling of angular momenta, and perturbation theory. Prerequisite: PHYS 211 and 520 or consent of instructor.

**PHYS 562 Atomic and Molecular Physics**

3 hrs. Fall

This course continues the study of the applications of quantum mechanics. Topics include the helium atom, multielectron atoms, the Raman, Zeeman, and Stark effects, stimulated emission, transition rates, selection rules, the diatomic molecule, and molecular physics. Prerequisite: PHYS 560 or consent of the instructor.

**PHYS 563 Solid State Physics**

3 hrs. Fall

After an initial study of symmetry and crystal structure, quantum mechanics is used to describe the cohesion of solids, X-ray and neutron diffraction, the elasticity of solids, lattice vibrations, and the thermal and electrical properties of solids, with particular emphasis on metals. Prerequisite: PHYS 560 or consent of the instructor.

**PHYS 564 Nuclear and Particle Physics**

3 hrs. Winter

This course covers such topics as properties of nucleos, collision theory, nuclear reactions, nuclear models, fundamental interactions, and classification techniques used in particle physics. Discussions of experimental methods as well as theoretical treatments using quantum mechanics are included. Prerequisite: PHYS 560 or consent of the instructor.

**PHYS 566 Advanced Laboratory**

3 hrs. Winter

The objectives of this course are to provide the student with experience in the use of modern laboratory equipment and with a better understanding of several important physical phenomena. The student will perform experiments from a list covering three areas: atomic, solid state, and nuclear physics. A portion of the semester may be devoted to studying a problem in depth. The course consists of three three-hour laboratory periods each week. Prerequisites: PHYS 342 and PHYS 560. (560 may be elected concurrently with 566.)

**PHYS 570 Relativity**

3 hrs.

This course is primarily devoted to the special theory of relativity. Topics include the Lorentz transformation, space-time diagrams, mechanics of systems of point masses, collisions, electromagnetism, and conservation laws. An introduction to the general theory of relativity will also be given. Prerequisite: PHYS 520 (may be taken concurrently).

**PHYS 598 Selected Topics**

1-4 hrs.

This course affords an opportunity for advanced students with good scholastic records in Physics to pursue independently the study of some subject of interest to them. Prerequisite: Consent of instructor.

 Courses in the department are designed to prepare a student to: (1) become a functioning citizen; (2) become a teacher of government or civics; (3) become a governmental employee or officer; (4) understand the part government plays in everyday business or other activities; (5) develop sound methods of investigation and reflection as well as the ability to evaluate political information critically; (6) understand the role that individuals and organized groups can play in the political process; and (7) appreciate the relationship of the study of government and public affairs to other social sciences. Students who wish to major in political science will complete the appropriate major declaration form and to consult with a departmental adviser.

**POLITICAL SCIENCE**

Ernest E. Rossi, Chair
John T. Bernhard
Ralph C. Chandler
Kenneth A. Danberg
I. Atilla Dicle
Richard A. Entsen
Susan B. Hannah
David G. Houghton
Alan C. Isaac
David L. Jickling
Robert W. Kaufman
C. I. Eugene Kim
Peter Kobrak
Richard L. McAnaw
James E. Nadonly
Claude S. Phillips, Jr.
Peter G. Renstrom
William A. Ritchie
Helenan S. Robin
Chester B. Rogers
T. Lyke Thompson
Lawrence Ziring

Programs of study offered by the department include: (1) the standard major and minor in political science; (2) the major in political science with a public law concentration; (3) the major in political science with an American political institutions and public policy concentration; (4) a minor in political science with an American political institutions and public policy concentration; (5) a major and minor in public administration; and (6) a teaching major and minor in political science.

**Major and Minor in Political Science**

**MAJOR**

The major consists of a minimum of 30 semester hours of work in the department. It is expected that transfer students will take at least one-half of the minimum required 30 hours in the department. The following are required courses for majors:

- 200 National Government
- 250 International Relations
- 340, 341, 342, 343 or 344 Foreign and Comparative Political Systems (choose one)
- 360, 361, 362, 562, 563, or 564 Political Theory (choose one)

Students who may become majors are encouraged to take 100, Introduction to Political Science, as their first course in the department during their freshman year.

**MINOR**

The standard Political Science Minor consists of 20 semester hours in Political Science. It is expected that transfer students will take at least one-half of the minimum required 20 hours in the department. A Political Science minor shall
complete PSCI 200 National Government and PSCI 250 International Relations.

Requirements may be waived with the written permission of the chairperson of the department.

**American Political Institutions and Public Policy Concentration**

This concentration is available within the Political Science Major for students with particular career and/or advanced degree interests in this field. The Concentration provides for students completing the program to receive designation on their Permanent Record Card.

The concentration in American Political Institutions and Public Policy is aimed at preparing students for careers in government service at national, state, and local levels, in politics, and in teaching in the American government field. A public policy focus is found in each of the courses required for the Major and Minor in this field.

Students interested in a major or minor in Political Science with a Concentration in American Political Institutions and Public Policy should see one of the department’s advisers.

To complete the major or the minor, a student must complete the following:

**MAJOR (31 hrs.)**

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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>PSCI 200</td>
<td>National Government</td>
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<tr>
<td>PSCI 210</td>
<td>Citizen Politics</td>
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<tr>
<td>PSCI 250</td>
<td>International Relations</td>
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<tr>
<td>PSCI 314</td>
<td>The Presidency</td>
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<td>PSCI 315</td>
<td>The Politics of Congress</td>
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<tr>
<td>PSCI 320</td>
<td>The American Judicial Process</td>
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<tr>
<td>PSCI 34-</td>
<td>One Course in Foreign and Comparative Systems (340, 341, 342, 343, or 344)</td>
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<tr>
<td>PSCI 506</td>
<td>Problems of American Government: National Public Policy</td>
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**MINOR (20 hrs.)**

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<td>The American Judicial Process</td>
</tr>
<tr>
<td>PSCI 506</td>
<td>Problems of American Government: National Public Policy</td>
</tr>
</tbody>
</table>

*This course, PSCI 506, will serve as the capstone for both the Major and Minor programs. Each student will be expected to prepare a research paper, present the paper to the class, and engage in critiques of other student papers.

**Public Law Concentration**

This concentration is available within the Political Science Major for students with particular career and/or advanced degree interests in this field. The concentration allows students completing the program to receive designation of this specialization on their Permanent Record Card.

Public Law is concerned with judicial and quasi-judicial institutions at the international, national, and local levels. The concentration is primarily, though not exclusively, designed for students with career interests in the field of law.

Students interested in the concentration should see the Public Law Adviser of the Political Science Department, Dr. Peter Renstrom—3029 Friedmann Hall (383-0483).

To complete the concentration within political science, a student must:

A. Complete the required core for the Major (14 hrs.):

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<tbody>
<tr>
<td>PSCI 200</td>
<td>National Government</td>
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<tr>
<td>PSCI 250</td>
<td>International Relations</td>
</tr>
<tr>
<td>PSCI 34-</td>
<td>Comparative Politics (to be chosen from 340, 341, 342, 343, or 344)</td>
</tr>
<tr>
<td>PSCI 506</td>
<td>- - - Political Theory (to be chosen from 360, 361, 362, 563, or 564)</td>
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</table>

B. Complete PSCI 320 American Judicial Process (4 hrs.)

C. Complete THREE of the following courses (9 hrs.):

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>PSCI 325</td>
<td>Criminal Justice Policy</td>
</tr>
<tr>
<td>PSCI 520</td>
<td>Constitutional Law</td>
</tr>
<tr>
<td>PSCI 522</td>
<td>Civil Liberties and Civil Rights</td>
</tr>
<tr>
<td>PSCI 526</td>
<td>Administrative Law and Public Regulation</td>
</tr>
<tr>
<td>PSCI 555</td>
<td>International Law</td>
</tr>
</tbody>
</table>

D. Complete at least one additional course (minimum of 3 hrs.) from the remaining courses in the Political Science Department to produce a minimum of 30 hours of political science courses. The chosen courses may include one of the courses not selected in C above.

E. Complete THREE of the following courses (9-10 hrs.):

These courses cannot be substituted for any of the requirements in A-D above.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ANTH 538</td>
<td>Law and Culture</td>
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<tr>
<td>FCL 340</td>
<td>Legal Environment</td>
</tr>
<tr>
<td>FCL 560</td>
<td>Seminar in Criminal Law and Procedure</td>
</tr>
<tr>
<td>HIST 301</td>
<td>Law and Justice in Western Civilization</td>
</tr>
<tr>
<td>PHIL 313</td>
<td>Philosophy of Law</td>
</tr>
<tr>
<td>SOC 362</td>
<td>Criminology</td>
</tr>
<tr>
<td>SOC 482</td>
<td>Criminal Justice Process</td>
</tr>
<tr>
<td>SOC 566</td>
<td>Advanced Criminology</td>
</tr>
</tbody>
</table>

**Programs in Public Administration**

These programs are designed to prepare students for entrance level positions in public and public-related agencies by equipping them with a knowledge and understanding of the political, social, economic, and legal environment of public agencies, by introducing them to operational and procedural problems of public agencies, and by providing them with an understanding of selected administrative tools.

The major in public administration has an interdisciplinary focus, which includes required courses in accounting, computers, economics, and statistics as well as political science. Internships which permit students to assist public administrators in their work are available. Credits can be obtained in these internships.

All students who elect the public administration programs are to complete a major or minor core in consultation with a public administration adviser in the Department of Political Science. The student must consult with an adviser upon entering the program.

The political science major program in public administration (PAB) requires 40 semester credit hours divided between:

1. (1) a 34-semester-hour core of required courses; and
2. (6) hours of electives.

### POLITICAL SCIENCE 115

#### MAJOR

**Required Core**

1. PSCI 200 National Government
2. PSCI 202 State and Local Government
3. PSCI 330 Intro. to Public Administration
4. PSCI 526 Admin. Law and Public Reg
5. PSCI 533 Public Personnel Admin.
6. PSCI 535 Politics of Governmental Administration

**ECON**

1. ECON 201 Principles of Economics
2. ECON 202 Principles of Economics

**ACTY**

1. ACTY 201 Accounting Concepts and Applications in Public Agencies
2. ACTY 210 Principles of Accounting

In addition, each major must complete both of the following:

(a) One approved course in statistics; and
(b) One introductory course in computers

**Electives**

3. Choose one from the following:

4. Choose one from the following:

5. Majors must choose one directed minor (15-24 hrs.) in consultation with a public administration adviser—contact departmental office for details.

**MINOR**

The minor in public administration requires 22 hours, including all courses listed in section 1, and one course (3 hrs.) drawn from section 3.

Many political science majors choose to minor in public administration.

The Department of Political Science also cooperates with the College of Business in offering a curriculum in public administration (PAB) designed for students planning careers in the private sector involving contact with governmental agencies and activities. The student takes a Bachelor of Business Administration with a business administration major plus the political science minor in public administration as described above. For further details, see Business Administration: Related Majors. For counseling see the general business adviser and the public administration coordinator.

**Political Science Teaching Curriculum**

**MAJOR**

The teaching major consists of a minimum of 30 semester hours of work in Political Science. It is expected that transfer students will take at least one-half of the minimum required 30 hours in the department. The following are required courses for teaching majors:

<table>
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<tr>
<th>Course Code</th>
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<tbody>
<tr>
<td>PSCI 200</td>
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<td>PSCI 202</td>
<td>State and Local Government</td>
</tr>
<tr>
<td>PSCI 250</td>
<td>International Relations</td>
</tr>
<tr>
<td>PSCI 34-</td>
<td>One course in Comparative Politics (340, 341, 342, 343, or 344)</td>
</tr>
<tr>
<td>PSCI 506</td>
<td>One course in Political Theory (360, 361, 362, 563, or 564)</td>
</tr>
</tbody>
</table>

Students who may become teaching majors are encouraged to take PSCI 100 Introduction to Political Science as their first course in the 1 semester during their freshman year.

Students planning to use this major to meet teacher certification requirements are required to complete SCSC 300 Teaching of Social Studies in the Secondary Schools.
GROUP SOCIAL SCIENCE

Students in the secondary education curriculum who major in Political Science must also complete a minor in group social science. Refer to the “Interdisciplinary Program” section of this catalog for a description of the minor requirements.

MINOR

A teaching minor consists of 20 semester hours of work in Political Science. It is expected that transfer students will take at least one-half of the minimum required 20 hours in the department. A teaching minor shall complete PSCI 200 National Government, and PSCI 202 State and Local Government.

Honors Program

The honors program in political science provides an opportunity for students to earn the bachelor's degree with honors in political science. To be eligible, a student must have sophomore standing, a better than “B” average, and a willingness to do original and independent work. Students interested in the program should consult the departmental honors adviser, Dr. Alan C. Isak.

Institute of Government and Politics

The Department of Political Science houses and administers the Institute of Government and Politics (IGP). The mission of IGP is multidimensional. It is organized to serve the professional staff of the Department of Political Science in their varied fields of interest and specialization. It will assist in meeting the needs of the department's student body by extending their educational experiences beyond the confines of the classroom. IGP also reaches out into the larger community, to the university, its immediate environment, the state and national scene, as well as the international arena. In this regard, IGP gives particular attention to the practical applications of political science training. It is therefore charged with the development of relationships between the Department of Political Science and the various colleges, departments, and programs comprising the University.

For further information, see Dr. Lawrence Ziring, Director, Institute of Government and Politics, Friedmann Hall (383-0491).

Courses By Topic

Principles

100 Introduction to Political Science
270 Political Topics

American Political System

200 National Government
202 State and Local Government
210 Citizen Politics
300 Urban Politics in the United States
306 Environmental Politics
310 Political Parties and Elections
314 The Presidency
315 The Politics of Congress
320 The American Judicial Process
325 Criminal Justice Policy
504 Making of Public Policy in the U.S.
506 Problems of American Government
516 Political Campaigning
520 Constitutional Law
522 Civil Liberties and Civil Rights
526 Administrative Law and Public Regulation

Public Administration

530 Introduction to Public Administration
530 Problems in Public Administration
531 Administration in Local and Regional Governments
532 The Bureaucracy
533 Public Personnel Administration
534 Administrative Theory
535 The Politics of Governmental Budgeting
536 Comparative Public Administration

Foreign and Comparative Political Systems

540 West European Political Systems
341 African Political Systems
342 The People and Politics of Asia
343 Latin American Political Systems
344 Soviet and East European Political Systems
541 Comparative Political Systems
542 Administration in Developing Countries
549 Problems of Foreign Political Systems

International Relations

250 International Relations
350 American Foreign Policy
552 Studies in International Relations
553 United Nations
555 International Law
557 Studies in Foreign Policy

Political Theory and Methodology

360 Introduction to the History of Political Theory I: Political Theory to Thomas Hobbes
361 Introduction to the History of Political Theory II: Political Theory from Thomas Hobbes to Karl Marx
362 Theoretical and Ideological Bases of Contemporary Politics
562 Modern Democratic Theory
563 Theories of Revolution
564 Introduction to Political Analysis
569 Research Methods
591 Statistics for Political Scientists

Special Studies

370 Issues in Contemporary Politics
390 Field Work in Political Science
490 Political Science Honors Seminar
492 Political Science Honors Research
572 Computer Applications for Political Scientists
598 Studies in Political Science

Political Science Courses (PSCI)

(Courses described in italics are approved for General Education.)

PSCI 100 Introduction to Political Science 3 hrs.
An introduction to those concepts useful for an understanding of politics. These concepts and their interrelationships will be examined in the context of contemporary political systems.

PSCI 200 National Government 3 hrs.
An introductory survey of American national government. This course introduces the basic principles and theories of American government, explores the political process, describes the structure, and illustrates its functions.

PSCI 202 State and Local Government 4 hrs.
A study of the institutions, the problems and the politics of policy making at the state and local levels in the United States. Consideration is given to the changing relations of state and local government to the total framework of government in the United States.

PSCI 210 Citizen Politics 3 hrs.
An examination of participatory democracy in the U.S., and the roles of the mass media and interest groups in influencing public opinion and voting behavior and public policy.

PSCI 250 International Relations 4 hrs.
A study of the nature of the international community and the forces which produce cooperation and conflict. Particular attention is given to analyzing power in terms of its acquisition and uses.

PSCI 270 Political Topics 1-3 hrs.
A specifically focused course dealing with a political topic of general student interest. The course will be primarily substantive rather than theoretical to accommodate students with no previous training in political science. The topic will be announced in advance, and the course may be repeated for credit with a different topic.

PSCI 300 Urban Politics in the United States 3 hrs.
A study of those factors having an impact on the governing of American cities, including social and economic conditions in the cities, the organization of local political systems, and the actions of the state and federal governments. The city will be viewed as a center of economic and social problems that necessitate political activity and as a laboratory for the advancement of general knowledge of politics.

PSCI 306 Environmental Politics 3 hrs.
An examination of the major legal, political, and bureaucratic forces influencing the development and implementation of environmental policy. Interactions between levels and units of government are analyzed. Effective modes of citizen participation and action, especially at the local level, are discussed throughout.

PSCI 310 Political Parties and Elections 3 hrs.
A study of the nature of politics, the organization and function of political parties and elections, and the elective process in the U.S.

PSCI 314 The Presidency 3 hrs.
A study of the presidency, including the White House staff and cabinet, the institutional and policy leadership of the president, and the politics of presidential selection.

PSCI 315 The Politics of Congress 3 hrs.
Examines the internal arrangements and the outside forces that impact upon the operations of the U.S. Congress. Emphasis is placed on explaining why Congress behaves as it does.

PSCI 320 The American Judicial Process 4 hrs.
An introduction to the politics of the American judicial process. The course will examine the judicial function generally with particular attention on the decisional processes, process participants, state and federal court structures, recruitment and selection of judges, bases of judicial behavior, policy making, and impact of judicial decisions.

PSCI 325 Criminal Justice Policy 3 hrs.
An examination of various judicial, legislative and executive policy decisions which govern the criminal justice processes. The course will include extensive discussion of the political dynamics of the policy making processes.
PSCI 330 Introduction to Public Administration 3 hrs.
An introductory course in the administrative process in the public service. Special attention given to the environment and politics of administration, the role of the chief executive and the legislature. Detailed consideration of personnel and financial problems of administration.

PSCI 340 West European Political Systems 4 hrs.
Considers the organization, political behavior and decision-making process of the major countries of West Europe, including Britain, France and Germany. Political trends and forces challenging and reshaping democratic institutions are examined.

PSCI 341 African Political Systems 4 hrs.
A systematic survey of the social, economic and political characteristics of the area. Political culture, institutions and processes, including both traditional and modern forms, are examined in detail. Major political problems dealing with political modernization are analyzed.

PSCI 342 The People and Politics of Asia 4 hrs.
A systematic survey of the social, economic and political characteristics of the area. Political culture, institutions and processes, including both traditional and modern forms, are examined in detail. Major political problems, country differences, and various paths to modernization, are analyzed.

PSCI 343 Latin American Political Systems 4 hrs.
A systematic survey of the social, economic, and political characteristics of the area. Political culture, institutions and processes are examined in detail. Intra-regional differences and major political problems are analyzed.

PSCI 344 Soviet and East European Political Systems 4 hrs.
The governmental organization and political structure of the Soviet Union and the states of Eastern Europe. Special attention is directed to the Communist Party and its relationship to the organization of the state. The social and economic bases of the current system are stressed.

PSCI 350 American Foreign Policy 4 hrs.
An analysis of the institutions and processes by which the American people and their government determine and seek to achieve the national interest of the United States in the international community.

PSCI 360 Introduction to the History of Political Theory I: Political Theory to Thomas Hobbes 3 hrs.
A survey of political philosophy as it developed in Classical Greece, Rome, Medieval Europe, the Reformation and the Renaissance. Emphasis placed on comparative analysis of political philosophies as they reflect the richly diverse sociocultural conditions of these periods. No prerequisite.

PSCI 361 Introduction to the History of Political Theory II: Political Theory from Thomas Hobbes to Karl Marx 3 hrs.
A survey of political philosophy from the seventeenth century to the middle of the nineteenth. Emphasis upon the great individual philosophers of this period and the early development of the major ideological systems of the modern period: conservatism, liberalism and socialism. No prerequisites.

PSCI 362 Theoretical and Ideological Bases of Contemporary Politics 3 hrs.
A survey of the more significant developments beginning with the confrontation between socialism and liberalism and concluding with an analysis of those theories and ideologies that have emerged in our own times. No prerequisites.

PSCI 370 Issues in Contemporary Politics 3 hrs.
This course is designed for the study of contemporary political problems. It is intended to provide opportunity for the study of political phenomena normally beyond the scope of regular departmental offerings. Essentially the course relates the theory and principles of political science to practical politics. The course may be applied to the appropriate field distribution requirement. Topics will vary from semester to semester. Students may repeat the course for credit.

PSCI 390 Field Work in Political Science 1-12 hrs.
An opportunity for students of Political Science or Public Administration to test theoretical and practical knowledge in an internship situation under the supervision of a faculty sponsor and a public or public-related official. Students wishing to apply must have a minimum of fifteen hours in Political Science and department approval before registering. Approved application required.

PSCI 391 Internship Seminar 2 hrs.
An undergraduate seminar taken in conjunction with Field Work in Political Science (PSCI 390). An emphasis will be placed on readings which analyze the administrative realm and which also focus on recent political, economic, and social developments. Interns also will discuss their field experiences. Department approval must be obtained to enroll for this seminar.

PSCI 490 Political Science Honors Seminar 3 hrs.
An undergraduate seminar for honor students and others approved by consent of the Department Honors Committee. The content of the seminar varies and will be announced in advance. May be repeated. Prerequisite: Admission by permission of the Department Honors committee.

PSCI 492 Political Science Honors Research 2-3 hrs.
Honor students, with the guidance of a faculty advisor, conduct research and write the Honors Paper on a topic of individual interest. Prerequisite: Membership in the Political Science Department Honors Program and approved application required.

PSCI 504 Making of Public Policy in the U.S. 3 hrs.
A study of the formation of public policy at the local, state, and national levels with emphasis on the impact of decision processes upon policy outcomes.

PSCI 506 Problems of American Government 3 or 4 hrs.
A critical examination of major problems facing national, state, or local government with emphasis upon contemporary efforts and studies designed to understand or solve such problems. Topics will vary from semester to semester and students may repeat the course.

PSCI 516 Political Campaigning 4 hrs.
How are elections won? This course provides a practical guide on how to organize and conduct a political campaign. For the potential candidate or campaign worker, it tells how to do it. For others it describes how campaigns are trying to affect your vote.

PSCI 520 Constitutional Law 3 hrs.
Study of leading American constitutional principles as they have evolved through major decisions of the U.S. Supreme Court. Emphasis on judicial review, federalism, separation of powers, commerce and taxation.

PSCI 522 Civil Liberties and Civil Rights 3 hrs.
An examination of Supreme Court responses to First Amendment, criminal procedure, and equal protection questions with particular emphasis on political, social and policy-making aspects.

PSCI 526 Administrative Law and Public Regulation 3 hrs.
A study of the requirements for, and the limits on, the exercise of administrative powers by public officials charged with major significant aspects of the social and economic life of the nation. Special attention is paid to the extent of governmental regulations and the means of safeguarding individual rights through fair administrative procedures and judicial control over administrative determination. Prerequisite: PSCI 200 or a course in Economics.

PSCI 530 Problems in Public Administration 3 or 4 hrs.
Consideration of issues and problems of current interest in the field of public administration. The course is intended to provide advanced work for undergraduates and to serve as an introduction to the field for graduate students without previous training in public administration.

PSCI 531 Administration in Local and Regional Governments 3 hrs.
The administrative organization, structure, procedure and form of local units of government are analyzed.

PSCI 532 The Bureaucracy 3 hrs.
Analysis of the role of public bureaucracies in the decision process of government.

PSCI 533 Public Personnel Administration 3 hrs.
This course emphasizes the development of public personnel patronage and merit systems, their structure, staffing effectiveness and current problems related to the staffing of public agencies.

PSCI 534 Administrative Theory 3 hrs.
A study of descriptive theories of organizational and administrative behavior relevant to governmental administrative agencies. Theories of complex formal organization, decisional theories and systems theories will be analyzed.

PSCI 535 The Politics of Governmental Budgeting and Finance 3 hrs.
A survey of the political process of governmental budgeting and finance. Budget systems, including program planning and budgeting systems, are studied. The politics of taxation and other governmental revenues,
including intergovernmental transfers, are studied for their impact on public policy choices.

**PSCI 536 Comparative Public Administration 3 hrs.**
This course introduces students to a variety of public administration systems found in the contemporary world and includes a brief evolutionary history of these systems. Various theoretical models of administration and bureaucracy are compared with current practice in Western Europe, North America, the Soviet Union, and in contemporary Asian and African systems.

**PSCI 541 Comparative Political Systems 3 hrs.**
A study of the principal types of political systems. The course examines, comparatively and theoretically, governmental institutions, political processes, political behavior, and political development.

**PSCI 542 Administration in Developing Countries 3 hrs.**
A consideration of the relation of administrative structure and technique to the political, economic and social problems of the developing countries. Special attention is given to the role of the bureaucracy in the political system and the nature of, and obstacles to, administrative modernization.

**PSCI 549 Problems of Foreign Political Systems 3 or 4 hrs.**
Course will consider selected problems of the governments and political systems of Western and Eastern Europe, Asia, Africa, and Latin America. The specific problems, topics, and countries to be studied will be announced each semester. May be repeated.

**PSCI 552 Studies in International Relations 3 or 4 hrs.**
Examines selected topics within the field of international relations. Topics will vary and will be announced each semester. Course may be repeated.

**PSCI 553 United Nations 3 hrs.**
A study of the United Nations in action. Attention is focused on significant political problems confronting world organization, i.e. functional and dysfunctional aspects of the UN Charter: nationalism vs internationalism within the UN, conflict resolution and UN peacekeeping efforts; specific UN accomplishments in maintaining a dynamic international equilibrium: UN weakness and the future of world organization.

**PSCI 555 International Law 3 hrs.**
The theory, sources, development, and general principles of international law, and the relationship of law to the dynamics of international politics. Decisions of international and municipal tribunals and the practices of states will be used to demonstrate the basic rights and obligations of states in time of peace and war. Such topics as recognition of states, diplomatic practice, treaties and neutrality will also be discussed.

**PSCI 557 Studies in Foreign Policy 3 or 4 hrs.**
Examines selected topics within the field of foreign policy. Topics will vary and will be announced each semester. Course may be repeated.

**PSCI 562 Modern Democratic Theory 3 hrs.**
The course consists of two parts. First, a consideration of traditional democratic theories, and the criticism of these theories emanating from modern elitists such as Mosca, Michels, Pareto and Ostrougozki. Second, an analysis of the attempts by contemporary economists, political scientists, and sociologists to meet these criticisms by revising democratic theory.

**PSCI 563 Theories of Revolution 4 hrs.**
Examines significant classical and contemporary theories of revolution with reference to both their analytical and normative implications.

**PSCI 564 Introduction to Political Analysis 3 hrs.**
A consideration of the approaches and methods used by contemporary political scientists with an emphasis on the application of scientific method to the study of politics. Included are applications of leading models of politics and the formulation of concepts, generalizations, and theories.

**PSCI 572 Computer Applications for Political Scientists 3 hrs.**
This course is designed to provide students in Political Science and Public Administration with a foundation in computer concepts and applications. They will learn to use application packages such as SPSS and DPL. The course includes computer exercises and a term project. Prerequisite: CS 105 or equivalent or consent of instructor.

**PSCI 590 Research Methods 3 hrs.**
Study of the formulation of research questions, the design of research, the methods of data collection, and the procedures for analyzing data concerning political institutions and behavior.

**PSCI 591 Statistics for the Behavioral Scientists 3 hrs.**
An introduction to statistical reasoning with particular reference to research on political institutions and behavior. This course will emphasize bivariate statistics, but will include a brief introduction to multivariate analysis. No mathematical prerequisite is required.

**PSCI 598 Studies in Political Science 1-4 hrs.**
An opportunity for advanced students with good scholastic records to pursue independently the study of some subject of interest to them. Subjects are chosen and arrangements made to suit the needs of individual students. Approved application required.

**PSYCHOLOGY**

David O. Lyon, Chair
Galen J. Alessi
Eston J. Asher
Dale M. Brethower
M. Michae Burnette
Howard E. Farris
R. Wayne Fuqua
Frederick P. Gault
Bradley E. Hulhema
Neil D. Kent
Chris Koronakos
Marilynn K. Malott
Richard W. Malott
Jack L. Michael
John E. Nangle
Alan Poling
William K. Redman
Malcolm H. Robertson
Roger E. Ulrich

The Department of Psychology offers a variety of courses and programs in both the experimental and applied analysis of behavior. The programs are designed for the student who plans to pursue graduate study and for the student who plans to terminate his/her education with a baccalaureate degree.

The sequencing of courses within the various programs is extremely important. Consequently, students should consult with a Psychology Department adviser as early as possible in their course work.

Psychology credit transferred from community colleges and other accredited institutions will count toward the partial fulfillment of the requirements for a major or minor in psychology. Transfer students must consult with a Department adviser before enrolling in psychology courses, so that they might begin their studies at a point within the course sequence that is most appropriate to their previous training. Psychology students unable to sequence properly the required courses in their schedule option, should obtain permission from a Department adviser to enroll concurrently in two or more of the courses.

Office 255 Wood Hall
Phone: 383-1830

**Major Options**

A student majoring in psychology has three options: (a) the experimental analysis of behavior option, (b) the human services option, and (c) the secondary school teaching option. The requirements for each of these options are summarized below.

**Human Services Option**

<table>
<thead>
<tr>
<th>37 hrs</th>
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<tbody>
<tr>
<td>PSY 151 Introduction to Behavior Analysis</td>
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<tr>
<td>PSY 160 Child Psychology</td>
</tr>
<tr>
<td>PSY 250 Abnormal and Social Psychology</td>
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<tr>
<td>PSY 300 Statistics for the Behavioral Sciences</td>
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<tr>
<td>PSY 330 Methodology of Applied Behavior Analysis</td>
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<tr>
<td>PSY 460 Survey of Applied Behavior Analysis Research</td>
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</table>

Select from one of the following combinations

<table>
<thead>
<tr>
<th>3 hrs</th>
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<tbody>
<tr>
<td>PSY 267 Supervised Practicum in Child Psychology</td>
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</table>
Experimental Analysis of Behavior Option

<table>
<thead>
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<tbody>
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<tr>
<td>PSY 160</td>
<td>Child Psychology</td>
<td>3</td>
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<td>PSY 250</td>
<td>Abnormal and Social Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 252</td>
<td>Experimental Analysis of Behavior I</td>
<td>3</td>
</tr>
<tr>
<td>PSY 258</td>
<td>Laboratory in Experimental Analysis of Behavior I</td>
<td>2</td>
</tr>
<tr>
<td>PSY 262</td>
<td>Experimental Analysis of Behavior II</td>
<td>3</td>
</tr>
<tr>
<td>PSY 268</td>
<td>Laboratory in Experimental Analysis of Behavior II</td>
<td>2</td>
</tr>
<tr>
<td>PSY 372</td>
<td>Physiological Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 378</td>
<td>Laboratory in Physiological Psychology</td>
<td>2</td>
</tr>
<tr>
<td>PSY 300</td>
<td>Statistics for the Behavioral Sciences</td>
<td>3</td>
</tr>
<tr>
<td>PSY 464</td>
<td>Systems and Theories in Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 595</td>
<td>History of Psychology</td>
<td>3</td>
</tr>
<tr>
<td>Approved</td>
<td>electives 344, 350, 367, 374, 384, 387, 464, 595</td>
<td></td>
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Select 12 hours from the following 24 hours:

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</thead>
<tbody>
<tr>
<td>PSY 344</td>
<td>Organizational Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSY 350</td>
<td>Behavior Modification and Behavior I</td>
<td>3</td>
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<tr>
<td>PSY 367</td>
<td>Practicum in Child Care</td>
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<td>3</td>
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<tr>
<td>PSY 374</td>
<td>Toward Experimental Living</td>
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<td>PSY 384</td>
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<td>History of Psychology</td>
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</tr>
</tbody>
</table>

Approved electives 344, 350, 367, 372, 374, 384, 387, 464, 595

Secondary School Teaching Option

Students who plan to obtain a secondary school teaching certificate with psychology as a teachable minor may elect to complete either the experimental analysis of behavior minor option or the general psychology minor option. They must also complete PSY 517.

Honors Program in Psychology

The honors program is designed to promote an academic community of undergraduate students, graduate students and faculty in psychology. The requirements for the departmental honors program include:

1. The completion of a major in Psychology
2. A University grade point average of 3.5, and a department grade point average of 3.5
3. Completion of PSY 499, Honors Project in Psychology (6 credit hours) and the preparation of an Honors Thesis.
4. The successful defense of the Honors Thesis before a departmental committee.
5. Participation in a professional apprenticeship program (2 credit hours)

Minor Options

A student who elects to minor in psychology has three options: (a) the experimental analysis of behavior option, (b) the general psychology option and (c) the secondary school teaching option. The requirements for each of these options are summarized in the tables below.

General Psychology Option

18 or 19 hrs.

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Approved electives 344, 350, 367, 372, 374, 384, 387, 464, 595

Experimental Analysis of Behavior Option

21 hrs.

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Minor Options

A student who elects to minor in psychology has three options: (a) the experimental analysis of behavior option, (b) the general psychology option and (c) the secondary school teaching option. The requirements for each of these options are summarized in the tables below.
upon the social variables and environmental conditions related to the acquisition and persistence of such behavior.

PSY 252 Experimental Analysis of Behavior I
3 hrs.
An intermediate level coverage of the basic areas of respondent and operant behavior. Emphasis is placed on theoretical interpretation of data, experimental methodology, and response measurement. Prerequisites: PSY 150 or permission of instructor. Prior or concurrent enrollment in ENGL 305 is required. Concurrent enrollment in PSY 258 is encouraged.

PSY 255 Teaching Apprenticeship in Abnormal and Social Psychology
2-4 hrs. Fall, Winter
A laboratory course in the instructional methods of teaching abnormal psychology. May be repeated for credit, but does not fulfill major/ minor requirements.

PSY 258 Laboratory in Experimental Analysis of Behavior I
2 hrs. Winter
An intermediate laboratory and companion to PSY 252 emphasizing the variations in response measurement and experimental methodology in various research areas within operant conditioning. Research design, data analysis, and description, as well as professional writing are stressed. Prerequisite: PSY 151 and 158 or permission of instructor. Prior or concurrent enrollment in ENGL 305 is required. Concurrent enrollment in PSY 252 is encouraged.

PSY 267 Practicum in Child Psychology
3 hrs. Fall, Winter
Supervised experience in the application of the principles of behavior analysis to early childhood learning. The Child Development Center is the site of this practicum. The Center provides accelerated education, nutrition, health and physical education programs. Students learn the techniques of direct instruction and other programs while serving as apprentice teachers. Prerequisite: PSY 150 or 151.

PSY 269 Research Practicum in Child Psychology
3 hrs. Fall, Winter
Supervised research experience at the Child Development Center which offers day care and an accelerated educational program. The course involves a variety of problems in early childhood learning, nutrition, health and safety which can be studied with pre-school children. The research topics are carefully selected to be beneficial to the children and to provide appropriate experience for the student. Data collection and report writing are stressed. Prerequisite: PSY 267. Prior or concurrent enrollment in ENGL 305 is required.

PSY 300 Statistics for the Behavioral Sciences
3 hrs. Fall, Winter
Interpretation and application of descriptive and inferential statistical techniques necessary in the understanding of data presentations in behavioral research. Major topics include: measures of central tendency and variability, frequency distributions and graphic presentations, the normal curve, probability theory and the binomial, hypothesis testing, the t-test, chi square and correlation.

PSY 305 Teaching Apprenticeship in Statistics
2-4 hrs. Fall, Winter
A laboratory course in the instructional methods of teaching elementary statistics. May be repeated for credit, but does not fulfill major/ minor requirements.

PSY 330 The Methodology of Applied Behavior Analysis
3 hrs.
An examination of the problems approached and of the methodologies utilized in applications of behavior analysis. Extensive readings in the recent literature of applied behavior analysis introduce the student to current issues in the field. Prerequisite: PSY 300 or consent of instructor.

PSY 344 Organizational Psychology
3 hrs. Fall, Winter
A survey of organizational, business and industrial psychology, including such topics as behavior in the organization, organizational climates and structures, personnel selection and placement, performance appraisal and training, social context of human work and psychological aspects of consumer behavior.

PSY 350 Behavior Modification and Radical Behaviorism
3 hrs.
An introduction to the principles of behavior modification as applied to a variety of societal and personal problem areas, with an emphasis upon the interpretation of psychological events with behavioral as well as mental references in terms of the philosophic position identified as radical behaviorism. Prerequisite: 9 hours of psychology.

PSY 357 Practicum with Special Populations
3 hrs. Fall, Winter
Supervised experience in the application of principles of behavior analysis to special populations. The Croyden Avenue School, which is the site of this practicum, provides an educational program for the developmentally disabled and the multiply handicapped. Students serve as tutors in behavior change and training programs. Prerequisite: PSY 250.

PSY 359 Research Practicum with Special Populations
3 hrs. Fall, Winter
Supervised experience at the Croyden Avenue School which offers an educational program for the developmentally disabled and multiply handicapped. This course involves a variety of problems in behavior change and learning which can be studied at the school. The research problems are carefully selected to be beneficial to the client and provide appropriate experience for the student. Data collection and report writing are stressed. Prerequisite: PSY 357. Prior or concurrent enrollment in ENGL 305 is required.

PSY 362 Experimental Analysis of Behavior II
3 hrs. Fall
An advanced level coverage of respondent and operant behavior. This course is a continuation of PSY 252 with an emphasis upon research design and training students in the theoretical interpretation of data, experimental methodology, and the techniques of response measurement. Prerequisite: PSY 252 or permission of instructor. Concurrent enrollment in PSY 368 is encouraged.

PSY 367 Practicum in Child Care
3 hrs. Fall, Winter
Supervised practicum at the Kalamazoo Learning Village. This course is designed to provide experience in all aspects of the conduct of a day care center. The daily schedule at the Village is combined with readings in developmental psychology, child abuse and early childhood learning. Prerequisite: PSY 160.

PSY 368 Laboratory in Experimental Analysis II
2 hrs. Fall
An advanced laboratory and continuation of PSY 258 emphasizing the variations in response measurement and experimental methodology in research areas within operant conditioning. Research design, data analysis and description, as well as professional writing are stressed. Concurrent enrollment in PSY 258 is encouraged. Prerequisites: PSY 252 and 258, or permission of instructor.

PSY 372 Physiological Psychology
3 hrs. Winter
An introduction to physiology and its relationship to behavior, including brain behavior interactions, behavioral induced chemical changes and behavioral changes induced by chemical alteration. Lecture only. Prerequisite: PSY 252.

PSY 374 Toward Experimental Living
3 hrs.
A comparison of complex social structures with an emphasis upon social ethics and the design of communities. Visits to experimental communities may be included. Prerequisite: 6 hours of psychology or permission of instructor.

PSY 378 Laboratory in Physiological Psychology
2 hrs. Winter
An intermediate laboratory and companion to PSY 372 emphasizing the acquisition of laboratory techniques, surgical skills and research methodology in physiological psychology and brain behavior interactions. Laboratory procedures, research methodology, data analysis and professional writing are stressed. Concurrent enrollment in PSY 372 is encouraged. Prerequisite: PSY 258, BIOL 101 or consent of instructor.

PSY 384 Behavior Analysis of Education
3 hrs. Fall
A lecture and laboratory course in behavioral assessment, classroom contingency management, behavioral objectives and other topics in educational psychology. Prerequisite: 6 hours of psychology.

PSY 385 Behavior Analysis in Education
2-4 hrs.
A practicum apprenticeship in direct instructional methods for remedial teaching in education. May be repeated for credit, but will not fulfill major/minor requirements.

PSY 387 Practicum in Behavior Analysis in Education
3 hrs. Fall
Supervised experience in the application of the principles of behavior analysis to remedial education. Project HELP, which is the site of this practicum, is designed to provide remedial education to school-age children in math and reading using the techniques of direct instruction. This course teaches the techniques of direct instruction and provides tutorial experience. This is a companion course to PSY 384. Prerequisite: 8 hours of psychology including PSY 384.

PSY 397 Seminar and Practicum in Psychology
1-5 hrs. Fall, Winter
Survey and discussion of selected topics in contemporary psychology. Associated practicum activities may include teaching and/or research apprenticeships as announced in the schedule of classes. May be repeated for credit up to 12 hours. Courses may include: Behavior Contracting, Seminar in Self Control, Seminar in Behavior Modification. Prerequisite: Permission of instructor.

PSY 398 Independent Study
1-5 hrs. Fall, Winter
This course provides the undergraduate student with the opportunity for independent reading and/or research under the direction of a Department staff member. Written permission required.
must be obtained on forms available in the department office. May be repeated for credit up to 12 hours.

**PSY 460 Survey of Applied Behavior Analysis Research**
3 hrs. Fall
An overview of diverse topics of behavior analysis research and applications. Topics include: clinical psychology, child psychology, behavioral medicine, environmental quality, mental retardation, education and geriatrics. Prerequisite: 9 hours of psychology.

**PSY 464 Systems and Theories in Psychology**
3 hrs. Fall
A critical examination of the assumptions, methods and problems of several major schools of psychology: Structuralism, Functionalism, Associationism, Behaviorism, Gestalt Psychology and Psychoanalysis. Prerequisite: 9 hours of psychology.

**PSY 499 Honors Projects in Psychology**
1-5 hrs.
Independent study and research projects completed under the supervision of a faculty member and coordinated with the Department Honors Program. Prerequisite: Permission of instructor.

**Open to Advanced Undergraduate and Graduate Students**

**PSY 510 Advanced General Psychology**
3 hrs. Winter
Readings, lecture and discussion designed to introduce non-majors in psychology to modern behavior theory. Emphasis will be upon human behavior, both normal and abnormal, with a significant portion of the course devoted to the higher cognitive processes. Recommended prerequisite: One course in psychology.

**PSY 512 Behavioral Pharmacology and Toxicology**
3 hrs. Winter
Topics range from the use of drugs to clarify behavioral principles to the use of behavioral preparations to discern pharmacological effects. Readings include summaries of pharmacological evidences and selected experimental reports concerning both the behavioral techniques and pharmacological problems in basic research. Prerequisite: 9 hrs of Psychology, permission of instructor or enrollment in SPADA program.

**PSY 513 Research in Animal Behavior I**
3 hrs.
Research in various areas of animal behavior. An individual research project is required with emphasis on laboratory research of animal learning processes. Research design, data collection, analysis and reporting are included.

**PSY 516 Conditioning and Learning**
3 hrs.
A study of the various approaches to response measurement, experimental methodology, and theoretical interpretations of data in the area of conditioning and learning.

**PSY 517 Psychology of Learning for Teachers**
3 hrs. Fall, Winter
Designed to teach the principles of behavior and the application of these principles to teaching. Topic areas include the use of behavior principles in the development of objectives, selection and preparation of instructional material, classroom management and incentive motivation, behavior change, performance contracting and program evaluation. Practical application is stressed.

**PSY 518 Research in Stimulus Control**
3 hrs.
An examination of the literature surveying sensory and perceptual processes with an emphasis upon the research methodology in, and theoretical interpretation of data from studies of stimulus control and discrimination in non-human organisms. Prerequisite: 9 hours of psychology or permission of instructor.

**PSY 519 Corrective and Remedial Teaching**
3 hrs.
An introduction to and survey of various content skills, curriculum approaches and special teaching techniques used in elementary school reading and mathematics instruction. Designed primarily for prospective school psychologists. Focus is on academic skill content, sequencing of skill hierarchies, devising short term educational plans to teach specific skills and evaluating the effectiveness of such plans. Prerequisite: Graduate standing in psychology, education or permission of instructor.

**PSY 524 Human Sexuality**
3 hrs. Fall
Discussion of those human behaviors concerned with sex, sexuality and reproduction. Consideration is given to the anatomical and psychological properties of sexual functioning in male and female. Emphasis is placed upon the sexual response cycle as described by Masters and Johnson. The course is not intended to provide therapy training.

**PSY 526 Human Drug Use and Abuse**
3 hrs.
This course provides a general overview of basic pharmacological principles, discusses the behavioral and physiological mechanisms of action of several classes of medicinal and recreational drugs, and surveys the factors thought to contribute to responsible and irresponsible drug intake. Although human drug use and abuse will be the primary focus of the course, non-human research findings will be emphasized where appropriate.

**PSY 528 Generalization, Discrimination and Concept Formation in Humans**
3 hrs.
Basic theoretical interpretations, methodological issues and data analysis in the stimulus control of behavior are reviewed and analyzed with an emphasis on the potential and actual applications to human behavior.

**PSY 530 Statistics for the Behavioral and Health Sciences**
3 hrs.
An introduction to statistical procedures, concepts, and reasoning with applications to the behavioral and health sciences. Topics include: measures of central tendency and variability, frequency distributions, and graphic presentations, the normal curve, probability theory, the binomial, hypothesis testing, the t-test, chi-square, correlation, regression and an introduction to analysis of variance.

**PSY 535 Instrumentation in Psychology**
3 hrs. Fall, Winter
A survey of problems of response measurement in experimentation. Lecture and laboratory. May be repeated for credit.

**PSY 540 Industrial Psychology**
3 hrs. Winter
Application of psychological principles to industry and other organizations. An examination of employee selection, job satisfaction, training, evaluation of performance, supervision and working conditions.

**PSY 542 Human Factors Engineering**
3 hrs.
A survey of research of the adaptation of equipment, products and environment to human capacities. Cross listed with EGM 542.

**PSY 560 Behavioral Medicine**
3 hrs.
Application of behavioral technology to medical patients with emphasis on in-patient treatment. Sample topics include bio-feedback, pain control, compliance with medical regimen and issues of work in a medical setting.

**PSY 562 Management of Health-Related Behaviors**
3 hrs.
A behavior analysis approach to the management of behaviors directly and indirectly affecting health. Emphasis will be placed on out-patient, public health applications and preventive approaches in health maintenance.

**PSY 570 A Behavior Analysis Approach to the Area of Retardation**
3 hrs. Fall
Topics will include: Historical background, assessment, training and legal implications of treatment.

**PSY 572 Applied Behavior Analysis: A Systems Approach**
3 hrs. Fall
The application of systems analysis concepts to the design of systems which yield behavioral measures of complex social situations.

**PSY 574 Experimental Social Psychology**
3 hrs.
Methodology of research with groups of animals and humans with emphasis upon design, application and ethical implications. Prerequisite: Permission of the instructor.

**PSY 595 History of Psychology**
3 hrs. Fall
The historical and philosophical foundations of contemporary American psychology.

**PSY 597 Topical Studies in Psychology**
2-4 hrs.
A survey and discussion of selected research topics of current interest. Topics may include both basic science and applied aspects of the discipline. Permission of instructor. Courses may be repeated for credit although the total number of credits may be limited by the degree program. Students should consult the program adviser. Courses may include the following: Parent Training, Studies in Industrial Psychology, Computer Assisted Instruction Theory of Direct Instruction.

**PSY 598 Special Projects in Psychology**
1-5 hrs.
This course provides the graduate student with the opportunity for independent reading and/or research under the direction of a faculty member. Graduate standing and permission of instructor. May be repeated for credit, although the total number of hours in a degree program may not exceed 5 hours.

**PSY 599 Practicum in Psychology**
2-4 hrs.
In depth training in the application of the principles of behavior to a specific and restricted problem area in the discipline. The practicum application is often identified by the location of the research site or professional service agency published in the Schedule of Classes. Each hour of credit requires 100 clock hours. May be repeated for credit although number of credits may be limited by program requirements. Written permission must be obtained from the department.
RELIGION

E. Thomas Lawson, Chair
Guntram Bischoff
H. Byron Earhart
David Ede
Nancy Falk
Otto Grundler
Rudolf Sebect

Religion courses are designed to give students (1) an understanding of the nature and role of religion in human societies, both past and present, both non-Western and Western; (2) a grasp of the various methods used by scholars to describe and explain religion, to assess achievements of these methods, and to develop new methods for increasing their knowledge of religious thought and practice, and (3) an opportunity for raising questions about the present and future significance of religious thought and practice.

Many courses in the department are approved for General Education, and students can extend their general education to include knowledge of religious thought and practice and to relate their knowledge of religion to their knowledge derived from other disciplines in the University.

The departmental major and minors are a good preparation for graduate study in religion, for the teaching of the academic study of religion in the public schools, and for a vocation associated with religion.

Requirements for Majors and Minors

A major in religion consists of a minimum of 28 hours and includes REL 200 (Introduction to Religion), two courses in the field of Historical Studies, and at least one course from each of the remaining three fields ( Morphological Studies, Methodological Studies, Constructive Studies). Two of these courses should be at the 500 level.

A minor in religion consists of a minimum of 16 hours and includes REL 200 (Introduction to Religion). One course is recommended in the field of Historical Studies. The two remaining courses should be taken in two of the three remaining fields.

Teaching Minor in the Academic Study of Religions

A teaching minor leading to state certification in the Academic Study of Religions consists of a minimum of six courses, totaling 22 semester hours, and composed as follows:

1. REL 200 Introduction to Religion
2. REL 304 African Religions
3. One course in the Christian, Jewish or Islamic religions, within the category of Historical Studies
4. One course in Comparative Studies
5. One course in any religion other than those specified above under (2) and (3), within the category of Historical Studies, or one course in Methodological Studies
6. REL 521 The Teaching of Religion in the Public School

NOTE: In exceptional cases REL 498, Independent Studies in Religion, or REL 598, Readings in Religion, may be substituted within the stipulated category for any of the courses specified above except REL 200, Introduction to Religion.

Courses By Topic

Introductory Studies

100 Religions of the World
107 Writing About Religion
200 Introduction to Religion

Historical Studies

302 Religion in the Indian Tradition
303 Chinese Religion
304 African Religions
305 The Christian Tradition
306 The Jewish Tradition
307 The Islamic Tradition
308 Japanese Religion
500 Historical Studies in Religion

Comparative Studies in Religion

311 Myth and Ritual
313 Religion in America
510 Morphological and Phenomenological Studies in Religion

Methodological Studies in Religion

320 The Philosophy of Religion
323 Religion and Revolution
324 Psychological Elements in Religion
520 Methodological Studies in Religion
521 The Teaching of Religion in the Public School

Constructive Studies in Religion

332 Religion and Social Ethics
333 Religion and Ecological Awareness
334 Religion in Modern Society
498 Independent Study
530 Constructive Studies in Religion
598 Readings in Religion

Religion Courses (REL)

(Courses described in italics are approved for General Education.)

REL 100 Religions of the World 4 hrs.

An approach to the religions of the world which surveys themes in various religious traditions (such as Judaism, Christianity, Hinduism, Buddhism and primitive religions). The course studies how these religious traditions conceive of gods and world order, founders and saviors, religious experience and practice, and religious communities. The course will pay attention to the contemporary status and significance of these themes. Does not apply toward major or minor in Religion.

REL 107 Writing About Religion 3 hrs.

This course develops and improves writing skills in the context of reading and discussing selected materials on religion. Emphasis is on the process of writing, with writing assignments in class and outside class. Reading selections focus on issues of contemporary interest. Fulfills the University Intellectual Skills college-level writing requirement.

REL 200 Introduction to Religion 4 hrs.

An introduction to the study of religion intended to be universal in scope, theoretical and scientific, in intent, and humanistic in orientation, of the nature and history of religion wherever it may be found, whatever its context, no matter what its forms, and attempting to raise whatever questions are necessary to illuminate its character. This will involve attention to more than one religious tradition, a discussion of the problems of definition, theory and method, and an acknowledgment of the interdisciplinary aspects of much of the inquiry, and an examination of the consequences of this inquiry for problems of self-understanding in the context of western culture in general, and American society in particular.

REL 302 Religion in the Indian Tradition 4 hrs.

This course draws its materials primarily from the great religious traditions native to India—i.e., Brahmanism, Buddhism, Jainism, and Hinduism. Particular attention is paid to the continuities of mood and practice that allow one to speak of “Indian Religion” as a unified phenomenon with a single history. Consideration is also given to such problems as the relationship between Indian religions and Indian culture and the relationship between Indian religious forms and the religious forms of other cultures.

REL 303 Chinese Religion 4 hrs.

A study of the historical continuity and overall unity in the Chinese religious tradition. The formal religions of Confucianism, Taoism, and Chinese Buddhism, as well as the informal religious movements of “ancestor worship,” family religion, and state religion will be discussed. An attempt is made to assess the meaning of religion in Chinese culture.

REL 304 African Religions 4 hrs.

This course is designed to introduce the student to the complexity and varieties of the religions of Africa. This is done by focusing on the myriad religious forms, e.g., ideas of the soul, cosmology, initiation rites, etc., which have emerged during the long history of Africa. The course pays attention to religious forms which either came into being with or define a specific cultural stratum: for example, the religious forms of hunters and food-gathers, horticulturalists, agrarianists, nomadic herders. Finally an attempt is made to see what changes Westernization has made in the African appropriation of their traditional religious symbols.

REL 305 The Christian Tradition 4 hrs.

An introduction to some of the salient features of the Christian experience as expressed in thought, practice and institutional structures. In an effort to elucidate the all-pervasive influence Christianity has had on Western Culture, the course focuses on such problems as the questions of the origin and identity of Christianity, the most important stages in its development, the interaction of Christian experience and current world-view of the host cultures, and particularly the phenomenon of secularization which is examined in the light of the astronomical, biological, historical, psychological and sociological "attacks" by modernity upon Christianity.

REL 306 The Jewish Tradition 4 hrs.

This course traces the history and development of Judaism from its roots in the Ancient Near East to the present, and its role in the shaping of Western consciousness. Particular attention is given to the periods of radical social, political and cultural change in Jewish history and hence to the critical problem of Jewish identity. An analysis of Jewish writings, customs, and institutions taken from different periods of Jewish history reveals that Jewish people have discovered and expressed their identity within a religious framework that includes myths and rituals, festivals, and holy days, celebration of the past and anticipation of the future, as well as social movements and political revolutions.
A study of the most important factors involved in the development of both the Islamic religious tradition and Islamic civilization. The pre-Islamic background of the life of Muhammad, the Qur'an, geographical expansion of the Muslim community, Islamic law, mysticism, sectarian development, philosophy, and Islam in the modern era are the major topics to be examined during the term.

RELI 308 Japanese Religion
4 hrs.
A study of the historical continuity and overall unity in the Japanese religious tradition. The major organized religions of Shinto and Japanese Buddhism, and also the influence of Taoism, Confucianism, and Christianity are discussed. Also taken up are the informal religious movements of "ancestor worship," family religion, and state religion. An attempt is made to assess the meaning of religion in Japanese culture.

REL 311 Myth and Ritual
4 hrs.
Eric Dardel, an anthropologist, has written: "Myth says with utmost seriousness something that is of essential importance." In this course an attempt will be made to discover just what this important something is and how it is actualized in certain rituals. Myths and rituals will be taken from a variety of historical traditions in order to reflect the cultural milieu of the communities whose lives are governed by them. Special problems to be considered will be the relationship between myth and cult, the problem of time and myth, the logic of mythic forms, etc.

REL 313 Religion in America
4 hrs.
An introduction to the full range of religious phenomena in today's North American culture and societies. The course attempts to isolate the specifically religious elements in concepts, values, and institutions and relate them to other elements of the socio-cultural fabric. While attention is directed to historical background, the rise, institutionalization and decline of movements, developing traditions, changing concepts, etc., the emphasis of the course is on contemporary religious experience and special attention is given to content analysis of the mass media, such as TV, radio, newspapers and magazines, advertising, popular music, comics, films, etc.

REL 320 The Philosophy of Religion
4 hrs.
An examination of the place of religion in human experience with special attention to the nature of religious language, the role and structure of religious concepts, the relation between religion and theology, and the logic of religious symbols.

REL 323 Religion and Revolution
4 hrs.
In this course, religion will be looked upon as a driving force of social and cultural evolution. The historical and contemporary record shows religion capable of exhibiting profound revolutionary tendencies as, for instance, in the Peasant War in 18th century Germany or in the present South American situation. The course will be concerned with religion's capability to promote fundamental change. It will explore the following main issues: The utopian and prophetic elements in Eastern, Middle Eastern, and Western religious traditions; comparison of contemporary religious and secular political hopes and aspirations; the correlation of political evolution utopias and religious eschatologies; the mutual reproduction of religious theory and social and political practice.

REL 324 Psychological Elements in Religion
4 hrs.
This course is concerned with the correlation between religion and the human subject—the religious or a religious individual. The central interest of the course is with religious propensities, feelings, impulses, passions, attitudes, motivations, values, ideas, prejudices. Critical questions such as the following will be asked: What is the function of religious faith for the nervous stability, mental health and wholesomeness of the subject? Does religion reinforce or hinder the maturation process of the individual? Is the need for religion just a derivation from the child's feeling of helplessness and of the longing it evokes for a sublime father figure?

REL 332 Religion and Social Ethics
4 hrs.
This course will be a study of different styles of religious and secular social ethics and the creative ideas, problems, and attitudes toward the social world they contain. The course will discuss a variety of special contemporary socioethical problems: The new sexual morality, abortion, divorce, guaranteed income, thermonuclear and chemical warfare, artificial insemination, euthanasia, and drug addiction. Particular attention will be paid to how different styles of social ethics relate themselves to fundamental changes in contemporary marriage and family as well as in the economic, political, and cultural sphere.

REL 333 Religion and Ecological Awareness
4 hrs.
A study of our society's attitudes toward the natural environment with special attention given to the sanctions which undergird these attitudes, a consideration of the various religious responses to the environmental crisis, and an inquiry into the possibility of reappropriating a sense for the sacrality of nature through the emerging ecological awareness.

REL 334 Religion in Modern Society
4 hrs.
Whereas a major focus of the systematic study of religion is upon religious traditions, or aspects of them, it is important that attention also be paid to the questions raised by the various contexts in which religion occurs as well as to questions raised by the methods developed in studying religion in such contexts. The specific context of religion to be studied in this course is that of industrial society. For religion to be understood in more than historical terms it is important that attention be paid to this kind of context. As a consequence of such a focus questions also are raised about the methods developed to specify and delineate such contexts and the role that religion plays in them. This provides an occasion for raising questions about the assumptions underlying such methods and about their relationship to the systematic study of religion.

REL 498 Independent Study
1-6 hrs.
Research on some selected problem under supervision of a member of the Religion faculty. Approval of the instructor involved and Chairperson of the Department must be secured in advance of registration.

REL 500 Historical Studies in Religion
2-4 hrs.
The topic to be announced in the Schedule of Classes. The content of the course will vary from semester to semester. Students may repeat the course for credit as long as the subject matter is different. Topics such as the following will be studied: Millenium, Utopia, and Revolution; Femininity as a Religious Form; Great Islamic Thinkers, the Hindu Yogas, the Occult Tradition.

REL 510 Morphological and Phenomenological Studies in Religion
2-4 hrs.
The topic to be announced in the Schedule of Classes. The content of the course will vary from semester to semester. Students may repeat the course for credit as long as the subject matter is different. Topics such as the following will be studied: Scientific Issues in the Study of Religion; The Critical Theory; Myth and Symbol in Religion and Literature.

REL 521 The Teaching of Religion in the Public School
2 hrs.
This course focuses on methods and issues involved in the teaching of religion in the public school. Particular attention is given to the problems of its constitutionality, the distinction between the academic study of religion and religious instruction, and the question of meaning. Various approaches to the teaching of religion are critically evaluated. Teaching methods appropriate to the level of instruction, availability, organization, selection and use of materials are discussed.

REL 522 The Teaching of Religion in the Private School
2 hrs.
This course focuses on methods and issues involved in the teaching of religion in the private school. Particular attention is given to the problems of its constitutionality, the distinction between the academic study of religion and religious instruction, and the question of meaning. Various approaches to the teaching of religion are critically evaluated. Teaching methods appropriate to the level of instruction, availability, organization, selection and use of materials are discussed.

REL 525 The Teaching of Religion in the Secondary School
2 hrs.
This course focuses on methods and issues involved in the teaching of religion in the secondary school. Particular attention is given to the problems of its constitutionality, the distinction between the academic study of religion and religious instruction, and the question of meaning. Various approaches to the teaching of religion are critically evaluated. Teaching methods appropriate to the level of instruction, availability, organization, selection and use of materials are discussed.

REL 526 The Teaching of Religion in the Elementary School
2 hrs.
This course focuses on methods and issues involved in the teaching of religion in the elementary school. Particular attention is given to the problems of its constitutionality, the distinction between the academic study of religion and religious instruction, and the question of meaning. Various approaches to the teaching of religion are critically evaluated. Teaching methods appropriate to the level of instruction, availability, organization, selection and use of materials are discussed.

REL 598 Readings in Religion
Variable Credit
Research on some selected period or topic under supervision of a member of the Religion faculty. Approval of the instructor involved and Chairperson of the Department must be secured in advance of registration.

RUSSIAN
See "Languages and Linguistics" in the College of Arts and Sciences.

SCIENCE (GROUP)
MAJOR AND MINOR
See "Interdisciplinary Programs" in the College of Arts and Sciences.
SCIENCE AND MATHEMATICS

TEACHING MINOR

See “Interdisciplinary Programs” in the College of Arts and Sciences.

SOCIOLOGY

David Chaplin, Chair
Lloyd Braithwaite
Milton J. Braver
Susan Caringella-MacDonald
Tilman Cothran
Paul C. Friday
Ronald C. Kramer
David M. Lewis
Richard R. MacDonald
Gerald Markle
Ellen Page-Robin
James C. Petersen
Stanley S. Roblin
Martin H. Ross
Herbert L. Smith
Subhash R. Sonnad
Thomas L. Van Valey
Morton O. Wagenfeld
Robert Will
Lewis Walker
Paul Wienir

Courses are designed to give students a better understanding of the significant factors and processes of modern life; to provide study useful for particular applied fields, such as social work, criminal justice, market research, opinion polling, city, state, and federal governmental service, and social research; to meet the needs of students preparing to teach in the social science field; and to prepare students for graduate work in sociology or criminal justice.

The Kercher Center for Social Research, as the research arm of the department, provides facilities and services available to students as well as faculty for instructional and research purposes. The center maintains computer and other research facilities that are used in the research arm of the department from 1940 to 1972. Following are required, except for students in the social psychology concentration: SOC 210, 250, 314, 352, 353, 354, 362, 373, 375, 390, and 495. Nine hours of advanced (400-500 level) courses, including SOC 556 are required. Limitations include: (1) A maximum of 12 hours transferred from a two-year institution may be included; (2) at least 9 hours must be taken at Western Michigan University; (3) no more than one course at the 100-level may be included. Transfer students should see the department adviser, since any transfer credit in sociology without a stated equivalent must be evaluated by the department if it is to apply toward a sociology major or minor.

Requirements include: (1) A maximum of 12 hours transferred from a two-year institution may be included; (2) at least 9 hours must be taken at Western Michigan University; (3) no more than one course at the 100-level may be included. Transfer students should see the department adviser, since any transfer credit in sociology without a stated equivalent must be evaluated by the department if it is to apply toward a sociology major or minor.

Sociology Major

A major in sociology consists of a minimum of 30 hours in sociology courses. SOC 200, 300, 320, and 382 are required. Two (6 hours) of the following are required, except for students in the social psychology concentration: SOC 210, 250, 314, 352, 353, 354, 362, 373, 375, 390, and 495. Nine hours of advanced (400-500 level) courses, including SOC 556 are required. Limitations include: (1) A maximum of 12 hours transferred from a two-year institution may be included; (2) at least 9 hours must be taken at Western Michigan University; (3) no more than one course at the 100-level may be included. Transfer students should see the department adviser, since any transfer credit in sociology without a stated equivalent must be evaluated by the department if it is to apply toward a sociology major or minor.

Students in secondary education must take SSCI 300 (Teaching of Social Studies in Secondary Schools) to meet the state certification requirement for a teaching methods course. This course may not be included in the hours required for a sociology major or minor. A major slip is required.

GROUP SOCIAL SCIENCE

Students in the secondary education curriculum who major in sociology must also complete a minor in group social science. Refer to the “Interdisciplinary Program” section of this catalog for a description of the minor requirements.

Sociology Minor

A minor in sociology consists of 18 hours for students in curriculum other than education. Students qualifying for teacher certification are required to complete a minimum of 20 hours. SOC 200 and 210 are required in either case.

Honors Program

Students in sociology and criminal justice may participate in the department honors program in four ways:

1. Qualifying for a bachelor’s degree with honors in sociology or criminal justice. The purpose of this program is to stimulate and reward outstanding student work in sociology or criminal justice. Requirements include: sociology or criminal justice major, overall average of 3.0 or better with an average of at least 3.25 in major courses, and satisfactory completion of an honors paper (including an oral exam on the paper). University recognition of graduation with honors appears on the diploma and transcript.

2. Membership in Alpha Kappa Delta, the national sociology honorary society. AKD is open to all students who have completed at least ten hours in sociology with a grade point average of 3.0 or better, and whose overall average is at least 3.0.

3. Leonard C. Kercher Fund Awards are made each year for outstanding student achievement. Dr. Kercher was head of the department from 1940 to 1972.

4. Membership in Alpha Phi Sigma, the national criminal justice honor society. Alpha Phi Sigma is open to all criminal justice students who have completed at least one third of the credit hours required for graduation with an overall grade point average of 3.0 or better, and whose criminal justice average is at least 3.2. Further information and application forms may be obtained at the Sociology Undergraduate Office, 2407 Sangren Hall.

Advising

Department Adviser

2407 Sangren Hall, 383-1733. Students must consult the department adviser for major/minor slips in Sociology, Criminal Justice, and the Social Psychology Concentration and for the evaluation of transfer credits, or for any other questions involving majors or minors. Information on graduate programs at Western as well as other schools is also available in the adviser’s office.

Undergraduate Assistantships

Students interested in becoming more involved in the department’s activities and projects may wish to apply for undergraduate assistantships which are available fall and winter semesters. Department assistants receive a moderate stipend and are assigned to work for a faculty member or department project. Applicants for these awards are also considered for the Kercher Award. For further information and application forms, see the department adviser.
The balance of the hours required may be selected by the student, with the following limitations: (1) A maximum of 9 hours transferred from a two-year institution may be included; (2) at least 6 hours must be 300-level or above; (3) no more than one 100-level course may be included. Minor slips are required.

**Sociology/Anthropology Major**

A combined major in sociology and anthropology consists of a minimum of 30 hours, with at least 12 hours in each department. SOC 200, 300, 382, and ANTH 210, 240, and 250 are required. Additional courses in either department may be selected by the student.

**Criminal Justice Curriculum**

This program is designed to provide perspective on the entire criminal justice system: crime as a social problem and society's reactions to it; the organization and operation of the criminal justice system, and the correctional process, as well as causes of crime and delinquency and other current issues. While the goal of the program is to provide knowledge and skills necessary for students interested in careers in criminal justice, it will support a number of related areas. In addition, students will be well prepared to pursue professional or graduate work in law, criminology, or other areas.

**MAJOR (CJU) CURRICULUM: 36 hours**

Requirements include:

1. Curriculum prerequisites, 9-10 hours
   SOC 200 or SOC 210 and SOC 264 and other PSCI 200 or 202.
2. Criminal Justice Core, 22 hours
   SOC 362, 462, 464, 564, 566, SWRK 465, and FCL 360.
3. Research Methods, 3-5 hours
   SOC 382 or PSCI 590.
4. Special Area of Concentration (Law Enforcement, Courts, Juvenile Justice, or Corrections), 6-8 hours.
5. Elective courses, 2-6 hours.

**ACT 210 Principles of Accounting**

**BAS 300 Black Experience**

**FCL 340 Legal Environment**

**HIST 301 Law and Justice in Western History**

**PSCI 300 Urban Politics in United States**

**PSCI 533 Public Personnel Administration**

**SOC 314 Ethnic Relations**

**SOC 320 Introduction to Social Psychology**

**SOC 496 Special Topics in Sociology (when applicable)**

**SOC 498 Criminal Justice Internship**

**SOC 510 Studies in Social Problems**

**SOC 510 Studies in Social Problems (Vicitmology)**

**SOC 512 Child Abuse**

**SOC 556 Social Stratification**

**SOC 567 Corporate/White Collar Crime**

**SOC 598 Directed Independent Study (with permission)**

**SWRK 433 Dynamics of Race and Culture**

Under authorization of the Michigan Law Enforcement Officers Training Council, law enforcement certifiability is available to coincide with graduation for students who meet the personal and academic requirements. Major slips are required for this major. Students should see the adviser at the beginning of the program in order to be sure the necessary prerequisites are included and courses taken in proper sequence. Transfer students interested in this major are also urged to see the adviser as soon as possible after admission for proper evaluation of transfer credits.

**CRIMINAL JUSTICE MINOR**

A 24-hour criminal justice minor is available, patterned after the major. Information on courses required may be secured from the department adviser. Minor slips are required.

**Social Psychology Concentration**

Social Psychology is the study of the impact of group life on individual behavior, thought and personality development. Training in social psychology provides a valuable background for a variety of positions in human service organizations and can provide an excellent theoretical foundation for graduate work in more applied fields such as social work, counseling, public administration and criminology.

**MAJOR REQUIREMENTS:**

SOC 200, 300, 320, and 382 are required. Three (9 hours) of the following electives are required: SOC 512, 520, 521, 522, 524, 528, and 579. Students must take SOC 556 and at least four (4) hours of other electives within the sociology department with no more than one 100-level course included.

**MINOR REQUIREMENTS:**

SOC 200, 210, and 320. Two (6 hours) of the following electives are required: SOC 512, 520, 521, 522, 524, 528, and 579. The student may include any other sociology course to complete the required eighteen (18) hours.

**Sociology Courses (SOC)**

(Courses described in italics are approved for General Education.)

**SOC 100 American Society**

3 hrs.

An analysis of contemporary American society, including continuity and change in value systems, major institutions and their interrelationships, and other aspects of social life.

**SOC 122 Death, Dying, and Bereavement**

3 hrs.

Social structures, attitudes, beliefs and values about death, dying and bereavement in contemporary American society as well as in other societies and other time periods will be considered. Medical, legal, religious, and psychological issues in relation to death, dying, and bereavement will be discussed. (Not recommended for persons recently bereaved.)

**SOC 171 Social Impacts of Science and Technology**

3 hrs.

An analysis of social consequences of major scientific and technological changes, including the actual and potential impact of advances in the physical and natural sciences.

**SOC 182 Computer Usage in the Social Sciences**

3 hrs.

An introduction to BASIC programming language. This course reviews ethical professional issues such as privacy, and provides training with software applications in social sciences such as SPSS, SAS, MINITAB, plus introducing students to microcomputers. This course meets the University's computer literacy requirement. Not for sociology or criminal justice majors or minor credit.

**SOC 190 Men and Women in Contemporary Society**

3 hrs.

A systematic analysis of roles of men and women, with particular emphasis upon problems of adjustment and conflict in contemporary society.

**SOC 195 Contemporary Social Issues: Variable Topics**

1-3 hrs.

This course is designed to explore topics of current sociological and general student interest in a substantive fashion at an introductory level. May be repeated for credit with a different topic.

**SOC 200 Principles of Sociology**

3 hrs.

An introduction to and survey of the discipline of sociology and its major fields of study. Selected sociological concepts, theories, and research findings will be discussed. Required for sociology majors and minors.

**SOC 210 Modern Social Problems**

3 hrs.

The course aims to develop a theoretical framework for understanding selected social problems in American society in such areas as: intergroup conflict, race, poverty, juvenile delinquency and crime, population changes, and mass communication. Problems selected for emphasis may vary with the instructor. Required for sociology minors.

**SOC 250 Rural Communities**

3 hrs.

Rural American society is a complex social situation involving the classic social institutions and problems, including social class, religion, poverty, and diverse racial and ethnic groups. This course attempts to examine these institutions and problems through current literature and by means of a series of field trips to visit examples of these social structures in southwestern Michigan. Contrasting rural communities in other countries may also be considered.

**SOC 264 Introduction to Criminal Justice**

3 hrs.

An overview of the criminal justice system as it currently operates in its three major components: police, courts, corrections. A broad-based interdisciplinary perspective is employed to introduce the beginning student to the process of criminal justice in modern America. Particular attention is placed on the discretionary authority of officials who are engaged in the decision making roles required to process suspects from arrest to release.

**SOC 300 Sociological Theory**

3 hrs.

A study of major theoretical viewpoints in contemporary sociology. The course is oriented toward the understanding, application, and extension of these major perspectives. Required for sociology majors. Prerequisite: SOC 200.
SOC 314 Ethnic Relations
3 hrs.
A study of race and ethnic relations, stressing a
global perspective on social relations among
varied peoples at different levels of
development, and in different parts of the
world.

SOC 320 Introduction to Social Psychology
3 hrs.
An introduction to social psychological theory
and research, covering the interaction of
individuals and their relationships to
social units. Includes such topics as
social influence, attitudes, socialization,
and personality.

SOC 335 Modern Latin American Societies
3 hrs.
An introduction to contemporary Latin
American societies focusing on their
developmental processes and problems.
Topics may include urban migration, land
reform, and conflict over resources.

SOC 336 Modern Japanese Society
3 hrs.
An introduction to Japanese society, focusing
upon current cultural and economic issues.
The course examines the influences of the
three major religious traditions on the social,
political, and economic processes that have
ensued in intergroup relations.

SOC 352 Introduction to Social Gerontology
3 hrs.
An introduction to the concepts of health and
illness, family life, village organization,
urban community, class structure, and
personality.

SOC 354 Population and Society
3 hrs.
A study of population, family life, village
organization, urban community, class structure,
and personality.

SOC 357 Modern Arab Societies
3 hrs.
An introduction to the Arab societies of the
Middle East and North Africa, focusing on
current urbanization and ethnic group tension.
The course examines the influences of the
major western religions and the religious,
social, political, and economic processes that have
ensued in intergroup relations.

SOC 358 Methods of Sociological Inquiry
5 hrs.
An introduction to quantitative and qualitative
methods of empirical research in sociology and
the description of findings. Theory and
techniques of research design are considered,
including formulation of hypotheses, sampling,
and the collection, analysis, and interpretation
of data. Laboratory sessions provide special
assistance. Required for sociology majors, who
are urged to take this course following SOC 200
to develop ability to evaluate research findings
in subsequent courses. Prerequisite: SOC 200 or
SOC 182 or Computer Literacy requirement.

SOC 360 Marriage and Family Relations
3 hrs.
A sociological analysis of the structural and
interactional aspects of marriage and family
groups in contemporary society, with emphasis
on the American middle class. Consideration is
given to change and diversity in family patterns,
norms, and values, and to factors contributing
to family unity or disorganization. Prerequisite:
SOC 200.

SOC 430 Sociology of Development
3 hrs.
An examination of the social factors which
influence the development of currently
developing societies in Europe, Africa, Asia, and Latin
America. These factors include such
phenomena as urbanization, nationalism, the
population explosion, welfare institutions and
practices, industrialization and the acculturation
of ethnic minorities. Prerequisite: SOC 200 or
consent of department.

SOC 462 Criminal Justice Process
3 hrs.
An analysis of substantive and procedural
criminal law as it relates to each stage of the
criminal justice process. The focus will be on
the sociological and legal implications of discretion
and judicial actions taken from arrest to conviction
and sentencing. Prerequisite: SOC 362 or
consent of department.

SOC 464 Sociology of Law Enforcement
3 hrs.
A sociological analysis of the process of law
enforcement as it involves municipal, state, and
federal agencies. Includes analysis of the police
"working personality," social role, isolation
from other social groups, vulnerability to
corruption through politics and/or organized
crime, and abuses of authority. The
development and comparison of the police role
will be traced from its roots in England to the
present American position. Prerequisite: SOC 362.

SOC 465 Correctional Process and
Techniques
3 hrs.
Course is scheduled as SWRK 465. An
overview of the correctional process as it can
operate in probation, prison and parole to alter
the criminal behavior patterns of legally defined
offenders. A broad perspective is employed
based on existing criminology theory and
accumulated knowledge of the phenomena of
crime and delinquency. Selected techniques for
corrective behavior modifications are studied
in relation to a typology of normative deviance
in terms of both etiology and rehabilitation.
Prerequisite: Consent of department.

SOC 467 The Police and Community
Dynamics
3 hrs.
Study of the role of the police in the community
by looking at the public's perceptions,
knowledge, and expectations, and the police's
responsibilities in communities. This
course stresses the practical application of
knowledge to contemporary issues facing
police such as the use of deadly force, police
performance, neighborhood patrols, politics of
law enforcement, minority relations, victimless
crime, and the resolution of police/community
differences.

SOC 468 The Police and Crime Prevention
3 hrs.
This course provides an intensive examination
of the important issues of crime prevention.
Crime prevention is viewed within the larger
political process and is related to the etiology of
criminal behavior. The utility of general and
specific prevention is discussed, looking at
theology and programs of both the police
and community including target hardening and
methods of decreasing the opportunity for
victimization. The security business and various
security techniques will also be analyzed.

SOC 490 Social Context of Sexual Behavior
3 hrs.
This course focuses on a systematic analysis of
contemporary sexual codes and behavior in
American society. Present-day beliefs and
practices are viewed in historical context
(especially from 1900 to the present) to gain
insight into what is today, with the purpose of
projecting what may be in the future. This
sociological, historical, social psychological
analysis examines current patterns of beliefs
and behavior in terms of their immediate and
potential effects and consequences both for
individuals and couples, and also for society.
Prerequisite: SOC 200.

SOC 495 Special Topics in Sociology or
Criminal Justice: Variable Topics
1-3 hrs.
A specialized course dealing, each time it is
scheduled, with some particular aspect of
sociology or criminal justice not usually
included in other course offerings. May be
repeated for credit with a different topic.
Prerequisite: SOC 200.

SOC 497 Juvenile Court Intervention
Internship
3 hrs.
Supervised field experience in the juvenile
court. Students attend seminars at the court and
on campus, and engage in interventions as
determined by the court, including interviews
with clients, law enforcement personnel, and
school authorities. Students make home visits
and corollary calls, prepare reports, and attend
court. Prerequisite: SOC 564 or SWRK 569 or
consent of department. Approved application
required.

SOC 498 Field Experience
2-8 hrs.
Structured as part of a specific departmental
program and identified as such in the printed
schedule when offered. Opportunity is provided
for supervised experiences in local community
organizations or activities in such areas as
criminal justice, gerontology, and urban
2-6 hrs. Consent of department.

3 hrs. An investigation and critique of social systems and analysis techniques which have been used in social organizations. Each student will be required to conduct a systems analysis during the course. Prerequisite: SOC 200 or consent of department.

SOC 510 Studies in Social Problems: Variable Topics 3 hrs. An examination of a selected area of concern in social problems not intensively covered in other courses. The focus of the course will be substantive, as well as theoretical and methodological. Topics may include such areas as poverty, mental illness, narcotic addiction, alcoholism, aging, and international tensions. May be repeated for credit with a different topic. Prerequisite: SOC 200 or 210, or consent of department.

SOC 512 Child Abuse 3 hrs. The course is an examination of child abuse in American society. Medical, psychological, educational, psychiatric, legal, and treatment perspectives are combined in a social analysis. The origins, family context, nature, extent, and social consequences of child abuse are discussed. Currently practiced social and legal solutions are presented, as well as possible social change required to respond to this phenomenon.

SOC 515 Sociology of Mental Disorder 3 hrs. This course will be concerned with examining the historical evolution and contemporary meaning of concepts of mental health and mental disorder. The course will also consider the amount and kind of mental disorder in society, the structure of the mental health care delivery system, the nature of help-seeking for mental disorder, and sociological analysis of psychotherapy. Prerequisite: SOC 200 or consent of department.

SOC 520 Studies in Social Psychology: Variable Topics 3 hrs. Further analysis of selected topics in social psychology not intensively covered in other courses. Specific topic will be designated in the course title when scheduled. May be repeated for credit with a different topic. Prerequisite: SOC 320.

SOC 521 Childhood Socialization 3 hrs. An investigation of social development of the child from birth to adolescence. The course will focus on the child’s interactions with parents and peers as these influence processes of learning, language acquisition, role-playing, the organization of knowledge, and development of self. Prerequisite: SOC 320 or consent of department.

SOC 522 Adolescent Socialization 3 hrs. An investigation of social learning and personality development in adolescence. This course examines the effects of interaction patterns and group allegiances, social class membership, biological maturation, sex roles and self-awareness on adolescent behavior, personality development, and orientation toward the adult world and adulthood. Prerequisite: SOC 320 or consent of department.

SOC 523 Contemporary Social Movements 3 hrs. A study of the origins, growth, and effects in contemporary society of social movements. Selected social movements including communism, fascism, the radical left, the radical right, women’s liberation, etc., will be analyzed. Prerequisite: SOC 200 or equivalent.

SOC 524 Adult Socialization 3 hrs. An examination of the processes of social learning and personality development from late adolescence through middle age. The course will focus on selection and performance of adult roles, issues of stability and change in adult identity, and the effects of role transitions and personal crises on adult development. Prerequisite: SOC 320 or consent of department.

SOC 528 Research Methods in Social Psychology 3 hrs. An examination and comparison of major research strategies in social psychology as applied to several selected major topics within the field. Students will be expected to review, critique, and conduct research within a selected area. Prerequisite: SOC 382 or equivalent.

SOC 531 Studies in Social Change: Designated Areas 3 hrs. Analysis of social change in specific geographic or national areas designated in the course title as scheduled. Change is examined through perspectives from history, anthropology, and sociology. May be repeated for credit with a different area. Prerequisite: SOC 200.

SOC 540 Sociology of Medicine 3 hrs. A comprehensive survey of concepts and research findings in the field of the sociology of medicine. Topics to be covered include the distribution of illness in society, relationships between social stress and disease, illness as a social process, health care professionals, the sociology of health care delivery. Prerequisite: SOC 373 or graduate standing.

SOC 552 Sociology of Aging 3 hrs. An examination of the process of aging in American society, with particular emphasis on the periods of late maturity and old age. Consideration will be given to theories of aging and the social implications of age grading, the meaning of work and retirement, and the status and roles of the aged. Prerequisite: 6 hours of sociology including SOC 200 or consent of department.

SOC 556 Social Stratification 3 hrs. An analysis of the nature, causes, and consequence of class and status differences within societies. Stress is placed upon such concepts as mobility, class, status, and differential power. Conflict and functional theories of stratification are treated. Prerequisite: SOC 200 or consent of department.

SOC 564 Juvenile Delinquency and the Community 3 hrs. A study of juvenile delinquency as a social problem. Extent, causative factors, methods of treatment, and programs of prevention and control are covered. When feasible, community resource people are invited to participate. Prerequisite: SOC 200.

SOC 566 Advanced Criminology 3 hrs. Advanced Criminology is a theoretically oriented course. Looking historically at the philosophical belief systems, classical and modern theories of crime are analyzed. Specific types of crimes such as property crime, violent personal crime and corporate crime are discussed and interpreted within the theoretical paradigms reviewed. Prerequisite: SOC 362.

SOC 567 Corporate and White-Collar Crime 3 hrs. An intensive analysis of corporate and white-collar crime from a sociological perspective. Topics covered include the problems involved in defining corporate and white-collar crime, an assessment of the costs of these crimes, a description of the nature, extent, and distribution of these forms of criminal behavior, the etiology of corporate and white-collar crimes, and societal and legal reactions to these types of crime. Prerequisite: SOC 362.

SOC 570 Studies in Social Institutions: Variable Topics 1-4 hrs. An examination of a selected topic in the area of social organization or institutions. The focus of the course will be substantive, but theoretical and methodological concerns will also be covered. Possible topics could include work and leisure, occupations and professions, sociology of science, mass society, macro-sociology, arts, and others. May be repeated for credit with a different topic. Prerequisite: SOC 200 or equivalent.

SOC 573 Sociology of Political Behavior 3 hrs. Systematic sociological theory and research applied to the study of political organization and behavior in the United States and in selected countries abroad. Such topics as political parties, voting, bureaucracy, and political ideology will be considered. Prerequisite: SOC 200 or consent of department.

SOC 574 Sociology of Religious Institutions 3 hrs. A study of the social role of religious institutions and beliefs, with particular reference to the United States. The course considers social factors affecting the development of different types of religious institutions and the influence of religion on American society. Prerequisite: SOC 200 or equivalent.

SOC 575 Industrial Sociology 3 hrs. The sociological study of industrial organizations and of the process of industrialization. The impact of technology and related factors on work organizations, the structure and operation of labor unions, and the changes occurring in industrial society are discussed. Prerequisite: SOC 200 or equivalent.

SOC 576 Sociology of School Organization 3 hrs. Advanced studies of education as an institution, emphasizing interaction with other social institutions and analysis of internal organization. Attention is focused on the school and social change, schooling and crime are reviewed, and schooling and stratification, as well as impediments to change, power and authority structures and the schools, the teaching profession, and student social structures. Prerequisite: 6 hours of sociology or consent of department.

SOC 578 Sociology of Law 3 hrs. An examination of legal organization, the legal profession, and legal norms in the United States.
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and other western societies. Emphasis will be placed upon the relationship between the legal system and the society in which it functions. Prerequisite: SOC 200 or equivalent.

SOC 579 Female/Male Interaction
3 hrs.
Examines the variable of gender as it influences interaction between women and men. Topics include female/male stereotypes, differences in female/male verbal and non-verbal codes, and female/male interaction on the job. (Cross-listed with COM 579.)

SOC 581 Logic and Analysis of Social Research I
3 hrs.
This course is designed to provide thorough grounding in basic univariate and bivariate descriptive and inferential statistics for social sciences. Prerequisite: graduate standing or SOC 382.

SOC 585 Research Methodology: Variable Topics
1-4 hrs.
This course concentrates on specialized research techniques and topics such as sampling and survey design, interviewing, and the use of sociological computer software. It may be repeated for credit with a different topic. Prerequisite: Consent of department.

SOC 590 The Family as a Social Institution
3 hrs.
The family viewed in historical and cross-cultural perspectives. A structural-functional analysis of the family institution and the relationship between the social structure of society and the family system. Emphasis is placed on change and comparative analysis. Prerequisite: SOC 200 or equivalent.

SOC 592 Family Life Education and Counseling
3 hrs.
Provides the student with working knowledge of the methods and materials appropriate in the school, the church and other social situations, for working with individuals and small groups who desire preparation for marriage and parenthood. Some attention will be given to the techniques for handling counseling opportunities arising out of these teaching situations. Prerequisite: SOC 200 or consent of department.

SOC 593 Marriage and Family in Middle and Later Years
3 hrs.
A systematic analysis of the marital and family system and interpersonal relationships of husbands and wives, and parents and children during middle age and the later years of married life. Prerequisite: SOC 390 or equivalent, or consent of department.

SOC 598 Directed Individual Study
2-6 hrs.
A program of independent study (reading or research) to provide the unusually qualified sociology student with the opportunity to explore a topic or problem of interest, under the guidance of one of the faculty of the department. The initiative for planning the topic for investigation must come from the student. Approval is contingent upon the merit of the proposal. Two or three hours credit per semester, cumulative to six hours. Enrollment beyond the first semester may be either for the same topic or for a new topic. Prerequisite: Consent of instructor and the department chairperson.

SPANISH
See “Languages and Linguistics” in the College of Arts and Sciences.

WOMEN’S STUDIES MINOR
See “Interdisciplinary Programs” in the College of Arts and Sciences.

WORLD LITERATURE MINOR
See “Interdisciplinary Programs” in the College of Arts and Sciences.
The function of the professional College of Business is to prepare capable men and women for responsible positions in business, industry, and public service. Three major areas of education are involved in the development process. They are:

1. A foundation of liberal arts and sciences in full recognition that as a future leader in the business and industrial world, the student will need a solid understanding of his/her relationships to social, economic, political, and cultural trends.

2. The presentation of a core curriculum that contemplates a thorough grounding in the fundamentals through which our free enterprise economic system operates. These fundamentals are met through business core subjects such as accounting, statistics, law, finance, marketing, management, and communications.

3. An opportunity for specialization in various aspects of business activity.

Continuing opportunities are made available to resident students to participate in campus meetings with business, industrial, and public service leaders, as well as outstanding professionals from various disciplines. In addition, business firm visitations, as well as business internships, give ample opportunity for the student to relate to his/her future role. Western's Placement Office is visited by the major firms that are engaged in recruiting activities.

The four main programs in the College of Business are:

1. Business Administration—Bachelor of Business Administration Degree.
2. Master of Business Administration for graduate students with Liberal Arts, Engineering, Business or other undergraduate preparation.
3. Master of Science in Accountancy for students desiring intensive preparation for a professional accounting career.
4. Master of Science in Business for students desiring intensive preparation for professional careers in Business.

Business Administration Curriculum (BBA Degree)

I. Pre-Business Curriculum

Any entering or transfer student planning to pursue business administration as a curriculum will be admitted to a pre-business curriculum and will work with a business adviser in the development of a planned program.

The pre-business curriculum requirements are:

1. Completion of a minimum of 60 semester hours.
2. An acceptable overall grade point average (minimum of 2.50).
3. Minimum grade of “C” in the following pre-business courses or approved alternatives:
   A. BIS 142, Informational Writing 3 hours
   B. One of the following: GSSC 121, Dimensions of Human Behavior; PSY 194, General Psychology; PSY 344, Psychology in Business and Industry; SOC 200, Principles of Sociology
   C. MATH 116, 122 or 200, 3 hours
   D. BIS 102, Intro. to Information Processing, 3 hours
   E. ECON 201 and 202, Principles of Economics, 6 hours
   F. ACTY 210 and 211, Principles of Accounting, 6 hours
   G. BIS 242, Business Communications, 3 hours
   H. MGMT 200, Business Statistics 3 hours

4. Additional hours will be taken in the following areas during the 60 semester hours:
   A. General Education Distribution Program: Area I Humanities and Fine Arts, 6 hours; Area II Natural Science, 3 hrs.
   B. Physical Education, 2 hours
   C. Non-business electives, 19 hours
After completion of at least 45 semester hours of work, application for admission to the professional business administration curriculum must be made by native students. Actual admission will not be approved until the completion of a minimum of 60 semester hours of work. Upper level transfer students will apply for admission to the professional business administration curriculum prior to their first semester of enrollment.

Admission of transfer students from accredited two- and four-year institutions will be made on an individual basis. The same criteria for admission listed above will apply. Equivalent transfer work must be credited to the same areas listed above.

Work completed at WMU with less than a “C” may not be completed by transfer work from another institution.

Students not meeting admission requirements will be informed of steps they can take to earn admission. Admission of students on a probationary basis to the professional business administration curriculum will be considered on an individual basis and include an examination of ACT test results in addition to a personal interview.

All students will receive academic advising from the College of Business during their first two years on an appointment basis. After admission to the College, students will be assigned to a specific adviser in the Academic Advising Office. After a choice of major has been made, students will also be assigned an adviser in that particular area.

Students following non-business curricula within the University beyond their sophomore year must realize that they could have difficulty graduating with a BBA degree in a four-year span.

II. Professional BBA Curriculum

In order to graduate from the professional BBA curriculum, a student must have a minimum of 122 non-repeated semester hours. In addition to the University requirements of general education, physical education and the first two years of study as outlined in the pre-business curriculum, students must complete the following:

1. Upper Class Requirements:
   A. MGMT 300 Fundamentals of Management 
   B. FCL 320 Business Finance 
   C. FCL 340 Legal Environment 
   D. MGMT 370 Marketing 
   E. Advanced Quantitative 
   F. Advanced ECON 
   G. G. MGMT 499 Management Problems

   (This capstone course must be taken during a student’s final semester of enrollment.)

   A “C” average grade point is required in the upper-level core courses outlined above.

2. Minor courses (minimum) 
   A. “C” average grade point is required in all courses applied toward a major.

3. General Education/ Electives
   A. General Education Distribution 
   B. Electives

Accountancy (ACTY)

Major Requirements:

ACTY 210, 211, Principles of Accounting 
ACTY 310, 311, 411, Financial Accounting 
ACTY 322 Managerial Accounting

ACTY 324 Income Tax Accounting

ACTY 516 Auditing

Electives in Accounting

FCL 352 Commercial Law

Minor Requirements: Students wishing to minor in accountancy are required to take a minimum of 21 hours. Fifteen of these hours must be in accountancy. ACTY 210, 211, and 310, are required plus 6 additional hours selected with the students’ professional objectives in mind. The remaining 6 hours must be selected from the following courses: FCL 320 and 340, MGMT 300, and MKTG 370.

Accountancy Electives Available for Majors and Minors

ACTY 513 Accounting Information Systems

ACTY 514 Institutional Accounting

ACTY 516 Accounting Theory and Problems

ACTY 522 Cost Accounting—Theory and Practice

ACTY 524 Studies in Tax Accounting

Advising

For questions regarding BBA curriculum requirements and transfer credit equivalencies, contact the College of Business Advising Office, North Hall.

Special Notes

1. A further requirement is that a minimum of 40 percent of the coursework must be taken from areas other than business and upper division economics.

2. The last 30 hours of work for those in the B.B.A. curriculum must be completed on campus. Exceptions may be granted by the department head and the Dean of the College of Business. CLEP examinations may not be used to fulfill the final 30-hour requirement.

3. Students at two-year community colleges who plan to transfer to WMU are urged to take courses equivalent to the ones listed in the pre-business curriculum, as this will facilitate entry into the upper level program of the college. Community college students should also be aware of coursework acceptable by transfer on the basis of the university’s MACRAO agreement and acceptable validation procedures.

4. Regarding the Mathematics 116 requirement, a 3-hour college algebra course based on a prerequisite of three years of college preparatory mathematics is acceptable as a transfer course.

5. With departmental approval, transfer courses from four-year schools (and appropriate lower division courses from community colleges) may be included in majors and minors. However, a minimum of 12 semester hours for a major and 9 for a minor must be taken at WMU.

Areas of Concentration In Business Administration

To graduate with any major from the College of Business, it is necessary to be enrolled in the Bachelor of Business Administration curriculum.

Business Information Systems (BIS)

The Department of Business Information Systems offers five undergraduate major areas of concentration as shown below. The courses are to be taken in the sequence indicated, following prerequisites as listed after the catalog course descriptions.

1. Administrative Systems (ADS)

   BIS 102 Introduction to Information Processing 
   BIS 260 Programming and Applications with Microcomputers
   BIS 386 Advanced Office Systems
   BIS 388 Records Management
   Plus 6 hours, as advised, from
   BIS 360 Information Systems Analysis and Design

   or

   BIS 484 Micrographics and Reprographics
   BIS 486 Corporate Records Centers
   Plus 9 hours, as advised, from
   CS 111 Computer Programming I
   BIS 261 COBOL Programming
   BIS 264 Report Program Generator
   BIS 343 Report Writing
   BIS 410 Internship in Administrative Systems
   BIS 557 Topics in Administrative Systems
   BIS 596 Independent Study in Administrative Systems
   BIS 598 Readings in Administrative Systems

2. Business Communication (BCM)

   BIS 142 Informational Writing 
   BIS 242 Business Communication 
   BIS 244 Organizational Communication
   BIS 343 Report Writing
   BIS 344 Business Communication Problems and Practices
   BIS 442 Advanced Business Writing
   Plus 9 hours, as advised, from
   BIS 410 Internship in Business Communication
   BIS 554 Topics in Business Communication (Business Communication Media, Business Communication Systems, Business Publications, etc.)
A. Accounting and Related Business Subjects

ACTY 210 Principles of Accounting 3
ACTY 211 Principles of Accounting 3
ACTY 310 Financial Accounting I 3
ACTY 311 Financial Accounting I OR
ACTY 322 Managerial Accounting 3
ACTY 324 Income Tax Accounting 3
CS 111 Computer Programming I 3
BIS 260 Programming and Applications with Microcomputers 3
BIS 261 COBOL Programming 3
BIS 362 Advanced COBOL 3
BIS 464 Decision Support and Expert Systems 3
FCL 350 Business Law 3

B. Business Administration

BIS 260 Programming and Applications with Microcomputers 3
BIS 261 COBOL Programming 3
BIS 264 Report Program Generator 3 OR
CS 111 Computer Programming I 3
BIS 360 Information Systems-Analyses and Design 3
BIS 182 Keyboarding 2
BIS 183 Formatting 2
BIS 306 Organizational Communication 3 OR
BIS 343 Report Writing 3
BIS 386 Advanced Office Systems 3 OR
BIS 556 Office Management 3
BIS 388 Records Management 3

ACTY 210 Principles of Accounting 3
ACTY 211 Principles of Accounting 3
FCL 350 Business Law 3
Students may also meet the requirements for vocational endorsement by completing an appropriate vocational teaching area of emphasis and appropriate courses in vocational education. At least 24 semester hours are required, which may necessitate an internship or work experience program.

Business Education Minor

Students not majoring in business education may elect a 20-hour business education minor in General Business or Accounting and Related Business Subjects. A minor of 12 hours must be taken in the College of Business.

A. General Business Teaching Minor

BIS 102 Introduction to Information Processing 3
BIS 182 Keyboarding 2
BIS 242 Business Communication 3
FCL 320 Business Finance 3
FCL 350 Business Law 3
MGMT 371 Management of Information Systems 3
MGT 300 Fundamentals of Management 3

B. Accounting and Related Business Subjects Minor

BIS 102 Introduction to Information Processing 3
ACTY 210 Principles of Accounting 3
ACTY 211 Principles of Accounting 3
ACTY 310 Financial Accounting I OR
ACTY 322 Managerial Accounting 3 OR
ACTY 324 Income Tax Accounting 3
BIS 260 Programming and Applications with Microcomputers 3
BIS 261 COBOL Programming 3
BIS 264 Report Program Generator 3 OR
CS 111 Computer Programming I

Finance and Commercial Law (FCL)

The Finance and Commercial Law Department offers majors in general business, finance, and real estate and minors in general business, finance, law, insurance, and real estate.

1. Finance and Commercial Law Majors

Option 1: Finance Major (FIN)

Advisers: Report to department office, 260 North Hall, for assignment to an adviser. In addition to the completion of the curriculum requirements for all students pursuing the Bachelor of Business Administration degree for which FCL 330 is required, all finance majors must complete 21 hours of finance coursework. Six of the 21 hours must consist of Introduction to Financial Markets 325 and Investment Analysis 326. The remaining 12 hours shall be selected with the student's professional objectives in mind. A student may elect a logical sequence of courses from the following:

- FCL 320 Business Finance 3
- FCL 325 Introduction to Financial Markets 3
- FCL 326 Investment Analysis 3
- ACTY 210 Principles of Accounting 3
- MGMT 300 Fundamentals of Management 3
- MGT 451 Administrative Behavior 3
- MGT 370 Marketing 3

Option 2: Law Major (LAW)

Advisers: Scheu

Students wishing to minor in law are required to take a minimum of 21 hours. Fifteen of these hours must be in law. Legal Environment 340 and Business Law 350 or Commercial Law 352 are required. The remaining 6 hours must be selected from the following courses:

- ACTY 210 Principles of Accounting 3
- MGMT 300 Fundamentals of Management 3
- MGT 451 Administrative Behavior 3
- MGT 370 Marketing 3

Option 3: Real Estate Minor (REA)

Advisers: Scheu

Students wishing to minor in real estate are required to take a minimum of 21 hours. Fifteen of these hours must be in Real Estate Law and Development 344 and one of the following courses:

- MGT 370 Marketing 3
- MGT 270 Salesmanship 3
- MGT 200 Business Statistics 3

Upon written consent of the adviser, up to 6 hours of approved alternative courses may be substituted for 6 hours of the required courses.
Option 4: Insurance Minor (INS)
Adviser: Report to department office, 260 North Hall for assignment to an adviser.
Students electing a minor in insurance are required to take 21 hours. Fifteen of these are in insurance courses and 6 are from other disciplines within the College of Business. The insurance minor consists of the following courses.

- [3] FCL 321 Risk and Insurance
- [3] FCL 322 Life and Health Insurance
- [3] FCL 323 Property and Liability Insurance

One (1) of the following courses:
- [3] FCL 320 Business Finance

Two (2) of the following courses:
- [3] MKTG 370 Marketing
- [3] ACTY 210 Principles of Accounting

BIS 102 Introduction to Information Processing

MGMT 200 Business Statistics

MGMT 300 Fundamentals of Management

Option 5: General Business Minor (GBS)
Adviser: Finance and Commercial Law Faculty

Fifteen additional hours of Management courses: 21 hours.

ACTY 210 Principles of Accounting (req. for Non-BBA minors) 3
FCL 320 Business Finance 3
FCL 340 Legal Environment 3
MGMT 300 Fundamentals of Management 3

Management (MGMT)
Advisers: Report to the Department of Management, 175 East Hall, for assignment to an adviser.

Major in Management (24 hours)
A major in management consists of the three courses listed below plus 15 hours of additional work. Such courses may be drawn from all Department of Management offerings above 300, except 360 and 499. A student who needs to build a special program is required to do so in consultation with a departmental adviser.

- [3] MGMT 301 Management Analysis and Behavior (I)
- [3] MGMT 302 Management Analysis and Behavior (II)

Fifteen additional hours of Management courses at the 300 level or above (excluding 360 and 499) 15

Minor in Management (21 hours)
A minor in management consists of 300, 301, 302, two MGMT electives, plus two courses from the four listed below. A student who needs to build a special program is required to do so in consultation with a departmental adviser.

- [3] ACTY 210 Principles of Accounting (req. for Non-BBA minors)
- [3] FCL 320 Business Finance
- [3] FCL 340 Legal Environment
- [3] MKTG 370 Marketing

Marketing (MKTG)
The Marketing Department offers four major areas of concentration as shown below. The courses are to be taken in the sequence indicated, following the prerequisites as listed after the course descriptions.

1. Advertising (ADV)
Adviser: Lindquist

- [3] MKTG 370 Marketing
- [3] MKTG 371 Marketing Research
- [3] MKTG 374 Advertising
- [3] MKTG 375 Principles of Retailing
- [3] MKTG 377 Retail Promotion
- [3] MKTG 474 Advertising Copy and Layout
- [3] MKTG 477 Consumer Behavior
- [3] MKTG 572 Marketing Media and Campaigns
- [3] MKTG 577 Advertising Theory and Ethics

2. Retailing (RET)
Adviser: Dannenberg

- [3] MKTG 370 Marketing
- [3] MKTG 371 Marketing Research
- [3] MKTG 374 Advertising
- [3] MKTG 375 Principles of Retailing
- [3] MKTG 377 Retail Promotion
- [3] MKTG 476 Retail Merchandising
- [3] MKTG 479 Marketing Internship (1-6)
- [3] MKTG 570 Problems in Retailing

3. Industrial Marketing (IDM)
Adviser: Oettesen

- [3] MKTG 370 Marketing
- [3] MKTG 371 Marketing Research
- [3] MKTG 374 Advertising
- [3] MKTG 376 Sales Administration
- [3] MKTG 476 Retail Merchandising
- [3] MKTG 574 Marketing Logistics

Optional minor for Industrial Marketing Majors:
Manufacturing Technology (15 hours)

4. General Marketing (MKT)
Advisers: Report to Department of Marketing, 224 North Hall, for assignment to an adviser.

- [3] MKTG 370 Marketing
- [3] MKTG 371 Marketing Research
- [3] MKTG 374 Advertising
- [3] MKTG 376 Sales Administration
- [3] MKTG 470 Industrial Marketing
- [3] MKTG 575 International Marketing

Elective from Marketing Department 3

5. Marketing Minor (MKT)
A marketing minor requires 21 credit hours consisting of the following courses:

- [3] MKTG 370 Marketing
- [3] MKTG 374 Advertising
- [3] MKTG 376 Sales Administration

Electives from Department of Marketing approved by Department Adviser 6

Two (2) Elective courses from the following:

- [3] ACTY 210 Principles of Accounting
- [3] ACTY 211 Principles of Accounting
- [3] FCL 320 Business Finance

Any deviations from the course requirements must have written approval of the departmental adviser or department chairperson.

Related Majors
Students who complete the B.B.A. curriculum requirements may major in any of the following four areas and receive the B.B.A. degree. All students electing a "related major" option must meet the minimum requirement of 40 percent of their coursework in business and upper division economics courses, in addition to the 40 percent in non-business requirement.

1. Economics (ECO)
Adviser: Caruso
Elect an additional 21 semester hours of advanced courses (300-500 level) from the Department of Economics.

2. Public Administration (PAB)
Adviser: McCarty

Major Requirements: 24 hours
In addition to the curriculum requirements for all students pursuing the Bachelor of Business Administration Degree, complete 24 hours from the following courses:

Required Course—Select one of the following courses:

- [3] FCL 340 Legal Environment
- [3] FCL 320 Business Finance

Elective Courses—Select seven (7) courses (21 hours) from the following list of courses:

- [3] ACTY 322 Managerial Accounting
- [3] ACTY 514 Institutional Accounting
- [3] BIS 343 Report Writing
- [3] BIS 556 Office Management
- [3] FCL 330 Real Estate Fundamentals
- [3] FCL 450 Management and Labor Relations Law
- [3] FCL 532 Real Estate Law
- [3] FCL 554 Government Regulation of Business

- [3] MGMT 451 Administrative Behavior
- [3] MKTG 571 Healthcare Marketing

Minor Requirements: 21 hours

- [3] PSCI 200 National Government
- [3] PSCI 202 State and Local Government
- [3] PSCI 330 Introduction to Public Administration
- [3] PSCI 533 Public Personnel Administration

Plus one of the following:

- [3] PSCI 504 Making of Public Policy in U.S.
- [3] PSCI 531 Administration in Local and National Governments
- [3] PSCI 534 Administrative Theory
- [3] PSCI 591 Statistics for Political Science

3. Statistics (STB)
Adviser: Sievers
The following courses from the Department of Mathematics plus one business elective
Two courses from the following list

- CRT 261 Agronomy (Crop Production) 4
- CRT 262 Principles of Horticulture 4

One course from one of the following areas

- Cultural and Regional Area Study
- Foreign Language

- FCL 320 Business Finance (Prereq. MGMT 300 and ACTY 210) 3
- FCL 340 Legal Environment 3
- BIS 242 Business Communications (Prereq. BIS 142) 3
- MGMT 300 Fundamentals of Management 3
- MKTG 370 Marketing (Prereq. ECON 201) 3

Four courses from the following list

- FCL 521 International Finance (Prereq. FCL 320) 3
- FCL 522 International Business Law (Prereq. FCL 340) 3
- MGMT 510 Multinational Management 3
- MKTG 575 International Marketing (Prereq. MKTG 370) 3
- ECON 480 International Economics (Prereq. ECON 201-202) 3

One course from one of the following areas

- Foreign Language
- Cultural and Regional Area Study
- Skill Specialization

College of Business Courses (BUS)
(Courses described in italics are approved for General Education.)

BUS 399 Field Experience (Community Participation)
2-8 hrs.
A program of independent study combining academic work with social, environmental, civic or political field work. Prerequisites: A written outline of the student's project, approved by a faculty supervisor, and approval from the office of the dean.

BUS 504 International Business Seminar
1-6 hrs.
A foreign study seminar designed for qualified and capable undergraduate students, graduate students, teachers and business executives. The seminar introduces participants to a firsthand knowledge of business operations abroad through on-site inspection of foreign manufacturing, marketing, financial, and governmental organizations, supplemented by coordinated faculty lectures and assigned reading. Students completing such a seminar may receive credit in the Departments of Accountancy, Business Information Systems, Finance and Commercial Law, Management, or Marketing, if approved by the head of the department prior to registration for the seminar.

Students may receive six hours credit in any combination of departments as described, provided the seminar is planned with that combination in mind. No student will receive credit under the course plan indicated here for work done in seminars planned and conducted by other institutions or for work done independent of seminars planned by the College of Business.

Accountancy Courses (ACTY)

ACTY 201 Accounting Concepts and Applications
3 hrs.
A study of the fundamental concepts and applications of accounting. Especially designed for the non-business student. Not open to students with credit in accounting.

ACTY 210 Principles of Accounting
3 hrs.
An introductory course in accounting which includes the recording and reporting of business transactions, and the measuring, planning and controlling of business income, assets and equities.

ACTY 211 Principles of Accounting
3 hrs.
A continuation of course 210 with emphasis on managerial/cost accounting concepts. Prerequisite: 210.

ACTY 310 Financial Accounting I
3 hrs.
This course reviews the accounting cycle, related accounting records and theory. Accounting principles and reporting requirements for current assets, plant and equipment, intangibles, and other assets are also studied. Prerequisite: 211.

ACTY 311 Financial Accounting II
3 hrs.
This course is a continuation of Accounting 310. Accounting principles and reporting requirements for liabilities, long-term investments, and stockholders' equity are studied. Other topics generally included are the study of the Statement of Changes in Financial Position, the recording and reporting of accounting changes, the analysis of financial statements, and the study of statements adjusted for inflation. Prerequisite: 310.

ACTY 322 Managerial Accounting—Concepts and Practices
3 hrs.
A study of the accounting methodology and concepts that have been developed to serve managers in decision-making for planning and control. Includes budgeting, standard costing, variance analysis, incremental analysis, cost and profit analysis, relevant costing, and
ACTY 324 Income Tax Accounting
3 hrs.
A study of the federal tax laws as they apply to individuals, partnerships, and corporations. While the course is primarily organized around the individual taxpayer, particular emphasis is given to the concepts that apply to all reporting entities. Prerequisite: 211.

ACTY 410 Internship in Accounting
1-4 hrs.
Under the direction of a faculty coordinator, students obtain full-time accounting related employment experience. Participation is limited to available internships and competitive selection by the faculty coordinator and potential employers. Students are required to write a final report. Each employer will provide an evaluation of the student. This course must be taken on a credit/no credit basis and does not count toward the accounting major. Prerequisite: Written consent of the faculty coordinator.

ACTY 411 Financial Accounting III
3 hrs.
The study of entities and special transactions not covered in Financial Accounting I and II. Particular emphasis is given to partnership equity accounting, fund accounting, accounting by agencies and branches, business combinations, reporting by parent-subsidiary consolidated entities (including foreign subsidiaries). Prerequisite: 311 and senior standing.

Open to Upperclass and Graduate Students

ACTY 513 Accounting Information Systems
3 hrs.
A study of concepts, organization, technology, and controls of an accounting information system. Includes a study of specific application (payroll, accounts receivable, etc.), with particular emphasis on data input, processing, and output utilizing the computer. Prerequisite: BIS 102, ACTY 310, and ACTY 322, or their equivalent.

ACTY 514 Institutional Accounting
3 hrs.
A comprehensive study of the recording of transactions by government units and the preparation of financial statements by fund entities. City government is the basic unit of study; however, school districts, universities, and hospitals are given brief coverage to illustrate the similarity in accounting for all not-for-profit entities. Prerequisite: 211 or written consent of instructor.

ACTY 516 Auditing
3 hrs.
The theory and practice of auditing business enterprises and government agencies. Topics include a review of professional pronouncements, internal control concepts, ethics, and a discussion of audit objectives. Prerequisite: ACTY 311 or equivalent.

ACTY 518 Accounting Theory and Problems
3 hrs.
A study of financial accounting theory and practice. The course is organized around pronouncements of the Financial Accounting Standards Board and other authoritative bodies. Case studies are used to illustrate application of the concepts of such pronouncements. Prerequisite: Senior standing and accounting major.

ACTY 522 Cost Accounting—Theory and Practice
3 hrs.
A study of the accounting methodology and concepts that have been developed to account for both product and period costs of a business enterprise. Includes product costing for job order and continuous process situations with related systems concepts, cost allocations among departments of an enterprise, joint and by-product costing, and standard costing as it relates to inventory pricing. Prerequisite: 322.

ACTY 524 Studies in Tax Accounting
3 hrs.
Special studies related to tax problems of individuals, partnerships, and corporations. Emphasis is on federal taxation of corporations, trusts and estates. Prerequisite: ACTY 324 or equivalent.

ACTY 598 Readings in Accounting
1-4 hrs.
Directed individual study of topics not otherwise treated in departmental courses. Prerequisite: Written consent of instructor.

BUSINESS INFORMATION SYSTEMS
Margaret M. Sanders, Chair
Kuniakote Athappily
Joel P. Bowman
Bernadine P. Branchaw
Earl E. Halvas
Darrell G. Jones
Marcia Mascolini
L. Michael Moskovis
Debbie A. Renshaw
Pamela S. Rooney
Jean O. Smith
Robert Supnick
Dani H. Swanson
Andrew S. Targowski
Judy A. Yeager

The Department of Business Information Systems offers five undergraduate programs of study: (1) Administrative Systems (ADS), (2) Business Education (BED), (3) Business Communication (BCM), (4) Computer Information Systems (CIS), and (5) Consumer Relations (CRL).

Business Information Systems Courses (BIS)
(Courses described in italics are approved for General Education.)

BIS 100 Introduction to Business Writing
3 hrs.
A course dealing with those areas of written communication necessary for the development of basic business writing skills. Designed as a foundation for subsequent business writing/communication courses. Credit for this course will not apply toward the number of credits needed for graduation. (Credit/No Credit)

BIS 102 Introduction to Information Processing
3 hrs.
An introductory survey of the needs for and roles of computer information systems within business organizations which will prepare students to be relatively sophisticated computer users. Emphasis is on (1) management information systems (MIS) including a focus on information management and information processing, (2) microcomputer applications, and (3) the development of elementary-level programs in BASIC language.

BIS 142 Informational Writing
3 hrs.
Development of the basic composition skills required of the competent writer in business and professions. Through continuing directed practice in writing, students develop competence in the organization and presentation of facts and information in writing. This course fulfills the University college-level writing requirement.

BIS 182 Keyboarding
2 hrs.
To provide basic touch keyboarding skill to input to typewriters and computers efficiently. To develop speed and accuracy on the alphabetic, numeric, and symbol keys.

BIS 183 Formatting
2 hrs.
An opportunity to build keyboarding speed and to learn to format common business information such as letters, memos, reports, and tabular material. Prerequisite: BIS 182.
BIS 242 Business Communication 3 hrs.
Business communication is a general introduction to the uses of communication in modern organizations. Organization theory, behavior, and communication channels form the basis for special emphasis on written communication to solve typical business problems. Prerequisite: BIS 142 or its equivalent.

BIS 244 Organizational Communication 3 hrs.
A study of communication in structured organizations and the application of communication theory to the solution of communication problems in organizations. Special emphasis on small groups decision making. Prerequisite: BIS 242.

BIS 260 Programming and Applications with Microcomputers 3 hrs.
A study of the role of microcomputers in business. Through hands-on exposure to small systems, students learn about microcomputer hardware configuration, business software application packages, and advanced BASIC programming techniques, especially file creation and manipulation, applicable to micros. Prerequisite: BIS 102, CS 111.

BIS 261 COBOL Programming 3 hrs.
Computer programming in the most widely used language for business type application. Programming will be done in timesharing and/or batch sequential mode. Current computer developments are discussed. Prerequisite: BIS 260.

BIS 264 Report Program Generator 3 hrs.
Study of feasibility and applicability of RPG (Report Program Generator) computer programming to business problems. Included are the design, coding, compiling, and execution of programs in RPG, RPG II, and RPG III. Prerequisite: BIS 102.

BIS 292 Consumer Principles and Practices 3 hrs.
This course examines the sociological, psychological, and economic aspects of the American consumer movement. Students review the function of the marketplace and examine its contributions and failings. Analysis is made of the changes and problems facing the consumer and the role of private and governmental protection agencies. Legal rights and responsibilities are reviewed, especially those involving warranties, guarantees, and landlord and tenant relationships.

BIS 343 Report Writing 3 hrs.
Intensive discussion and practice of the commonly used report-writing techniques. The study includes various formats and graphics of reports. In addition to writing several brief reports, students prepare a complete research report, give oral reports. Prerequisite: BIS 242.

BIS 344 Business Communication Problems and Practices 3 hrs.
An in-depth analysis of communication problems and practices as they occur in modern business. Special emphasis is given to development of business writing skills as they apply to decision making, report writing, and business communication systems. Prerequisite: BIS 242.

BIS 360 Information Systems Analysis and Design 3 hrs.
A study of the total systems analysis and design process including data collection, problem definition, systems analysis and design, systems implementation, and application of the tools and techniques of the systems professional. Prerequisite: BIS 260.

BIS 362 Advanced COBOL 3 hrs.
Continuation of BIS 261, including advanced treatment of sequential access, plus index sequential and random access, report writer, library routines, precompilers, documentation, efficiency, and data base management systems. Prerequisite: BIS 261.

BIS 386 Advanced Office Systems 3 hrs.
A study of the trends and impacts of automated office systems on the work process, human resources, workstations and environments, and productivity. An examination of the planning, integration, and management technology and ergonomics in the information (white-collar) environment. Prerequisite: BIS 260.

BIS 388 Records Management 3 hrs.
The study of efficient methods, procedures, and systems for processing, controlling, and disposing of organizational records. Includes records inventory and classification, information retention and retrieval, and the administration of office information systems.

BIS 410 Internship 1–4 hrs.
Under the direction of a faculty adviser, qualified students may engage in a variety of professional experiences. Scheduled meetings with adviser and written experience reports application required. May be repeated for a maximum of 4 hours credit. Prerequisite: Approved application required.

BIS 442 Advanced Business Writing 3 hrs.
Emphasis on the written communication problems of business, including message design, style, and editing. Students apply skills through work with forms, brochures or handbooks, and articles. There will be some field work outside of class.

BIS 462 Applied CIS Development Project 3 hrs.
Application of computer programming and system development concepts, principles, and practices to a comprehensive system development project. A team approach is used to analyze, design, and document realistic systems of moderate complexity. Use of project management methods, project scheduling and control techniques, formal presentations, and group dynamics in the solution of information system problems. Development of a database to support the system. Prerequisite: BIS 362.

BIS 464 Decision Support and Expert Systems 3 hrs.
An analysis of the highest level of information support systems which serve the manager-user. A study of systems providing quantitative-based information derived from one or more data bases within and/or external to the organization and used to aid managers in the decision-making process. Theoretical concepts are applied to real world applications with an analysis of examples from specific organizations. Prerequisite: BIS 362.

BIS 466 Distributed Data Processing 3 hrs.
The features of centralized, decentralized, and distributed systems will be examined. The impact of distributed systems on the business enterprise will be examined via the medium of case studies. Technology implications of computer hardware, software, and communications are discussed as they relate to the design, development, and implementation of distributed data processing systems. Prerequisite: CS 542.

BIS 484 Micrographics and Reprographics 3 hrs.
Fundamentals of micrographics and reprographics, including related components of technology, legal implications, systems applications and trends, feasibility, and industry standards. Prerequisite: BIS 388 or permission.

BIS 486 Corporate Records Centers 3 hrs.
An examination of commercial and corporate records centers. Includes services, equipment, systems, and technology; addresses functions of planning, staffing, operating, and managing records centers. Prerequisite: BIS 388 or permission.

BIS 554 Topics in Business Communication 3 hrs.
An intensive study of a topic in business communication such as a communication system, business media, business publicity and others. The topic will be announced in advance. May be repeated for credit.

BIS 555 Topics in Computer Information Systems 3 hrs.
Special topics appropriate to business applications such as data base management systems, structured networking, programming documentation and efficiency, planning and directing management information systems. May be repeated for credit.

BIS 556 Office Management 3 hrs.
Procedures of office administration with attention to supervisory patterns in development, appraisal, and management of human resources.

BIS 557 Topics in Administrative Systems 3 hrs.
Includes an intensive study of a selected topic in administrative systems such as communication audit, computerized office systems, work measurement and simplification, forms control and design, and others. The topic will be announced in advance. May be repeated for credit.

BIS 560 Office Systems and Procedures 3 hrs.
A study of paperwork systems and procedures. Emphasis is placed on office systems and the techniques of systems development including fact gathering and recording, work analysis, and office work simplification and measurement.

BIS 564 Information Resource Management 3 hrs.
This seminar course provides an overview of the management of information systems resources. The student will gain an insight and understanding of the subject through study of the fundamentals of organizing, planning, controlling, and other significant management tasks that relate to management of information resources. Prerequisite: BIS 462.
FINANCE AND COMMERCIAL LAW

Majors may be obtained in general business, finance, and real estate. Minors are available in general business, finance, law, insurance, and real estate. The general business major and minor require students to select a logical sequence of courses from the several departments within the College of Business. All majors and minors (except the general business minor when completed by a student having a business major) in this department must be approved by the assigned adviser.

Finance and Commercial Law Courses (FCL)

Finance Area—Finance, Insurance and Real Estate Courses

F. William McCarty, Chair
Robert Balk
James D’Mello
Adrian Edwards
A.D. Issa
Robert Jones
Kenneth Kennedy
C. R. Krishna-Swamy
Inayat Mangla
Tim F. Scheu

FCL 305 Personal Finance
3 hrs.
Deals with various concepts inherent in personal financial management. This is a survey course designed to enable the student to better understand the considerations involved in the management of income, savings, investments and in debt planning. A lecture-discussion approach will include consideration of insurance planning, investment management, consumer and mortgage credit, real estate, tax planning and financial planning in the area of wills and estates. (Cannot be used for any major or minor.)

FCL 320 Business Finance
3 hrs.
Presents a basis for understanding the financial management function of the business enterprise. Considers financial principles and techniques essential for planning and controlling profitability and liquidity of assets, planning capital structure and cost of capital, and utilizing financial instruments and institutions for capital raising. Prerequisites: MGMT 200 and ACTY 210.

FCL 321 Risk and Insurance
3 hrs.
A comprehensive course which considers the nature and orientation of insurance risks and their management. Major business and personal risks are analyzed and their insurance treatment evaluated, as are the functional aspects of insurer operations. The impact of insurance on public policy is also considered.

FCL 322 Life and Health Insurance
3 hrs.
This course combines a discussion of the economic aspects of life and health insurance with basic analysis of life insurance and annuity contracts. It also includes investigation of the major functional aspects of life and health insurance companies. Prerequisite: FCL 321.

FCL 323 Property and Liability Insurance
3 hrs.
This course includes analytical study of the major property and liability contracts, together with discussion of the principal functional aspects of property and liability company operations. Prerequisite: FCL 321.

FCL 325 Introduction to Financial Markets
3 hrs.
A survey of financial markets and intermediaries with emphasis on their structure, social justification, and current status. This course provides additional background for advanced study in finance and a practical foundation for those students interested in an exposure to the financial system. Prerequisite: ACTY 210.

FCL 326 Investment Analysis
3 hrs.
A survey of the securities markets from the viewpoint of the novice investor. This course includes a study of market operations, trading techniques, special investment vehicles such as options and warrants, and a consideration of the investment objectives and practices of institutional investors. Prerequisite: FCL 320 or consent of instructor.

FCL 327 Internship in Insurance
1-5 hrs.
Under the direction of a faculty adviser, students obtain employment experience with an insurance company or with a firm having an insurance division or department. Students are required to file periodic reports to the faculty adviser. In addition, they are evaluated by the firm’s executives. Available only to students majoring in insurance. No more than 3 hrs. can be used as credit toward a minor or major.

FCL 328 Internship in Finance
1-5 hrs.
Under the direction of a faculty adviser, students obtain employment experience with industrial, commercial, and financial enterprises (commercial banks, insurance companies, etc.) and students are required to file periodic reports to the faculty adviser. In addition, they are evaluated by the firm’s executives. Available only to students majoring in finance. No more than 3 hrs. can be used as credit toward a major or minor.

FCL 329 Internship in Real Estate
1-5 hrs.
Under the direction of a faculty adviser, students obtain employment experience with a real estate firm or enterprises with a real estate department or division. Students are required to file periodic reports to the faculty adviser; in addition, they are evaluated by the firm’s executives. Available only to students majoring in real estate. No more than 3 hrs. can be used as credit toward a major or minor.

FCL 330 Real Estate Fundamentals
3 hrs.
Supplies the basis for comprehension of the basic economic characteristics and the organization and techniques used in the real estate business. Treats real estate resources, marketing, financing, valuation, and trends.

FCL 331 Real Estate Finance
3 hrs.
Considers the field of real estate finance from the viewpoint of sources of funds, various real estate contracts, valuation techniques, appraisals of residential and income properties and the various aspects of risk analysis in real estate. Prerequisite: FCL 330 or consent of instructor.

FCL 332 Real Estate Investments
3 hrs.
The effect of various forms of taxation, market conditions and governmental policies as they affect the investor’s spendable income are reviewed. Prerequisite: FCL 330 or consent of instructor.
FCL 333 Real Estate Appraisal 3 hrs.
A study of the sources of real estate value, the techniques for estimating property value, and the effective use of appraisal information. Prerequisite: FCL 330 or consent of instructor.

FCL 420 Quantitative Applications in Finance 3 hrs.
The applications of quantitative analysis to finance. Emphasis will be placed on the techniques available in financial decision-making, determination of financial relationships, and financial forecasting. Applications in corporate financial management, investment analysis, and financial institutions. Prerequisite: FCL 320.

An in-depth study of the concepts and theories underlying the investment and financing decisions of business enterprises. The course emphasizes the various aspects relating to the effective management of the firm's working capital, fixed assets and financial structure. Prerequisite: FCL 320.

FCL 426 Applications in Financial Management 3 hrs.
Further studies of financial markets stressing theories, supporting evidence, and policy implications of selected topics. Research and analytical methods are included in the course content. Prerequisite: FCL 325.

FCL 427 Advanced Financial Markets 3 hrs.
Further studies of financial markets stressing theories, supporting evidence, and policy implications of selected topics. Research and analytical methods are included in the course content. Prerequisite: FCL 325.

FCL 428 Management of Financial Institutions 3 hrs.
This course is devoted to in-depth analysis of the operations of selected financial institutions with emphasis on management decision-making processes. Case analysis and analytical problems are included in the course content. Prerequisite: FCL 325.

FCL 429 Mortgage Banking 3 hrs.
Mortgage lending in the United States with special emphasis on the function, lending policies and operations of mortgage banks. Considered the interrelationships of these institutions with savings and loan associations, savings banks, insurance companies, individuals and governmental institutions in providing funds to the primary and secondary mortgage markets. Prerequisites: FCL 325.

FCL 434 Real Estate Land Development 3 hrs.
Neighborhood and city growth, municipal planning and zoning, development of residential, commercial, industrial and special purpose properties are analyzed. Prerequisite: FCL 330 or consent of instructor.

FCL 437 Real Estate Management 3 hrs.
Management of income producing properties as an agent of the owner. Consideration of professional standards, business promotion, leasing, insurance and maintenance.

FCL 519 Security Analysis 3 hrs.
An analysis of stocks and bonds as investment vehicles. The course is designed as a sophisticated analysis of valuation techniques with a view towards aiding the student to bridge the gap between techniques used by the academician and the practitioner. Prerequisite: FCL 326.

FCL 521 International Finance 3 hrs.
A study of contemporary problems in international finance. The course examines the international money markets, working capital considerations and capital budgeting problems as faced by the multinational corporation. Prerequisite: FCL 320 or consent of instructor.

FCL 526 Group Insurance and Pensions 3 hrs.
By means of problems and cases this course analyzes in detail the following areas: group life and health insurance, business life and health insurance, insured pension plans and estate and tax planning. Prerequisite: FCL 320.

FCL 527 Risk Management and Insurance 3 hrs.
This course covers the function of risk management and the responsibilities of risk managers. The sources of risk information are examined, the business risks analyzed and the alternative methods of handling risks evaluated. Criteria for selection of proper insurance coverages and selection of carriers and intermediaries are reviewed. Prerequisite: FCL 321 or consent of instructor.

FCL 528 Insurance Company Management 3 hrs.
The topics studied by means of cases and problems in this course include multiple line insurance operations, special problems in functional areas of industry operations and personal and commercial risk surveys and analysis. Prerequisite: FCL 323.

FCL 598 Readings in Finance and Commercial Law (Finance) 1-4 hrs.
Directed individual study of bodies of knowledge not otherwise treated in departmental courses. Prerequisite: Written consent of instructor.

Law Courses
F. William McCarty, Chair
Nicholas C. Batch
Thomas Gossman
Stephen Schanz
Leo Stevenson
Carol VanAuken-Haight

FCL 311 Ecology and the Law 3 hrs.
The study of law as it relates to people's efforts to protect the environment. Included will be an examination of traditional common law principles and federal and state statutes relating to environmental protection, analysis of recent cases, and discussion of techniques for the effective use of administrative procedures of the various environmental protection agencies.

FCL 340 Legal Environment 3 hrs.
An introduction to the legal environment in society. An examination of the role of law in society, the structure of the American legal system and the basic legal principles governing individual conduct.

FCL 350 Business Law 3 hrs.
The study of law as it impacts on the business firm. Examines the formation and performance of business contracts, employer-employee rights and duties and business liability in commercial transactions. Students cannot receive credit for both 350 and 352. Prerequisite: FCL 340.

FCL 352 Commercial Law 3 hrs.
The study of law applicable to the organization and operation of most business firms. Examines contract formation, agency law, and employer liability for employee actions. Reviews commercial transaction laws related to sales agreements and negotiable instruments. Students cannot receive credit for both 350 and 352. Prerequisite: FCL 340.

FCL 360 Criminal Law and Procedure 4 hrs.
This course surveys the laws and procedures underlying the American criminal justice system. After an introduction to the philosophy and sources of criminal law, the course investigates the legal definition of particular crimes and studies their elements. Legal procedures from arrest, through pre-trial and trial phases, to sentencing, probation and parole are also considered, together with relevant evidentiary topics. Prerequisite: SOC 465 or PSY 525 or FCL 340 or consent of Instructor.

FCL 440 Tort Law and Liability 3 hrs.
The study of individual and business rights and liabilities with respect to negligence, intentional wrongs, libel, misrepresentation, and insurance aspects thereof. Prerequisite: FCL 340.

FCL 450 Management and Labor Relations Law 3 hrs.
A survey of laws affecting management-labor relations. The course examines general employer-employee relationships, emphasizing the hiring and firing of employees, employee benefit programs, workman's compensation laws, and civil rights rules and regulations. Prerequisite: FCL 340.

FCL 532 Real Estate Law 3 hrs.
The study of land ownership, sales agreements, mortgages, land contracts, leases, zoning, condemnation and urban land development problems. Prerequisite: FCL 340.

FCL 550 Law of Business Organizations 3 hrs.
A study of the laws affecting the organization and operation of business enterprises. The course examines the different forms of business organization, principally corporations and partnerships, and analyzes how their structure affects the operation of various activities. Prerequisite: FCL 340.

FCL 552 International Business Law 3 hrs.
A study of national, regional and international laws which affect the conduct of international business. An examination of the legal regulations which promote or restrict trade or investment by international business firms. Prerequisite: FCL 340.

FCL 554 Governmental Regulations of Business 3 hrs.
Examines the laws, rules and regulations at the federal, state and local level which affect most business enterprises. Substantive laws affecting the firm's obligation to employees, stockholders and the general public are examined as are procedural laws affecting the regulation of the firm by public institutions. Prerequisite: FCL 340.
The course examines the law as it applies to the sale of goods, warranties affecting such sales and the methods of financing those sales. Legal obligations imposed upon and risks assumed by the seller are emphasized. Prerequisite: FCL 340.

FCL 598 Readings in Finance and Commercial Law (Law) 1-4 hrs.

Directed individual study of legal problems which are not treated in departmental course offerings. Prerequisite: Written consent of the instructor.

Management Courses (MGMT)

(Courses described in italics are approved for General Education.)

*MGM 200 Business Statistics 3 hrs.*

An applications-oriented study of statistical concepts and techniques. The course focuses on the student as a user of statistics who needs a minimal understanding of mathematical theory and formula derivation. Major topics of study are statistical description, central tendency, dispersion, distributional shapes, sampling, confidence levels, probability, comparison tests, association tests, regression and time series. The objectives of the course are to develop the skill to apply these concepts in conjunction with computer usage and make appropriate decisions regarding actual business problems. Prerequisite: MATH 116, BIS 102.

MGMT 210 Small Business Management 3 hrs.

A study of the fundamental principles involved in the operation of a small business enterprise. The structure, functions, and basic operating principles will be discussed and developed. Prerequisite: Non-BBA students only.

MGMT 300 Fundamentals of Management 3 hrs.

An introduction to the concepts, theories, models, and techniques central to the practice of management. Historical and contemporary thought are presented in the context of the behavioral, structural, functional, quantitative, and ethical aspects of managing organizations. Cross-cultural aspects of management are also explored. Expected outcomes for the student are: a general familiarity with the management process, and limited situational application of course content. Prerequisite: junior standing. Group decision making, problem solving, and business presentations are emphasized. In addition, the student will learn the costs and benefits of assuming different group roles. Prerequisites: MGMT 200, 300.

MGMT 301 Management Analysis and Behavior (II) 3 hrs.

Management analysis and behavior will be presented and practiced by the students in small task oriented groups working on real problems. Group decision making, problem solving, and business presentations are emphasized. In addition, the student will learn the costs and benefits of assuming different group roles. Prerequisites: MGMT 200, 300.

MGMT 302 Management Analysis and Behavior (III) 3 hrs.

An extension of MGMT 301.

MGMT 310 Survey of Management 3 hrs.

An introduction for non-business students to the key concepts and issues underlying management. The course includes a survey of management history and theory, management organization, and the process of management. Not open to PBA students or business majors or minors.

MGMT 352 Personnel Management 3 hrs.

The personnel function in organizations including manpower needs, staffing and development, organization and individual appraisal, employee compensation and benefits, safety and health, approaches to employee problems, labor relations. Prerequisite: junior standing.

MGMT 360 Quantitative Methods for Business Decisions 3 hrs.

Introduction to quantitative methods and their application to the functional areas of business. Topics covered will include system modeling, probability theory, forecasting methods, decision making under conditions of certainty, risk and uncertainty, inventory models, linear programming, elementary queuing theory, and introduction to techniques of mathematical simulation. Prerequisite: MGMT 200.

MGMT 400 Topics in Management 3 hrs.

An examination of advanced topical problems in management. (Repeatable)

MGMT 404 Business and Society 3 hrs.

A systematic analysis and evaluation of the institutions and other external and internal factors which shape the role of business in the United States. Illustrative topics: pluralism, values, ethics, social responsibility, the business/government relationship, productivity, corporate governance and social responsiveness.

MGMT 432 Compensation Administration 3 hrs.

This course is an advanced introduction to compensation management. The course covers four general topics: wages and salary administration, performance appraisal, incentive systems, and supplementary benefits. Intended to emphasize application, the course assumes a knowledge of motivation and reinforcement theory. Prerequisites: MGMT 300, MGMT 352, and MGMT 360.

MGMT 451 Administrative Behavior 3 hrs.

A course designed to integrate the contributions and implications of the behavioral sciences to modern business practice to promote and maintain effective human relations for the individual and the group. Extensive use of cases and conference methods is made.

MGMT 453 Organizational Behavior 3 hrs.

A study of current theory, research, and practice regarding variables that influence human behavior in complex organizations. Emphasis is placed on models relevant to human productivity, satisfaction, retention, and learning in organizational settings.

MGMT 454 Managing Employee Relations 3 hrs.

This course is designed to present methods and concepts of managing employee relations.
A seminar dealing with the changing roles of women, men, and the assumptions underlying U.S. management and effective operations in cross-cultural organizations and the implications of change for women in business. Emphasis is given to the unique needs of women aspiring to managerial roles abroad will be examined in light of the cultural controls, environmental influences of the multinational corporation with consideration of formal and informal influences, and all core courses.

MGMT 463 Operations Management
3 hrs.
Economic and socio-technical characteristics of the major types of production systems. Managerial aspects of workplace and facility design. Simple models for controlling operations in organizational contexts. Prerequisites: MGMT 360 or equivalents.

MGMT 464 Production Management and Control
3 hrs.
Quantitative and computer-based methods of planning and controlling operations in manufacturing industries and service organizations. Areas covered in depth include scheduling, aggregate planning, and inventory control. This course is intended for students interested in quantitative applications in business as well as management majors concentrating in production and operations management. Prerequisite: MGMT 200.

MGMT 465 Operations Management
4 hrs.
An introduction to the research process as it aids decision making in marketing. The focus is on the stages of research to gathering, analysis, and interpretation of data as it relates to marketing management. Prerequisite: MGMT 300, MGMT 360, MGMT 463. Validation of MGMT 360 as a prerequisite for MGMT 300.
and the decision making process. Sources and uses of funds, inventory planning and control, merchandise resources, promotion, customer services, building layout, and expense analysis are special areas of study. Prerequisite: MKTG 370.

MKTG 376 Sales Administration
3 hrs. Fall, Winter, Spring, Summer
Topics include the role of personal selling in the firm, determination of market and sales potential, recruiting, training, sales communication, territories and quotas, motivation, measuring selling effectiveness. Prerequisite: MKTG 370.

MKTG 377 Retail Promotion
3 hrs. Fall, Winter
Study of techniques used in identifying and appealing to retail consumer needs through the use of various store and departmental promotions, newspapers, radio, T.V., direct mail, and point of purchase advertising. Ethical considerations of all retail promotion explored. Prerequisite: MKTG 370.

MKTG 470 Industrial Marketing
3 hrs. Fall, Winter, Spring
A course designed to analyze the problems of marketing industrial goods. Attention is given to market information, market planning, methods of distribution, pricing, and the promotional problems of industrial marketing. Prerequisite: MKTG 370.

MKTG 471 Quantitative Marketing Applications
3 hrs. Fall, Winter
Provides marketing student with a basic understanding of fundamental quantitative techniques and shows how these techniques will assist the decision maker in solving marketing problems. A term project applying the research process, concepts, and quantitative methods is required. Prerequisites: MKTG 370, 371.

MKTG 473 Direct Marketing
3 hrs.
Covers principles, concepts, methods, techniques, and applications of direct marketing; includes use of direct marketing under various conditions and media with special emphasis on mail, electronic media, telephone, and catalog advertising, student projects required. Prerequisite: MKTG 370; Permission of instructor.

MKTG 474 Advertising Copy and Layout
3 hrs.
Study of the theory and practice in the writing, preparation and typographical composition of advertising including the writing of radio, television, magazine, and newspaper copy. Prerequisites: MKTG 370, MKTG 374; permission of instructor.

MKTG 476 Retail Merchandising
3 hrs.
The planning, “buying”, and controlling of merchandise for resale through retail outlets; fashion, mass merchandise, specialty, boutique, department, and food stores. Students will develop buying plans for various products, such as fashion merchandise, sporting goods, wearing apparel, household goods, and others. Prerequisites: MKTG 370, MKTG 375.

MKTG 477 Consumer Behavior
3 hrs. Fall, Winter
Investigates, analyzes and interprets the extensive body of research information on consumer behavior considering both the theoretical and practical implications. Prerequisite: MKTG 370.

MKTG 479 Marketing Internship
1-6 hrs. Arranged Fall, Winter, Spring, Summer
Cooperative internship training for the BBA degree marketing majors having completed sophomore year. Variable credit at the rate of approximately one credit per 100 hours of internship training acceptable to adviser. May be repeated for a maximum of 3 hrs. Term reports required; evaluations completed by executives of firms in which training takes place. Prerequisites: Marketing major; permission of the instructor.

MKTG 570 Problems in Retailing
3 hrs.
Designed to analyze current retailing problems; market segmentation, inventory planning and control, vendor evaluation, store services, traffic patterns, and warehousing. Report required. Prerequisite: Permission of the instructor and senior level.

MKTG 571 Healthcare Marketing
3 hrs.
An analysis of the field of marketing and its application in the healthcare industry. Emphasis will be on the role and utilization of marketing by a range of healthcare providers from hospitals to agency and medical group services. Prerequisite: MKTG 370.

MKTG 572 Advertising Media and Campaigns
3 hrs.
Examines theory and practice of media research, use of Audit Bureau of Circulation data, broadcasting ratings, copy testing, development of media plans and scheduling as required for advertising campaigns. Prerequisites: MKTG 374 and MKTG 474; Advertising Majors only.

MKTG 574 Marketing Logistics
3 hrs. Fall, Winter, Spring
An examination of problems relating to the movement, handling and storage of industrial products. Attention will also be given to changing market conditions and industrial structure as they affect the physical distribution of industrial goods. Prerequisite: MKTG 370.

MKTG 575 International Marketing
3 hrs. Fall, Winter, Spring
An examination of the theories and principles of international marketing. Attention directed to related commercial policies, trade practices and procedures, and marketing research tools and techniques required to locate and evaluate foreign markets. Prerequisites: MKTG 370

MKTG 576 Marketing Strategy
3 hrs. Fall, Winter, Spring, Summer
Identification of marketing problem situations and cause diagnosis with development of appropriate marketing strategies. Stress placed on application of marketing fundamentals to factual case situations and on decisions in a simulated dynamic environment. Communications of findings and strategies emphasized. Cases and computer games used. Senior level. MKTG 371 (573), plus 6 additional MKTG hrs.

MKTG 577 Advertising Theory and Ethics
3 hrs.
Critical examination of social, cultural, and ethical implications of “public and business” responsibilities involved in the advertising function. Special student interests developed through research and term projects. Prerequisite: MKTG 370, 374, permission of instructor.

MKTG 578 Marketing Decisions in Publicity and Public Relations
3 hrs.
Analysis of principles and practices of publicity and public relations as these areas relate to the firm’s overall promotional strategies; stress on application through case studies and term project. Prerequisite: MKTG 370.

MKTG 598 Readings in Marketing
1-3 hrs. Arranged
Directed individual study of bodies of knowledge not otherwise treated in departmental offerings. Prerequisite: Written permission of instructor.
In general, the College of Education performs seven functions:
1. Supervises the selection, admission, and retention of students in advanced teacher education curricula;
2. Provides professional education courses designed to develop competent, efficient performers in the classroom and within a school system;
3. Provides advanced specialized courses in selected major and minor fields in departments within the college;
4. Provides service courses to students in other colleges within the University;
5. Provides clinical and curricular development services to teachers and school personnel;
6. Conducts experimentation and research at all levels of professional education;
7. Maintains liaison with professional organizations and learned societies involved in teacher education.

Curricula for Teachers
The program for prospective teachers consists of three parts: (1) general education, designed to develop those understandings and competencies which make for effective living and good citizenship, and to provide a foundation for professional study; (2) advanced specialized study, with major and minor interest in the fields of the student's choice, offered in the various colleges of the university; and (3) professional education courses offered in the College of Education.

Prospective teachers choose to work for the Michigan Elementary Provisional Certificate valid for teaching all subjects in self-contained classrooms in grades kindergarten through eighth grade and major/minor subjects in departmentalized classrooms in grades six through eight OR the Michigan Secondary Provisional Certificate, valid for major and minor subjects in grades seven through twelve. Students majoring in Art, Music, Physical Education, Special Education, Speech Pathology and Audiology, Health Education, Industrial Arts, or Home Economics may be certified to teach in their specialized area in grades K-12 by completing the requirements of the curriculum and the requirements for certification.

The following curricula are offered in the College of Education: Elementary Education, Elementary Music Education, Rural Elementary Education, Special Education, Middle and Junior High School Education, Secondary Education, and Physical Education. Students seeking admission to these curricula must contact the Office of Admissions, Advising, and Certification, 2504 Sangren Hall.

Students seeking admission to the Art or Music curriculum must apply to the College of Fine Arts.

Those seeking admission to Speech Pathology and Audiology must apply to the department.

Those seeking admission to Industrial Arts or Home Economics Education must apply to the College of Engineering and Applied Sciences. Teaching certificates are granted only to those students who satisfactorily complete an approved teacher education program with an overall grade point average of 2.5 and a bachelor's degree (and in the case of Speech Pathology and Audiology, students with a master's degree).

Office of Admissions, Advising, and Certification
2504 Sangren Hall
383-1840
Advisers:
Wendy Asmus
Maxine Gilling
William H. Kanzler, Coordinator of Admissions and Advising
Diane Pelc, Certification Officer

The Office of Admissions, Advising, and Certification provides information regarding teacher education curricula, and processes applications for admissions to those curricula in the College of Education. The office also coordinates academic advisement for students enrolled in all teacher education and recreation curricula.

ADMISSION/ADVISEMENT
All Students seeking admission to teacher education curricula as entering freshman, transfers, or as students changing curricula, must contact the Office of Admissions, Advising, and Certification.

Students wishing to enter Professional Education (i.e. Upper Division coursework) must secure an appropriate application from the Office of Admission, Advising, and Certification. Admission requires the completion of 35 semester hours of general education coursework, a 2.5 GPA, and participation in the College of Education testing program.

TEACHER TESTING
Effective July 1, 1989, all individuals recommended for Michigan teacher certification must have passed both a test of basic skills and a specialty area test in each area in which they are to be certified. Effective fall semester, 1987, all students entering a teacher education curriculum will be required to take the Pre-Professional Skills Test. The Michigan Department of Education is expected to identify the required specialty area test during the 1987-1988 academic year.

Information regarding required teacher testing may be obtained from the Office of Admissions, Advising, and Certification, 2504 Sangren Hall.
The University Certification Office located in the Office of Admissions, Advising, and Certification processes all recommendations for certification and advises post-baccalaureate students seeking teacher certification.

Office of Student Teaching

Jeanne T. Williams, Coordinator
The Office of Student Teaching is responsible for the coordination and oversight of all field experiences associated with teacher education curricula.

STUDENT TEACHING
The following criteria must be met prior to student teaching.
1. Completion of a minimum of 88 semester hours, not including repeated hours.
2. A cumulative grade point average of 2.5 or above.
3. An average grade point average of 2.5 in the professional sequence and no grade lower than a "C" in any Professional Education course.
4. Satisfactory completion of the Elementary Education Minor for those seeking placement in an early childhood or elementary school setting.
5. Satisfactory recommendation from major and minor departments.
6. Completion of method course(s) in major and minor with a minimum grade of "C".

Students must contact the Office of Student Teaching at least two semesters prior to the semester in which they plan to complete their student teaching requirements.

APPEALS
A student aggrieved by an action taken by the Office of Student Teaching has the right to appeal such action by filing an appeal form in the Office of Student Teaching within fourteen (14) days of the aggrieved action. Appeals will be reviewed by the Appeals Committee within ten (10) working days: the student will be notified of the decision in writing five (5) days after the decision has been reached.

Elementary Education Curriculum

Bachelor of Arts or Bachelor of Science Degree
Michigan Elementary Provisional Certificate
The Elementary Education Curriculum is designed to prepare students to assume teaching responsibilities in a general education classroom in grades K-8.

Minimum hours required for this curriculum .......................... 130 hours

Program Requirements:
General Education Distribution .......... 40 hours

General Education Requirement: 35 hours required for University General Education requirement. An additional five hours in General Education courses from the College of Arts and Sciences (non-professional courses only) and/or the College of General Studies are required for Michigan certification. Students' General Education Distribution requirement will be met by options within the professional education program and the approved minors. (Courses listed in the elementary education program description with an * are approved for General Education credit. Two courses at the 300-500 level are required.)

Minors/Majors Approved for Elementary Education
Students in the elementary education curriculum are required to complete three minors, the Elementary Education Minor plus the Science and Mathematics Teaching Minor and one additional minor selected from those listed in "Acceptable Minors."* An exception to this requirement is provided for those students seeking K-12 certification in the areas listed below. Students seeking K-12 certification in one of the acceptable majors must also complete the Elementary Education Minor.

Acceptable Majors
Art (ATE): 61 hours
Music (MUS): 63 hours
Physical Education (PEP): 45 hours
Special Education (SPED): 34 hours
Speech Pathology and Audiology (SPN): M.A. Degree

Acceptable Minors

1. Elementary Education Minor (EED)

 Elementary Education Minor (EED) ............................ 28 hours
Requirements and approval for this required minor are available in the Office of Admissions, Advising, and Certification, 2504 Sangren Hall. All students must have a minor slip signed by an approved elementary education advisor (see Elementary Education Minor for details).

2. Science and Mathematics Teaching Minor (SCM) .................. 27 hours
Requirements and approval for this required minor are available in B-302 Elsworth Hall. All students must have a minor slip signed by the Science and Mathematics Teaching Minor advisor (see Science and Mathematics Teaching Minor for details).

3. A third minor selected from .... 20-24 hours
Art (ATE): 24 hours
Creative Arts (CRA): 24 hours
English Elementary Education (ENG): 20 hours
Group Social Science (SOS): 24 hours
Integrated Language Arts (ILAM): 24 hours
Language Arts (LANG): 20 hours
Physical Education (PEP): 22 hours (See specific minor for details.)

Professional Education

General Education Foundations ....... 7/8 hours
*COM 170 Interpersonal Communications I ............................. 3 hrs.
OR *GHUM 315 Human Communications ............................. 4 hrs.
SPPA majors may substitute *LING 145, The Nature of Language ............................. 4 hrs.
*GHUM 409 Women: Past, Present and Future ............................. 4 hrs.
OR *GSSC 424 Female and Male: Psychological Perspective ............................. 4 hrs.

*Approved for General Education credit.

Professional Education Program .......... 29 hours
Pre-Professional Foundation: 3 hrs.
ED 250 Human Development ............................. 3 hrs.

Professional Education: 15 hrs.
ED 370 Educational Psychology: Elementary ............................. 3 hrs.
Elementary Teacher Cert. ED 250 ............................. 3 hrs.
ED 347 Technology in Learning ............................. 1 hr.
SPED 527 Educational Provisions for Exceptional Learners-Regular Elementary Programs ............................. 3 hrs.

ED 371 Classroom Organization and Management: Young Children/Elementary ............................. 3 hrs.
Prerequisites: ED 370, SPED 527

ED 348 Technology for Teachers ....1 hr.
ED 395 School and Society .................. 3 hrs.
* Not required for students majoring in SPPA and SPED; Physical Education majors may substitute either PEPR 320 or PEPR 520.

Professional Practicum .................. 12 hrs.
ED 410 Seminar in Education .......... 2 hrs.
ED 470 Directed Teaching: Early Childhood .................. 5/10 hrs.
ED 471 Directed Teaching: Primary Grades .......... 5/10 hrs.
ED 472 Directed Teaching: Upper Elementary/Middle School .......... 5/10 hrs.

* Students majoring in SPPA and SPED are required to enroll for one six-hour experience.

Other Requirements
University Intellectual Skills requirements in Reading, Mathematics, Writing, and Computer Literacy must be met. The Intellectual Skills Writing Literacy requirement may be met by selecting BIS 142 or ENGL 105 which are also approved for General Education credit. The Computer Literacy requirement is met through the Science and Mathematics Teaching Minor courses: MATH 151, MATH 265, and MATH 552.

Elementary Education Minor
Office of Admissions, Advising, and Certification, 2504 Sangren Hall
This 28 hour interdepartmental program is designed to prepare students to assume teaching responsibilities in a general education classroom in grades K-5.

Prior to entering the minor, students must complete:
(a) 12-16 hours of specified General Education coursework in addition to the hours required as part of the Professional Education sequence and (b) 7-10 hours of prerequisites to required courses in the minor.

General Education Foundations .......... 12-16 hours

One course from the following list:
*ANTH 120 Peoples of the World ........ 3 hrs.
*ANTH 220 Cultural Anthropology ........ 3 hrs.
*GENL 304 Introduction to Non-Western World ........ 4 hrs.
Two courses from the following list (SPPA Majors and Group Social Science Minors see NOTE below):
*ANTH 240 Principles of Cultural Anthropology ........ 3 hrs.
*BAS 300 Black Experience ........ 3 hrs.
*ECON 100 Contemporary Economic Problems ........ 3 hrs.
*GEOG 102 World Geography Through Media and Maps ........ 3 hrs.
*GEOG 311 Geography of Michigan ........ 3 hrs.
*GHUM 316 Mass Media: Messages and Manipulations ........ 4 hrs.
*GSSC 123 Human Society ........ 4 hrs.
*HIST 210 U.S. History Since 1877 ........ 3 hrs.
*HIST 211 U.S. History Before 1877 ........ 3 hrs.
*PSCI 200 National Government ........ 3 hrs.
*SOC 200 Principles of Sociology ........ 3 hrs.

NOTE: Students electing the Group Social Science Minor (GSS) will meet this requirement within the GSS Minor. GSS students must therefore, select two courses from the General Education Humanities area. Students majoring
in SPPA may choose PSY 194 as one of two required electives in this area.

One course from the following list:

* BIS 142 Information Writing .... 3 hrs.
  (Meets University Writing Requirement.)

* ENGL 105 Technical Writing .... 4 hrs.

* SPPA 200 Communication Disorders (Early Childhood/Primary Level) .... 3 hrs.
  * Approved for General Education credit.

Prerequisites 7/10 hours

* to MATH 150, MATH 110 Algebra I .... 3 hrs.
  Pass Proficiency Examination

* to ED 307, GEOG 102 World Geography Through Media and Maps .... 3 hrs.

* or HIST 211 U.S. Since 1877 .... 3 hrs.

* or PSCI 200 National Government .... 3 hrs.

* to ED 351 and 352:

  * ENGL 282 Children's Literature .... 4 hrs.

Minor Requirements 28 hours

Reading/Language Arts: 17 hrs.

ED 312 Foundations of Reading Instruction .... 3 hrs.

* ED 351 Reading and Related Communication Skills for Early Childhood .... 3 hrs.
  Prerequisites ENGL 282 and ED 312

** ED 352 Reading and Related Communication Skills for Middle and Upper Grades .... 3 hrs.
  Prerequisites ENGL 282, ED 312, and ED 351

ENGL 369 Writing for the Elementary Teacher .... 4 hrs.

or

ENGL 373 Reading and Writing as Psycholinguistic Processes .... 4 hrs.

COM 365 Oral Communication and the Early Elementary Child .... 4 hrs.

or


* Students majoring in SPPA are required to complete ED 351 or ED 352.

Mathematics: 4 hrs.

MATH 150 Structure of Arithmetic .... 4 hrs.

Science: 4 hrs.

Students must select one of the following, not used in Science and Mathematics Teaching Minor:

* BIOL 107 Biological Science .... 4 hrs.

* BIOL 234 Outdoor Science .... 4 hrs.

* GEOG 105 Our Physical Environment .... 4 hrs.

* GSCI 131 Physical Science .... 4 hrs.
  * Approved for General Education credit.

NOTE: Students majoring in Speech Pathology and Audiology may enroll in ILMC 112/BIOL 101 plus PHY 106.

Social Studies: 3 hrs.

ED 307 Teaching Elementary Social Studies .... 3 hrs.

Prerequisites GEOG 102 or HIST 211 or PSCI 200

Elementary Education Minor Program

Exceptions

1. Students who have a K-12 major or who are enrolled in the Creative Arts Minor will complete the Elementary Education Minor as prescribed.

2. Students enrolled in ILAM will, with approval of their adviser, substitute two courses from ART 200, MUS 140, or COM 564 in place of ENGL 369/366.

3. Students enrolled in the English Education Minor will, with approval of their adviser, substitute two courses from ART 200, MUS 140 or COM 564 in place of ENGL 282 and ENGL 369/373.

4. Students enrolled in the Group Social Science Minor or in a language minor will, with approval of their adviser, select two courses from ART 200, MUS 140, or COM 564.

5. Students majoring in Speech Pathology and Audiology meet this requirement by taking ED 307 Teaching Elementary Social Studies 3 hrs.

and a 4th hour from:

* BIOL 234 Outdoor Science 4 hrs.

* MUS 140 Music for the Classroom Teacher 4 hrs.

* PSCI 200 National Government 3 hrs.

* or ART 200 The Creative Process Through Art 3 hrs.

* or COM 564 Creative Dramatics for Children 4 hrs.

* or ED 430 Creativity in the Elementary School 4 hrs.

E electives 1-4 hrs.

* Approved for General Education credit

** Electives to accommodate student needs and balance will be determined by the departments and faculties of Education and Professional Development, Art, Dance, Music, and Communication and selected with the approval of the adviser.

*** ED 230 is geared toward personal creative development and is not restricted to Integrated Creative Arts Minors. Students enrolled in the minor must take ED 430 (Creativity in the Elementary School) or have taken all other courses in the program.

Integrated Language Arts Minor (ILAM)

June Cottrell, Adviser

323 Sprau Tower

(616) 383-4080

An interdisciplinary program of

COLLEGE OF ARTS AND SCIENCES

Communication
English Languages and Linguistics

COLLEGE OF EDUCATION

Department of Education and Professional Development

COLLEGE OF HEALTH AND HUMAN SERVICES

Speech Pathology and Audiology

This 24-hour interdepartmental program for preservice elementary school teachers emphasizes the integrated nature of learning. This program satisfies the guidelines of the Michigan Department of Education for competency based programs and provides opportunities for a wide variety of interests and alternative learning styles.

The critical importance of fieldwork in the learning of preservice teachers is recognized in the program and is an integral part of each course. Students in the program are encouraged to develop and implement innovative instructional materials and practices based on sound theory.

Each course is taught by a faculty member or with interdisciplinary expertise from one of the departments participating in the minor. Each course focuses on a particular aspect of language development which will be presented through a balance of lectures, discussions, and workshops together with opportunities for student-initiated learning.

Students can enter the program in their sophomore year. In general, ED 250, Human Development and Learning (or its equivalent), is a prerequisite for admission to the program. English 282, Children's Literature, is also recommended. Program bulletins and application form are available in the Advising Offices of the College of Arts and Sciences or the Department of Education and Professional Development and from the Integrated Language Arts (ILAM) Adviser, June Cottrell, 323 Sprau Tower, 383-4080. A minor slip is required.

Creative Arts Minor

Adviser: Alfred Balkin

This 24-hour interdepartmental program is offered to preservice elementary school teachers, special education teachers, and others. The program stresses integration of all the arts as a primary motivating agent in the teaching of all subject areas. It also emphasizes the stimulation and development of creative problem-solving behaviors.

A minor slip is required. Students must see an adviser before they have completed eight hours in the minor.

* GHUM 102 Direct Encounter with the Arts .... 4 hrs.

* ED 230 The Nature of Creativity .... 4 hrs.

* Electives 1-4 hrs.

* Approved for General Education credit

** Electives to accommodate student needs and balance will be determined by the departments and faculties of Education and Professional Development, Art, Dance, Music, and Communication and selected with the approval of the adviser.

*** ED 230 is geared toward personal creative development and is not restricted to Integrated Creative Arts Minors. Students enrolled in the minor must take ED 430 (Creativity in the Elementary School) or have taken all other courses in the program.
Required Practica and Seminar
ED 401 Teaching Elementary School Science .................. 3
ED 402 Practicum in Elementary Science and Mathematics .... 2
MATH 552 Practicing Elementary Mathematics .................. 3
* General Education

Middle School and Junior High School Curriculum
Bachelor of Arts or Bachelor of Science Degree
State Elementary or State Secondary Provisional Certificate

A program of undergraduate studies to prepare students to teach in the middle and junior high school which focuses on teaching-learning processes and content areas which are effective for working with the older child and the young adolescent in grades 5-9. (Student has option of earning elementary (grades K-9) or secondary (grades 7-12) certification. Elementary certification is recommended.) The program includes a two-semester sequence of planned and supervised experiences specifically designed for teaching in the middle or junior high school. Program requirements must be planned and approved by adviser.

Minimum hours required for this curriculum .................................. 122 hrs.
General Education Requirement
35 hrs. required for University General Education requirements. An additional 5 hrs. in General Education courses drawn from the College of Arts and Sciences (nonprofessional courses only) and/or the College of General Studies, are required for Michigan certification.

Major/Minor Requirements Elementary Certification Option
1. Two minors or group minors (20-24 hours);
OR one major or group major (30-36 hours) selected from the following areas: communication, English, foreign languages, mathematics, science, social science minor only.
2. Elementary Education minor: see adviser in the Office of Admissions, Advising, and Certification.

Secondary Certification Option
1. One major or group major
2. One minor or group minor

Required Science: 1 course from each science area listed

Science and Mathematics Teaching Minor
Adviser: College of Education Office of Admissions, Advising, and Certification
2504 Sangren Hall

The minor is open only to students enrolled in the elementary education curriculum. Transfer students will need to have their previous coursework in science and mathematics evaluated by a College of Education adviser prior to enrolling in this minor. This minor results in an endorsement in science. To obtain information about an additional mathematics endorsement, contact the Department of Mathematics.

Because of the interdisciplinary nature of this minor, one course must be selected from each of the three science areas. Mathematics courses must be taken in sequence. Practice and seminar are taken concurrently.

Required Science: 1 course from each science area listed

Biological
*Biol 107 Biological Science (Section for Elementary Education Minor) 4
*Biol 234 Outdoor Science 4
Earth Science
*Geol 130 Physical Geology 4
*Geog 105 Physical Geography (Section for Elementary Education Minor) 4
Physical Science
Chem 230 Chemical Science in Elementary Education 4
GSCI 201 Physical Science in Elementary Education II 4

Required Mathematics
Math 151 Geometry for Elementary Teachers (Prerequisite: Math 150) 3
Math 265 Probability and Statistics for Elementary Teachers 4

ED 398 Special Studies in Education (topical seminars) 4 hrs.
Winter Semester
ED 398 Special Studies in Education (Psychology and Guidance of Young Adolescents) 2 hrs.
ED 352 Reading and Related Communication Skills for Middle and Upper Grades 4 hrs.
ED 395 School and Society 3 hrs.
ED 307 Teaching Elementary Social Studies (elementary option OR methods course in major or minor field—secondary option) 3 hrs.
ED 472 Directed Teaching: Upper Elementary/Middle School 1-10 hrs.

Professional Education
ED 250 Human Development (required before two semester planned sequence) 3 hrs.
ED 472 Directed Teaching: Upper Elementary/Middle School 1-10 hrs.
472 and 410 are taken concurrently during senior year. Professional Education must total 21 hours; other professional education requirements are included in two semester planned sequence.

Physical Education 2 hrs.

Bachelor of Science Degree Elementary Music Curriculum
Elementary Education Minor
Grants certification to teach in elementary grade room and elementary music.

Minimum hours required for this curriculum .................................. 122 hrs.
Course Requirements
General Education Requirements .................................. 35 hrs.
See University requirements for General Education.
Music Major .................................. 40 hrs.
Music Convocation 101 (4 semesters) 0 hrs.
Basic Music 160-161 6 hrs.
Aural Comprehension 162 163 2 hrs.
Basic Music 250 2 hrs.
Twentieth Century Techniques 261 2 hrs.
Music History and Literature 270-271 8 hrs.
Conducting 215 1 hr.
Keyboard Musicianship 220, 221, 320, 322 4 hrs.
NOTE: Students who do not qualify for entry to 220 must complete keyboard Fundamentals 120 and/or 121 as a deficiency. Students who “comp out” of advanced Keyboard Musicianship 322 are urged to consider 518 Improvisation, 350 American Music, 352 Non-Western Music as courses to take as music electives toward the 40 hour requirement.
Voice Class 122-123 2 hrs.
Choral Ensemble 107, 108, or 112 2 hrs.
Elementary Music Practicum 244 3 hrs.
Creating Music in the Classroom 373 4 hrs.
General Music Methods 240 2 hrs.
Fundamentals of Guitar 126 1 hr.
Instruments of the Band and Orchestra 279 2 hrs.
Elementary Education 24 hrs.
An adviser sets up an “individualized” program for each student. Report to the College of Education, Office of Admissions, Advising, and Certification, 2504 Sangren Hall
Rural Elementary Curriculum

Bachelor of Arts or Bachelor of Science Degree

State Elementary Provisional Certificate

Major attention is given to preparation for teaching in schools located in rural or small community areas—population 2,500 or fewer. Students desiring to teach in schools serving these areas select the rural life major or two academic minors under the guidance of the Director of Rural Life and Education. Thought is given to the many demands made upon the teacher in the small school. Those preparing to serve the smaller communities in other professional groups, such as ministers, librarians, recreation leaders, etc., either at home or overseas, will find considerable basic work in the curriculum of rural life and education.

Minimum hours required for this curriculum ........................................ 122 hrs.

Course Requirements

General Education Requirement: 35 hrs. required for University General Education requirement. An additional 5 hrs. in General Education courses drawn from the College of Arts and Sciences (nonprofessional courses only) and/or the College of General Studies are required for Michigan certification.

Elementary Education Minor ........................................ 24 hrs.

Requirements and approval for this required minor are available in the College of Education Office of Admissions, Advising, and Certification, 2504 Sangren Hall. Students must have a minor slip signed by an approved elementary education adviser.

Professional Education Sequence ................ 16-21 hrs.

Human Development ................................. 3

Directed Teaching, Seminar in Education, School and Society 471 or 472, 410, 395 . . 14

Physical Education .................................. 2 hrs. (PEPR 340 Physical Education for the Elementary Teacher will satisfy one hour of this requirement.)

Directed Teaching 471 or 472 1-10

Seminar in Education 410 —2 hrs., School and Society 395—3 hrs.

NOTE: 322 Teaching of Reading, Secondary (3 hrs.), is required for all students in this curriculum.

The candidate for the State Secondary Provisional Certificate must present a teaching methods course in a major or minor field.

One major of 30 hours or a group major of 36 hours, and one minor of 20 hours or group minor of 24 hours or on second major in subjects or subject fields taught in the junior and senior high school. Certain courses in some departments may not be counted toward majors or minors (see course descriptions).

The candidate must satisfy the requirements for the B.A. or B.S. degree.

Approved majors and minors for the Secondary Education Curriculum. (Only programs listed below are acceptable for secondary education).

Majors

(Agriculture (AGR), American Studies (AMS), Anthropology (ANT), *Art Education includes Drawing and Design minor (ATE), Biology (BIO), Chemistry (CHM), Communication (COM), Computer Science (CPS), Distributive Education (DED), Earth Science (EAR), Economics (ECO), English (ENG), Geography (GEG), Health Education (HED), History (HIS), Industrial Arts (GIA), Drafting (DRA), Graphic Arts (GRA), Metal Working (MWK), Power-Automotomechanics (POW), Woodworking (WDK), Language Department Majors: French (FREN), German (GER), Latin (LAT), Spanish (SPA), Linguistics (used only as 2nd major) (LIN), Mathematics (MAT), Music Education (includes vocal or instrumental minor) (MUS), Physics (PHY), Political Science (POL), Psychology (PSY), Science (need departmental approval) (SCI), Sociology (SOC), Theatre Education (THN), Vocational Technical Education Majors (See Industrial Education Majors))

Minors

Agriculture (AGR), Anthropology (ANT), Biology (BIO), Black American Studies (BAS), Chemistry (CHM), Communication (COM), Computer Science (CPS), Distributive Education (DED), Earth Science (EAR), Economics (ECO), English (ENG), Environmental Studies (EV), Family Life Education (FLE), Food Services (OCE), General Business (BED), Geography (GEG), Health Education (HED), History (HIS), Industrial Arts (same minor areas as listed under major), International and Area Studies Minors: African Studies (AFS), Asian Studies (SVS), Cross Cultural Studies (CCS), Latin American Studies (LAS), Slavic Studies (SVS), Language Department Minors: (Same as listed under major), Library Science (LIB), Linguistics (LIN), Mathematics (MAT), Music Education (includes vocal or instrumental minor) (MUS), Physical Education Minors: Physical Education—Secondary (PES), Physics (PHY), Political Science (POL), Psychology (PSY), Religious, Academic Study of (ASR), Social Science (need departmental approval) (SOC), Sociology (SOC), Theatre Education (THN), Vocational Technical Education (Same Minor Areas as Listed Under VTE Majors)

Special Education Curriculum

Bachelor of Science Degree State Elementary Provisional Certificate

For the preparation of teachers of the emotionally impaired.

Minimum hours required for this curriculum ........................................ 130 hrs.

*Emotionally Impaired
### Course Requirements

(Courses marked with "*" indicate that a minimum of "C" must be earned in the course. Those marked with "**" are approved for General Education.)

### General Education Requirement

35 hrs.

An additional 5 hrs. in General Education courses drawn from the College of Arts and Sciences (nonprofessional courses only) and/or the College of General Studies are required for Michigan certification. (See "Degree Requirements" under Degree and Curricula listed earlier in this Bulletin.)

### Communication and English

7 hrs.

- Children’s Literature 282 4
- Mathematics and Psychology 35
- General Psychology 194 3
- Human Development 250 3
- Teaching of Reading 312 3
- Communication and English 170 3

### Sciences

An additional 5 hrs. in General Education Sciences (nonprofessional courses only) and/or courses drawn from the College of Arts and Sciences (nonprofessional courses only) and/or the College of General Studies are required for Michigan certification. (See "Degree Requirements" under Degree and Curricula listed earlier in this Bulletin.)

### Mathematics and Psychology

7 hrs.

- Structure of Arithmetic 150 4
- **General Psychology 194 3
- Human Development 250 3
- Teaching of Reading 312 3
- Reading and Related Communication Skills for Early Childhood 351 3
- Reading and Related Communication Skills for Middle and Upper Grades 352 3
- Directed Teaching 471 or 472 (Regular Class) 4

### Fine Arts (Art and Music)

6 hrs.

- Music for the Classroom Teacher 140 or Music in Special Education 184 3
- Art Education Workshop 150 3

### Practical Arts

3 hrs.

- Childhood/Adulthood Crafts and Adapted Techniques 190 3

### Mentally Impaired—Major

39 hrs.

- Practicum in Special Education 531 3
- **Communication Disorders 200 3
- Education of Exceptional Persons 530 3
- Nature and Needs of the Mentally Retarded 532 3
- Diagnostic and Prescriptive Techniques in Special Education 533 4
- Curricular and Instructional Provisions for Exceptional Children 534 4
- Directed Teaching (Special Education) 474 10
- Seminar in Education 410 2
- School and Society 395 3

### Physical Education

2 hrs.

- Physical Education for the Elementary Teacher 340 2

One academic minor in a subject or subject field taught in the elementary school, 20 hrs.

### Electives

(Approved by curriculum adviser)

The candidate must satisfy the requirements for the B.S. degree or the B.A. degree.

### Physically or Otherwise Health Impaired

For the preparation of teachers of the physically or otherwise health impaired.

### Minimum hours required for this curriculum

130 hrs.

(If a B.A. degree is desired, see "Degrees and Curricula" for these requirements)

### Course Requirements

(Courses marked with * indicate that a minimum of "C" must be earned in the course. Those marked with ** are approved for General Education.)

### Visually Impaired

For preparation of teachers of the visually impaired.

### Minimum hours required for this curriculum

130 hrs.

(If a B.A. degree is desired, see "Degrees and Curricula" for these requirements)

### Course Requirements

(Courses marked with * indicate that a minimum of "C" must be earned in the course. Those marked with ** are approved for General Education.)

### General Education Requirement

35 hrs.

An additional 5 hrs. in General Education courses drawn from the College of Arts and Sciences (nonprofessional courses only) and/or the College of General Studies are required for Michigan certification. (See "Degree Requirements" under Degree and Curricula listed earlier in this Bulletin.)

### English

4 hrs.

- Children’s Literature 282 4

### Mathematics and Psychology

7 hrs.

- Structure of Arithmetic 150 4
- **General Psychology 194 3
- Human Development 250 3
- Teaching of Reading 312 3
- Reading and Related Communication Skills for Early Childhood 351 3
- Reading and Related Communication Skills for Middle and Upper Grades 352 3
- Directed Teaching 471 or 472 (Regular Class) 4

### Fine Arts (Art and Music)

6 hrs.

- Music for the Classroom Teacher 140 or Music in Special Education 384 3
- Art Education Workshop 150 3

### Practical Arts

3 hrs.

- Childhood/Adulthood Crafts and Adapted Techniques 190 3

### Physically or Otherwise Health Impaired

Major

39 hrs.

- Practicum in Special Education 531 3
- Behavior Disorders in School-Aged Learners 585 3
- Educational Provisions for Handicapped Adolescents and Young Adults 560 3
- Orthopedic Conditions: Therapeutic Education 543 4
- Diagnostic and Prescriptive Techniques in Special Education 533 4
- Curricular and Instructional Provisions for Exceptional Children 534 4
- Directed Teaching (Special Education) 474 10
- Seminar in Education 410 2
- School and Society 395 3

### Physical Education

2 hrs.

- Physical Education for the Elementary Teacher 340 2

One academic minor in a subject or subject field taught in the elementary school, 20 hrs.

### Electives

(Approved by curriculum adviser)

The candidate must satisfy the requirements for the B.S. degree or the B.A. degree.
the College of General Studies are required for Michigan certification. (See "Degree Requirements" under Degrees and Curricula listed earlier in this Bulletin.)

Communication

Language, and English 7 hrs.
**Children's Literature 282 4
Public Speaking 1130 3
or
**Interpersonal Communication 170 3

Mathematics and Psychology 7 hrs.
Structure of Arithmetic 150 4
**General Psychology 194 3

Professional Education 14 hrs.
Human Development and Learning 250 3
Teaching of Reading 312 3
and
Reading and Related Communication Skills for Early Childhood 351 3
or
Reading and Related Communication Skills for Middle and Upper Grades 352 3
Directed Teaching 471 or 472 (Regular Class) 3

Fine Arts (Art and Music) 6 hrs.
Music for the Classroom Teacher 140 or Music in Special Education 384 3
Art Education Workshop 150 3

Practical Arts 3 hrs.
Childhood/Adulthood Crafts and Adapted Techniques 190 3

Visually Impaired Major* 38 hrs.
Education of Exceptional Persons 530 3
Practicum in Special Education 531 2
Education of Blind and Partially Sighted 592 2
Diagnostic and Prescriptive Techniques in Special Education 533 4
Curricular and Instructional Provisions for Exceptional Children 534 4
Braille and Other Communication Methods 591 2
Methods and Techniques of Teaching Braille and Other Areas of Communication 593 3
Physiology and Function of the Eye 590 2
Principles of Orientation and Mobility for the Blind 594 3
Directed Teaching (Special Education) 474 10
Seminar in Education 410 2
School and Society 395 3

Physical Education 2 hrs.
Physical Education for the Elementary Classroom Teacher 340 2

One academic minor in a subject or subject field taught in the elementary school 20 hrs.

Electives (Approved by curriculum adviser)

The candidate must satisfy the requirements for the B.S. degree or the B.A. degree.

See Education and Professional Development course listings for reading courses offered.

Education College Course (ED)

ED 399 Field Experience (Community Participation) 2-8 hrs.
A program of independent study combining academic work in education with social environmental, civic or political field work.
Prerequisites: A written outline of the student's project, approved by a faculty supervisor, and approval from the office of the dean.

COUNSELOR EDUCATION AND COUNSELING PSYCHOLOGY

Alan J. Hovestadt, Chair
Beverly Belson
Robert L. Betz
Kenneth Bullmer
William A. Carlson
John S. Geisler
Gilbert E. Mazer
Joseph R. Morris
Jody L. Newman
Robert Oswald
Edward L. Trembley
Thelma Urbick

The Department of Counselor Education and Counseling Psychology offers professional education in the fields of counseling psychology, community agency counseling, counselor education and supervision, student personnel services in higher education, and school counseling and guidance. Most of the courses are open to graduate students only, but the following courses are open to qualified undergraduates.

Counselor Education and Counseling Psychology (CECP)

CP 580 Principles of Counseling and Guidance 3 hrs.
The content of this introductory course focuses on the concepts underlying school guidance programs and related service delivery systems. Open to all students, but is not intended for counseling majors.

CP 583 Workshops in Counselor Education and Counseling Psychology 1-4 hrs.
Workshops designed to enhance skill development related to Counselor Education and Counseling Psychology practices. Open to all students, but is not intended for counseling majors. May be repeated for credit.

Reading Center and Clinic

The primary purpose of the Reading Center and Clinic is to provide educational and clinical experiences for students enrolled at Western Michigan University who are preparing to work with children and adults in reading. Special activities carried on by the clinic are designed to provide diagnosis and developmental and corrective instruction in reading for children and adults, and to furnish consultative services for teachers and schools in Southwestern Michigan. Furthermore, the clinic provides students in education an opportunity to observe and participate in the administration of educational and clinical tests, and the procedures employed in interviewing children, parents, and school personnel.

COUNSELOR EDUCATION AND COUNSELING PSYCHOLOGY (CECP)

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EDUCATION AND PROFESSIONAL DEVELOPMENT

Thomas Ryan, Chair
Anel Anderson
James Armstrong
Keith Bailey
Alfred Babin
Dorothy Blatt
James Bosco
Robert Brashear
James Burns
Mary A. Cain
Joe R. Chapel
Mary Corder
Ronald A. Crowell
Margaret Ebler
Paul Farber
Mary Frances Fenton
Franklin Fisk
Richard Harring
Edward Heinig
Arthur Howson
Norma Hungerford
Rachel Insingberg
William Kanizer
Ted K. Kilty
Robert Kotecki
Philip Larsen
Bruce Lloyd
Barbara Mehoke
George Miller
Carol P. Smith
Jess Walker
Archie Watson
Paul Wilson

Courses are designed to meet the professional needs of the student preparing to teach. All students pursuing a curriculum for a secondary provisional certificate and a degree are required to take a minimum of 21 hours of professional education courses, plus a methods course offered in the major or minor field; students in elementary education are required to complete the prescribed elementary education program.

Elective courses are available in the following fields: elementary education, secondary education, special education, methods of teaching, foundations of education, and related areas. Certain special methods courses are available in other departments of the University. Students must contact the Office of Admissions, Advising, and Certification, 2504 Sangren Hall, to be admitted to the teacher education curriculum. Once admitted, the student will be assigned an advisor who will assist the student in program planning and scheduling the sequence of courses, including directed teaching.

Education and Professional Development Courses (ED)

ED 102 Techniques of Learning and Adjustment
2 hrs.
Designed to aid the student in making a more adequate academic and social adjustment. Attention is given to schedule-making, note-taking, study techniques, and examination writing. Principles of effective learning are discussed and demonstrated.

ED 103 Critical and Creative Reading
2 hrs.
Designed to develop practical application of principles of critical reading through extensive use of content area textbooks. Course will stress author's purpose, summarizing, and outlining for academic efficiency.

ED 104 Effective Reading for College Students
2 hrs.
Designed to provide the student with skills in vocabulary development, comprehension, and reading efficiency. Attention is given to the effective use of text and reference books in academic subjects, inferential reading, and synthesis of main ideas. Credit for this course will not apply to the number of credits needed for graduation. Course is graded on a credit/no credit basis.

ED 105 Advanced Reading
2 hrs.
Designed to increase reading rates and comprehension skills. Provides the well-adjusted academic student with an opportunity to develop more sophisticated skills. Course is graded on a credit/no credit basis.

ED 106 Effective College Reading for International Students
2 hrs.
This course focuses on vocabulary development and comprehension, including an emphasis on correct pronunciation, word analysis, factual and inferential thinking, and synthesis of ideas. Course is graded on a credit/no credit basis. Prerequisite: Results of TOEFL or MTEL.

ED 230 The Nature of Creativity
3 hrs.
This course literally explores the nature of creativity—its process, its product, its characteristics, its values, and its relationship to human beings and society. Growth in aesthetic sensitivity, personal interaction, self-confidence, and ability to solve problems creatively are the objectives of this course. Open to all students.

ED 250 Human Development
3 hrs.
This course traces the psychological and social development of human beings from conception to maturity. Consideration is given to those factors which facilitate or inhibit normal progress in the areas of physical, emotional, social, intellectual and moral development. Attention is also given to the development of the self-concept for the purpose of helping students to become more aware of themselves and of their relationships with others. Students are required to observe human beings at different stages of development in a variety of cultural settings.

ED 260 The Cognitive Development of the Child
2 hrs.
This course focuses on the physical, social, emotional, and cognitive development of the child, birth through 12 years. Special attention is given to cognitive development viewed in a Piagetian framework. Applications to the teaching of language arts are emphasized. (This course is required for the Integrated Language Arts Minor and in that program must be taken concurrently with SPPA 262.)

ED 301 Teaching and Learning (Secondary)
3 hrs.
This course is designed to prepare students for the responsibilities of classroom instruction. Emphasis is placed on purposes of the school, selection and organization of learning experiences; instructional methods and materials; patterns of curriculum organization, classroom management; noninstructional duties of the teacher in the school and community. Requires a one half day per week field experience in the classroom from 7:30 a.m. to 11:00 a.m. or from 11:00 a.m. to 2:30 p.m. Offered only during the Fall and Winter Semesters. Prerequisite: ED 250.

ED 307 Teaching Elementary Social Studies
3 hrs.
This course is designed to help undergraduates understand the role of social studies in the elementary school. Gain insight into important considerations in the selection of content, skills, and attitudes; and discover how to guide and assess the learning of children in this field. Planning social studies experiences and ways of working with individuals, groups, and the total class will be emphasized. Multicultural and non-sexist content and strategies will be emphasized. Prerequisite: Junior standing in Elementary Education Curriculum and ED 250.

ED 311 Reading Workshop
3 hrs.
The basic purpose of the workshop will be to study typical classroom reading problems. Tools useful in identifying problems, materials available, and techniques for the teaching of reading will be examined and experimented with in the classroom. Special consideration will be given to a case study of one severe reading problem.

ED 312 The Foundations of Reading Instruction
3 hrs.
This course will provide students with the foundations of reading instruction in the United States. Summaries of the results of current research in reading will be presented and the underlying theories and concepts examined. Also, current methods of teaching reading—especially the teaching approaches exemplified in basal programs—will be critically analyzed. Language as a system for transmitting ideas, information, and feelings will be introduced. Additionally, specific topics of importance to a foundational study, such as classroom diagnosis, also will be presented. Prerequisite: ED 250.

ED 322 The Teaching of Reading (Secondary)
3 hrs.
This course deals with methods and materials for improving reading in the junior and senior high school. Both developmental and remedial procedures are stressed. Prerequisite: ED 250.

ED 347 Technology in Learning
1 hr.
An introduction to the contributions of technology and nonprint media to learning and development in childhood. Based upon a manifold model of cognitive processing, the course will provide opportunities for students to develop their own skills in learning and communicating with graphic, photographic, and audio technologies while considering how similar processes can enable the young learner to understand and express more about his or her world. To be taken concurrently with ED 370. Prerequisite: ED 250.

ED 348 Technology for Teachers
1 hr.
An introduction to the selection, design, organization, and use of technological resources in teaching young learners. Students will have opportunities to select, plan for, and produce audiovisual media for interactive and independent modes of learning. To be taken in conjunction with ED 371.
ED 350 Young Children, Their Families, and Their Society
3 hrs.
A study of the effects of family, peer group, and society on the development of young children. Emphasis will be placed on family roles and child-rearing practices and their effects on learning and other behavior. Family constellations, the learning of sex roles, the effects of divorce, and similar phenomena will be studied. Consideration will be given to the effect of cultural and subcultural differences on early childhood development and students will look at the contemporary American scene as it affects young children. Prerequisite: ED 250.

ED 351 Reading and Related Communication Skills for Early Childhood
3 hrs.
A study of the young child's verbal and nonverbal language and how he/she records and interprets language. An awareness of the relationship of experience to language development and of the many approaches to teaching. Emphasis will be placed on the implications of current research as it effects reading programs and reading instruction for young children, as well as on experiences in selecting, developing, writing for and with children, and the production of a wide variety of audiovisual materials to be used with children. Participation will be required in school settings. Prerequisite: ENGL 282, ED 312.

ED 352 Reading and Related Communication Skills for Middle and Upper Grades
3 hrs.
A study of the multi-ethnic language of this age group and of how these youngsters record and interpret language. Emphasis will be placed on the implications of current research as it effects teaching and learning at the elementary school level. Emphasis will be placed on major learning theories, on the growth of a healthy self-concept, and on the cognitive styles of these age levels. Students will examine the effects on learning of cultural and gender differences and discrimination. Through observation and participation in a variety of learning situations with children, there will be opportunity to plan, implement, and evaluate teaching and learning relationships with young children. Demonstrating application of the theoretical concepts of the course. Each student will infer the roles of the teacher as they relate to students' personal goals and as implicit in the theories of the course. ED 370 must be taken concurrently with ED 347 and SPED 527. Prerequisite: ED 250.

ED 370 Educational Psychology: Young Children/Elementary
3 hrs.
The course will develop understandings of children's learning from birth through fourth/fifth grade. Emphasis will be placed on major learning theories, on the growth of a healthy self-concept, and on the cognitive styles of these age levels. Students will examine the effects on learning of cultural and gender differences and discrimination. Through observation and participation in a variety of learning situations with children, there will be opportunity to plan, implement, and evaluate teaching and learning relationships with young children. Demonstrating application of the theoretical concepts of the course. Each student will infer the roles of the teacher as they relate to students' personal goals and as implicit in the theories of the course. ED 370 must be taken concurrently with ED 347 and SPED 527. Prerequisite: ED 250.

ED 371 Classroom Organization and Management: Young Children/Elementary
3 hrs.
Students will examine and apply recent research on effective classroom management, concentrating on such variables as time on task, appropriate choice of group structures and direct instruction; the management of time, space, and materials; and the analysis of classroom interactions. Students will design, implement, and evaluate an integrated curriculum and will learn management principles designed to prevent "discipline problems." Micro-teaching experiences and a supervised teaching practicum will give each student the opportunity to replicate research on effective teaching and to become an effective classroom manager. ED 371 must be taken concurrently with ED 348 and ED 395. Prerequisites: ED 250, 370, and SPED 527. SPPA majors may substitute SPED 530 for SPED 527. Physical Education Majors may substitute PEPR 320 or PEPR 520 for SPED 527.

ED 395 School and Society 3 hrs.
This course is concerned with the utilization of change in society as a force in directing American education. The course is directed toward modern problems in education as well as a futurist look at its possible development. Course content centers around analysis of the influences which areas as the following have upon American education: political, legal, economic, social, psychological, historical, philosophical. Consideration is given to the individual's role in the change process in education. An interdisciplinary approach is used.

ED 398 Special Studies in Education 1-6 hrs.
With variable topics and variable credit, this course is designed for undergraduates who, by virtue of their special interest or concerns, find it desirable to pursue in greater depth topics or problems related to children's educational development. The course will be offered under the following conditions: (1) that a written outline of the offering be approved by the Department Chairman, and (2) that prior arrangement be made with a faculty member or faculty members. The course offers variable credit from one through six semester hours. Students may repeat the course so long as topics differ. Each offering of 398, Special Studies in Education, will be given an appropriate subtitle, which will be listed on the student's official transcript. Students may earn up to three hours of credit for any given subtitle. No more than six hours of 398 may be applied toward meeting professional program requirements.

ED 401 Teaching Elementary School Science 3 hrs.
Designed to introduce students to a sampling of the elementary school science program. Emphasis will be given to the exploration of science programs, techniques, philosophies, and teaching strategies that are currently being used in the elementary school science classroom. Taken in conjunction with ED 402.

ED 402 Seminar in Science and Mathematics 2 hrs.
This capstone course required of all students in the Science and Mathematics Teaching Minor will afford the student classroom teaching and observation experiences on a regular basis. In addition to the required classroom participation of 2-3 hours per week, the student will meet weekly in a seminar with the supervising faculty from science, mathematics, and education. Taken in conjunction with ED 401.

ED 410 Seminar in Education 2 hrs.
The seminar will be directly related to the student's classroom experiences; it will further the student's practical understanding of research on effective teaching and effective schools; help to refine his/her techniques of effective classroom management and curriculum design, and enhance the student's sense of his/her own teaching style. The seminar will build the student's self-concept as a professional as he/she is encouraged to take professional responsibility and to practice professional ethics. It is in the seminar that the ongoing Teaching Portfolio is completed and reviewed by a faculty committee. Must be taken concurrently with ED 470, 471 and/or 472, and 475.

ED 430 Creativity in the Elementary School 4 hrs.
A synthesis of the principles developed in the Integrated Creative Arts Minor as applied to teaching and learning at the elementary school level. Emphasis is placed on the integration of creative processes in elementary school curriculum and instruction, on the teacher as problem solver, and on the creation of structures which accommodate individualization of instruction and creative problem solving in children.

ED 460 Integrated Language Arts Seminar 4 hrs.
This course will focus on synthesizing theories, concepts, and classroom approaches from previous work in the Integrated Language Arts Minor. Students will practice restructuring curriculum objectives, classroom organization, and teaching strategies in order to achieve the maximum integration of the language arts processes in the elementary school. Students will pursue individualized programs culminating in a guided field experience through which students will demonstrate identified program competencies. Student- and faculty-led seminars will be scheduled periodically throughout the course. (This course is required in the Integrated Language Arts Minor.)

ED 470 Directed Teaching: Early Childhood 1-10 hrs.
Only for seniors who have completed all their professional studies courses. This will be the final field experience consisting of five days per week in an educational setting. Students will synthesize the knowledge, apply the understandings, and practice the skills which they acquired during their University course work. They will participate in all phases of the school program where they are assigned. To be taken concurrently with ED 410. Prerequisites: ED 347, 348, 370, 371, 395, and SPED 527.

ED 471 Directed Teaching: Primary Grades 1-10 hrs.
Only for seniors who have completed all their professional studies courses. This will be the final field experience consisting of five days per week in an educational setting. Students will synthesize the knowledge, apply the understandings, and practice the skills which they acquired during their University course work. They will participate in all phases of the school program where they are assigned. To be taken concurrently with ED 410. Prerequisites: ED 347, 348, 370, 371, 395, and SPED 527.

ED 472 Directed Teaching: Upper Elementary/Middle School 1-10 hrs.
Only for seniors who have completed all their professional studies courses. This will be the final field experience consisting of five days per week in an educational setting. Students will synthesize the knowledge, apply the understandings, and practice the skills which they acquired during their University course work. They will participate in all phases of the school program where they are assigned. To be taken concurrently with ED 410. Prerequisites: ED 347, 348, 370, 371, 395, and SPED 527.

EDUCATION AND PROFESSIONAL DEVELOPMENT 149
ED 474 Directed Teaching in Special Education
4-10 hrs. Only for students specializing in Special Education. Candidates must be approved by the Chair of the Special Education Department. The student shall present documented evidence of successful field experience with children or young people prior to beginning a Directed Teaching assignment.

ED 475 Directed Teaching: Secondary
1-9 hrs. Students devote a minimum of four and one-half days per week for one semester to Directed Teaching. They are expected to have experience in both the curricular and extra curricular programs of the school in which they teach. Prerequisite: Successful completion of ED 250, 301, and 322 or their equivalents prior to beginning Directed Teaching; an academic average of 2.5 in all education courses and an overall average, 2.0 in majors and minors used for certification.

ED 502 Curriculum Workshop
1-6 hrs. Opportunity provided for teachers, supervisors and administrators in selected school systems to develop programs of curriculum improvement. This may include short-term offerings to resolve a particular curricular problem, as well as long-range curriculum studies. A wide variety of resources is used for instructional purposes, including several specialists, library and laboratory facilities, field trips, audiovisual materials, and the like. Each offering of 502, Curriculum Workshop, will be given an appropriate subtitle, which will be listed on the student's official transcript. Students may earn up to three hours of credit for any given subtitle. No more than six hours of 502 may be applied toward a Master's degree.

ED 504 Adult Development
3 hrs. This course will provide an in-depth look at each age and stage in the life cycle. It will explore such problems as: the changing role of parents and singles, the changing societal pressures on teachers, new adult life-styles, mid life career changes, the changing role of males and females, and unique health stresses. Emphasis will be placed on the identification of patterns of lifelong learning leading to a more fruitful and fulfilling life.

ED 505 The Adult Learner
3 hrs. This course will provide an in-depth look at the learning potential for adults from age 22 to death with emphasis on human variety, unique learning style, and characteristics of the adult learner. Theories of adult learning, studies of intelligence and memory, learning capabilities, abilities, approach to, and speed of learning will be considered. Motivation as prerequisite for high-level wellbeing and problem solving will be studied. Limited to 20 students.

ED 506 Teaching in Adult Education
3 hrs. This course is designed to provide teachers with a knowledge of special situations incurred in the teaching of adults. Included also are techniques of interpersonal communication with adults, as well as a practical exercise in the designing of learning experiences for adults. Extensive use will be made of audiovisual media, experts in the field, and field observation in adult learning activities. The course should be helpful to administrators in planning inservice programs for their own staff.

ED 508 Seminar in Parent Education
2 hrs. Emphasis will be placed on cooperative problem-solving between parents and teachers of school-age children and youth. Problems considered will include such topics as grief and loss through separation; special needs and contributions of multicultural parents; parents as resource persons and paraprofessionals in the schools, and problems identified by members of the seminar. Members of the seminar will report on the current literature available through libraries and community resources and work toward potential solutions of problems.

ED 509 Parent Education for Teachers of Young Children
3 hrs. Presents a variety of techniques for teachers to use in working together with parents. Teachers will study child-rearing factors which parents most need to know. The course will help teachers to develop their own record-keeping systems, ways of involving parents in their children's education, and ways of making meaningful reports to parents. The education of parents as aids is included.

ED 511 Developmental Reading Theory and Application
3 hrs. Emphasizes the application of reading theory in the teaching of reading skills to special-needs students. Intensive study of the theory and practice of individualized reading, language-experience approaches, and basal-reading materials will be made. Will focus on the actual use of materials with pupils to provide practical experiences in teaching on an individual and small-group basis. Efficiency of reading procedures will be studied through actual use with pupils. Intended to provide potential teachers with an introduction to basic reading theory as applied to materials, programs, and conditions likely to be encountered in the field. Prerequisite: ED 312 or 322.

ED 516 Professional Symposium in Reading
3 hrs. This course is designed to be the initial course in the graduate program in reading. It is designed to present the basic concepts concerning the nature of the reading process and the teaching of reading. Emphasis will be placed on reading as a thinking process and on factors affecting reading performance. Special emphasis will be placed on child development, language development, concept development, physical, psychological, and environmental factors affecting the child's learning to read. In addition, the course will provide a brief overview of the delivery systems and procedures used in the U.S. to teach reading. This will involve an historical overview as well as current and potential future practices.

ED 521 Piaget and Young Children
3 hrs. Examines significant contributions of Piaget to our understanding of young children's learning. Knowledge of how young children think will be applied to early childhood curriculum. Teachers will apply Piagetian tasks and will be able to improve curriculum for young children with growing understanding of these children's minds.

ED 548 Audiovisual Media I
3 hrs. An introduction to audiovisual media as effective means for achieving educational objectives in presentation, interactive, and individualized modes of instruction. Emphasizes evaluation, selection, production, and classroom use of commercially available and locally produced instructional materials. Students are expected to participate in laboratory experiences in which they produce materials such as mounted and laminated pictures and displays, overhead projection transparencies, audio tapes and photographic slides, and to demonstrate proficiency in the operation of audiovisual equipment. In addition to texts, each student should plan to spend $15 or more for supplies and have the use of a simple camera. Limited to 20 students.

ED 549 Audiovisual Media II
3 hrs. A continuation of ED 548 in which teachers and media specialists consolidate basic audiovisual skills and deal in depth with more advanced procedures. Required field experiences may include production of complex transparencies, photographic slides, films, and prints; super 8 films; audio and video tapes; duplicated materials; and more sophisticated charts, posters, and displays. A systematic production planning process is emphasized, with consideration given to evaluating effectiveness of media and to requirements for operating a school building level media center. In addition to texts, each student should expect to spend $15 or more for supplies and should have the use of a portable camera. Limited to 15 students. Prerequisite: ED 548 or equivalent experience.

ED 550 Photography Workshop
1-3 hrs. Intended to sharpen visual perception while improving technical skills, this laboratory course emphasizes photography as a creative and expressive medium of visual communication. Each student is expected to produce new photographs each week and to submit one or more mounted enlargements for group critique at each class meeting. Each student must have the use of appropriate equipment and should expect to spend $25 or more for supplies. Although no prerequisite is required, it is helpful to have had some experience with basic darkroom processes. May be repeated up to a total of six credits. Limited to 15 students.

ED 557 Reading and Related Language Experiences
3 hrs. This course involves a study of the current research and aspects of language which are involved in the process of effective reading. It is intended to provide students with a thorough understanding of the research in language and its application to the reading process. It also is intended to help students understand more fully the place of reading in a total language arts program and to give students an opportunity to make application to practical classroom situations.

ED 598 Selected Reading in Education
1-4 hrs. Designed for highly qualified students who wish to study in-depth some aspect of their field of specialization under a member of the departmental staff. Prerequisite: Written consent of departmental adviser and instructor.
EDUCATIONAL LEADERSHIP
Edgar A. Kelley, Chair
Robert O. Brinkerhoff
Mary Anne Bunda
David J. Cowden
Kenneth E. Dickie
James R. Sanders
Lawrence B. Schlack
Ulids Smidchens
Daniel L. Stufflebeam
Charles C. Warfield

This department offers curricula in line administration, staff administration, human resource development, and program leadership, leading to a degree of Master of Arts, Specialist in Education, or Doctor of Education. While most of the department’s courses, seminars, and studies, are intended for graduate students, programs of studies may be outlined and pursued by advanced undergraduate students whose career goals include positions as leaders in the many and varied educational agencies that are operative in society today. Courses are listed under the prefix EDLD. Interested students should see The Graduate College Catalog for more detail.

PROFESSIONAL HEALTH, PHYSICAL EDUCATION AND RECREATION
Roger Zabik, Chair
Debra Berkey
Billye Ann Cheatum
Charles Corner
Harriet Creed
Mary Dawson
David Diget
Frances Ebert
Jean Friedel
George Hobbs
Patricia Lernanski
Ruth Ann Meyer
John Miller
Robert Moss
Fred Orfiksky
Linda Powell
Richard Raklovits
Harold L. Ray
William Rowekamp
William Schreiber
Norma Stafford
Ronald Winter
Robert Wyman

The professional programs are based on the concepts of (1) balanced preparation that enables the student to later specialize at the graduate level, (2) exposure to practical experiences throughout the professional sequence, (3) elective choices of specific courses, and (4) continual review of curricular offerings by students and faculty.

Students who desire specialized professional preparation may select from the following:

Majors
1. Health Education
2. Physical Education
   A. Teacher-Coach Emphasis
   B. Teacher-Exercise Science Emphasis
3. Recreation

Minors
1. Teaching Certification
   A. Health Education
   B. Physical Education
      1. Elementary
      2. Secondary
      3. Special Physical Education
2. Non-Teaching
   A. Athletic Training
   B. Coaching
   C. Recreation

The professional student is expected to work closely with a departmental adviser during his/her years on campus. A copy of the “Departmental Handbook” should be secured from the department office promptly after choosing a major or minor.

Transfer Students
Transfer courses from four year schools and appropriate lower division courses from community colleges may be included in majors and minors. However, a minimum of one-half of the required semester hours for a major or a minor must be taken at Western Michigan University. The PEPR teaching methods course(s) must be included in the hours at WMU. Transfer students must participate in HPER entry skill and fitness assessments.

Alternative Careers
The student may select a student planned curriculum to pursue a career in sports business, sports management, sports journalism, etc. The student must see an adviser for approval prior to completing 75 credit hours.

General Education Requirement
Each student must complete 36 hours of work in approved General Education courses and/or non-professional courses in the College of Arts and Sciences. The student seeking Michigan teacher certification must complete an additional 5 hours in the College of Arts and Sciences and/or the College of General Studies.

Majors

Health Education Major

36 credit hours
Bachelor of Science Degree
State Elementary or Secondary Provisional Certificate

The health education major is a program to prepare health educators who can influence the psychological, sociological, and biological development of individuals and groups to meet effectively the health needs of society.

The major is designed so graduates may enter first level positions in both schools and community agencies and qualify for graduate work.

Students planning to enter community health positions are not required to take directed teaching or courses in the education block.

Students planning to major in health should consult a department adviser promptly after choosing this major.

Health education majors are expected to have a valid First Aid Certificate at the time of graduation.

Course Requirements ........................ Hrs.
General Education .............................. 40

Physical Education ............................ 2

Recommended:
Students who wish to substitute other courses should consult the adviser in advance.

Required Cognates ............................. 10
PSY 194 General Psychology ............. 3
OR
PSY 150
SOC 200 Principles of Sociology ........ 3
BIO 107 Biological Science .............. 4
OR
BIO 101 (Substitute BMED 211 Anatomy or 240 Physiology) ............ 4

Required Courses ............................ 28-29
PEPR 100 Health for Better Living .... 4
PEPR 211 Community Health—Public Health I .......... 3
PEPR 314 Elementary School Health and Safety Education ........ 3
OR
PEPR 315 Secondary School Health and Safety Education
PEPR 411* Public Health II ............. 3
PEPR 412* Administration in Health Education ............. 3
Required Cognates:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIOL 101</td>
<td>Biology (at all levels)</td>
<td>4</td>
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<tr>
<td>BMED 211</td>
<td>Human Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>BMED 240</td>
<td>Anatomy and Physiology of Medical Science</td>
<td>4</td>
</tr>
<tr>
<td>BMED 211</td>
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Professional Core Requirements

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PEPR 101</td>
<td>Basic Exercise Concepts</td>
<td>1</td>
</tr>
<tr>
<td>PEPR 150</td>
<td>Measurements of HPER</td>
<td>3</td>
</tr>
<tr>
<td>PEPR 200</td>
<td>Exercise Physiology of Motor Activity</td>
<td>2</td>
</tr>
<tr>
<td>PEPR 400</td>
<td>Field Experience/Internship in HPER</td>
<td>2-3</td>
</tr>
</tbody>
</table>

Activity Emphasis Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEPR 102</td>
<td>Cycling/Relaxation/Stress Management</td>
<td>1</td>
</tr>
<tr>
<td>DANC 106</td>
<td>Recreational Dance</td>
<td>1</td>
</tr>
<tr>
<td>PEPR 205</td>
<td>Cross Country Skiing: Weight Training</td>
<td>1</td>
</tr>
<tr>
<td>PEPR 210</td>
<td>Racquet Sports</td>
<td>1</td>
</tr>
</tbody>
</table>

Recreation

- **Bachelor of Arts Degree**
- **Bachelor of Science Degree**

The recreation major is designed to prepare students to assume leadership and/or administrative roles in public or private recreation agencies and organizations. The hours of electives are offered and the suggested sequence of course work is available through the student flexibility in preparing for a specific phase of recreation. Students must complete a supervised internship of at least three consecutive months duration.

**Required Courses**

- Bachelor of Science Degree
- Bachelor of Arts Degree

**Hours Required**

- **130**
- **122**
- **35**

**Physical Education Major**

45 credit hours Bachelor of Science Degree

The major in physical education allows the student to choose one of two professional preparation options:

1. **Teacher-Coach Emphasis**
2. **Teacher-Exercise Science Emphasis**

Successful completion of the Teacher-Coach emphasis leads to K-12 certification for teaching physical education in schools. Students must complete the education sequence required by the Department of Education and Professional Development including the directed teaching experience. In HPER, students must also serve as a teaching assistant for one semester in a general physical education course and complete a minimum of 20 clock hours of observation and participation at both the elementary and secondary levels.

The Teacher-Exercise Science emphasis prepares students to assume careers in non-school settings such as corporate, public, and private adult fitness programs. The emphasis is also excellent preparation for the student desiring to pursue graduate study in exercise science and/or research. Students completing the Teacher-Exercise Science emphasis are not eligible for teaching certification.

**Hours Required**

130 hours

**Required Courses**

- **35**
- **23**
- **2**
- **12-13**

**K-12 State Provisional Certificate**

**Required Cognates:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMED 211</td>
<td>Human Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 101</td>
<td>Biology (at all levels)</td>
<td>4</td>
</tr>
<tr>
<td>BMED 211</td>
<td>Human Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>BMED 240</td>
<td>Anatomy and Physiology of Medical Science</td>
<td>4</td>
</tr>
<tr>
<td>PEPR 100</td>
<td>Health Better Living</td>
<td>4</td>
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</table>

**Problems Core Requirements**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>PEPR 101</td>
<td>Basic Exercise Concepts</td>
<td>1</td>
</tr>
<tr>
<td>PEPR 150</td>
<td>Measurements of HPER</td>
<td>3</td>
</tr>
<tr>
<td>PEPR 200</td>
<td>Exercise Physiology of Motor Activity</td>
<td>2</td>
</tr>
<tr>
<td>PEPR 400</td>
<td>Field Experience/Internship in HPER</td>
<td>2-3</td>
</tr>
</tbody>
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**Activity Emphasis Requirements**

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</tr>
<tr>
<td>PEPR 210</td>
<td>Racquet Sports</td>
<td>1</td>
</tr>
</tbody>
</table>

**Recreation**

45 credit hours Bachelor of Arts Degree or Bachelor of Science Degree

The recreation major is designed to prepare students to assume leadership and/or administrative roles in public or private recreation agencies and organizations. The hours of electives are offered and the suggested sequence of course work is available through the student flexibility in preparing for a specific phase of recreation. Students must complete a supervised internship of at least three consecutive months duration.

**Hours Required**

130 hours

**General Education Courses**

- **35**

**Physical Education**

- **2**

**Required Professional Courses**

- **20**

(please note in course descriptions when courses are offered and the suggested sequence of course work.)

- **PEPR 170** Introduction to Recreation
- **PEPR 178** Playground Administration
- **PEPR 181** First Aid
- **PEPR 270** Recreation Leadership (Prerequisite 170)
- **PEPR 372** Recreation Programming (Prerequisite 270)
- **PEPR 370** Recreation Pracitcunum (Prerequisite 372)
- **PEPR 375** Organization and Administration of Recreation
- **PEPR 470** Recreational Facilities and Areas
- **PEPR 400** Internship in Recreation

**Elective Courses**

- **16**

**Group I: Program Skills**

- Aquatics Area
- **PEGN 251** Senior Life Saving
- **PEGN 250** Water Safety Instructors
- **PEGN 107** Canoeing
- **PEGN 141** Sailing
- **PEGN 255** Synchronized Swimming
- **PEGN 253** Speed Swimming
- **PEGN 254** Springboard Diving

- **Sports Area** (Not more than 8 courses)
- **PEGN/PEPR Team Sports** (Not more than 4—no repeats)
- **PEPR 236** Sports Officiating (Not more than 4)

- **PEGR 337** Adv. Techniques and Coaching (Not more than 2)

**Arts and Crafts Area** (Not more than 4 courses)

- **ET 190** Adult/Child Crafts
- **ART 201** Drawing
- **ART 200** Ceramics
- **ART 207** Jewelry
- **ART 240** Printing
Music and Drama Area (Not more than 4 courses)

MUS 140 Music for the Classroom Teacher ... 3

MUS 281 Music Therapy: Actk/Child ... 3

DANC 106 Recreational Dance ... 1

COM 564 Creative Drama for Children ... 4

THEA 100 Intro, to Theatre ... 3

Outdoor Skills Area (Not more than 4 courses)

PEGN 106 Canoe Camping ... 1

PEGN 108 Backpacking ... 1

PEGN 110 Cross-Country Ski Camp ... 1

PEGN 135 Outdoor Challenge ... 1

PEGN 143 Cross Country Skiing ... 1

PEGN 167 Winter Camping ... 1

PEPR 172 Camp Leadership ... 3

PEPR 276 Outdoor Education ... 2

BIOL 234 Outdoor Science ... 4

BIOL 105 Envir. Biology ... 3

Group II: Administrative Skills
Not more than four courses

PEPR 368 Organization and Administration of Intramurals ... 2

COM 130 Public Speaking ... 3

COM 335 Leadership ... 3

COM 549 Public Relations/Organization ... 3

COM 550 Public Relations/Program Organization ... 3

GEOG 240 National Park Lands ... 3

GEOG 350 Conservation/Environmental Management ... 3

BIS 388 Records Management ... 3

BIS 556 Office Management ... 3

BIS 242 Business Communications ... 3

BIS 102 Intro, to Information Processing ... 3

ACCT 201 Accounting ... 3

GEOL 312 Geology of National Parks and Monuments ... 3

GEOL 544 Environmental Geology ... 3

ECON 319 Environmental Economics ... 3

CRT 363 Landscape Design ... 3

Group III: Community Organization Skills
Not more than four courses

PEGN 516 Issues in Health Education ... 2

COM 232 Discussion ... 3

COM 581 Communication in Organizations ... 3

SWRK 572 Community Agency Resources ... 2

SWRK 562 Community Organizations in Urban Areas ... 3

SOC 210 Modern Social Problems ... 3

SWRK 464 Problem Solving in Gerontology ... 3

PEGR 572 Recreation for the Aged ... 2

SOC 352 Introduction to Gerontology ... 3

Group IV: General Electives

PEGN 589 Readings in H.P.E.R. ... 1-3

Minors

Health Education Minor

24 credit hours

A minor is offered in health education. It is open to all students and is especially appropriate for those specializing in middle/junior high school education, in special education, and in secondary education with majors in such areas as biology, home economics, physical education, psychology, and sociology. The health education group minor consists of 24 hours. The program is designed to offer courses in multidisciplinary areas and to meet state certification standards.

Cognates—Students should elect BIOL 101/107 or BMED 112—4 semester hours (Biological Sciences) as part of the distribution program in general education.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEPR 100</td>
<td>Health for Better Living</td>
<td>4</td>
</tr>
<tr>
<td>PEPR 314</td>
<td>Elementary School Health and Safety Ed</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEPR 315</td>
<td>Secondary School Health and Safety Ed</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEPR 211</td>
<td>Community Health</td>
<td></td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PEGR 514</td>
<td>Health Education Materials and Methods</td>
<td>2</td>
</tr>
<tr>
<td>PEGR 516</td>
<td>Issues in Health Education</td>
<td>2</td>
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</table>

Elective Courses (Activity)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 234</td>
<td>Outdoor Science</td>
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</table>

Elementary Physical Education Minor

(Must be taken as part of Elementary Group Minor)

Cognates

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>BIOL 107</td>
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<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMED 112</td>
<td></td>
<td>3*</td>
</tr>
<tr>
<td>BMED 211</td>
<td></td>
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<tr>
<td>ED 230</td>
<td></td>
<td>4</td>
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</tbody>
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*Applicable to total General Education requirement

Hours Required for this minor

22

Required Professional Courses Academic

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
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<tbody>
<tr>
<td>PEPR 101</td>
<td>Basic Exercise Concepts</td>
<td>1</td>
</tr>
<tr>
<td>PEPR 276</td>
<td>Outdoor Education</td>
<td>2</td>
</tr>
<tr>
<td>PEPR 285</td>
<td>Biomechanical Analysis of Activity</td>
<td>2</td>
</tr>
<tr>
<td>PEPR 320</td>
<td>Physical Education for the Exceptional Child</td>
<td>3</td>
</tr>
<tr>
<td>PEPR 444</td>
<td>Administration and Development of Instructional Systems</td>
<td>2</td>
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<tr>
<td>PEPR 445</td>
<td>Physical Education: Teaching Skills and Strategies</td>
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Activity

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>PEPR 115</td>
<td>Tumbling Apparatus</td>
<td>1</td>
</tr>
<tr>
<td>PEPR 310</td>
<td>Track and Field</td>
<td>1</td>
</tr>
<tr>
<td>DANC 106</td>
<td>Recreational Dance</td>
<td>1</td>
</tr>
<tr>
<td>DANC 290</td>
<td>Teaching Dance in the H.P.E.R.</td>
<td>3</td>
</tr>
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</table>

Elective Courses (Activity)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEPR 105</td>
<td>Softball Volleyball</td>
<td>1</td>
</tr>
<tr>
<td>PEPR 110</td>
<td>Soccer Basketball</td>
<td>1</td>
</tr>
</tbody>
</table>

Special Physical Education Minor

23 credit hours

Designed to prepare special education and physical education majors in the area of recreation, physical education, swimming, health, and dance for the exceptional child. Students majoring in other curricula must take all courses listed for physical education majors and special education majors. (Courses A. and B.)

Required Cognates

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 107</td>
<td></td>
<td>4*</td>
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<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMED 112</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>BMED 211</td>
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<td>4</td>
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</table>

*Applicable to total General Education requirement

Special Physical Education Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEPR 321</td>
<td>Therapeutic Needs and Exercises</td>
<td>3</td>
</tr>
<tr>
<td>PEPR 420</td>
<td>Testing and Developmental Programs</td>
<td>3</td>
</tr>
<tr>
<td>PEPR 400</td>
<td>Professional Field Experience/Internship</td>
<td>4</td>
</tr>
</tbody>
</table>

A. Background Courses in Physical Education

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEPR 101</td>
<td>Basic Exercise Concepts</td>
<td>1</td>
</tr>
<tr>
<td>PEGN 139</td>
<td>Relaxation</td>
<td>1</td>
</tr>
</tbody>
</table>
Softball, golf, and gymnastics. Football, track and field, tennis, volleyball, currently emphasized by the Michigan

This minor does NOT certify a student to teach physical education. The coaching minor will provide instruction in the sports which are currently emphasized by the Michigan Interscholastic Sports Programs: basketball, football, track and field, tennis, volleyball, softball, golf, and gymnastics.

ATHLETIC TRAINING MINOR (Non-Teaching)
16-21 credit hours

Required Cognates:
BMED 112 Biology 3
BMED 211 Anatomy 4
BMED 240 Human Physiology 4

Required Core: 13
PEPR 181 First Aid (required in major or minor) 2
PEPR 380 Foundations Spts. Injuries (If not required in major or minor) 2
CRT 260 Nutrition (Prereq. - First Aid 181) 2
PEPR 400 Field Experience (Prereq. — Coaching and Adv. Tech. Course) 2

INDIVIDUAL

Gymnastics 2
Tennis 2
Track and Field 2

PEPR 236 Officiating — Select two of the following officiating courses to complete the 11 hrs. of Professional Electives 2
Basketball 1
Gymnastics 1
Baseball 1

Recreation Minor (Non-Teaching)
24 credit hours

The recreation minor is designed to prepare students to assume leadership roles in public or private recreation agencies and organizations. The 10 hours of electives within this course of study allows the student flexibility in preparing for a specific phase of recreation.

Required Professional Courses 14
(See note in course descriptions when courses are offered and the suggested sequence of course work.)
PEPR 170 Introduction to Recreation 3
PEPR 270 Recreational Leadership (Prereq. 170) 3
PEPR 372 Recreational Programming (Prereq. - 270) 3
PEPR 370 Recreation Practicum (Prereq. 170, 270, 372) 3
PEPR 375 Organization and Administration of Recreation (Prereq. 170, 270, 372, 370) 3

Elective Courses (From not more than two groups) 10

Group I: Program Skills
Aquatics Area (Not more than 4 courses)
PENN 251 Senior Life Saving 2
PENN 350 Water Safety Instructors 2
PENN 107 Canoeing 1
PENN 141 Sailing 1
PENN 253 Speed Swimming 1
PENN 254 Springboard Diving 1
Sports Area (Not more than 8 courses)
PENN/PEPR Team Sports (Not more than 4—no repeats) 4
PENN/PEPR Ind. and Dual Sports (Not more than 4—no repeats) 4
PEPR 236 Sports Officiating (Not more than 4) 4
PEPR 337 Adv. Techniques and Coaching (Not more than 2) 4

Group II: Administrative Skills
Outdoor Area (Not more than 4 courses)
PENN 106 Canoe Camping 1
PENN 108 Back Packing 1
PENN 110 Cross-Country Ski Camp 1
PENN 135 Outdoor Challenge 1
PENN 143 Cross Country Skiing 1
PENN 167 Winter Camping 1
PEPR 172 Camp Leadership 3
PEPR 276 Outdoor Education 2
BIOL 234 Outdoor Science 4
BIOL 105 Envir. Biology 3

Group III: Community Organization Skills
Not more than four courses
PENN 516 Issues in Health Education 2
COM 232 Discussion 3
COM 581 Communication in Organizations 3

Group IV: General Electives
PENN 500 Studies in H.P.E.R. 1-3
PENN 598 Readings in H.P.E.R. 1-2
Courses By Topic

Professional Activity Courses (PEPR)
102 Cycling: Relaxation/Stress Management
105 Baseball/Softball: Volleyball
110 Soccer: Basketball
115 Tumbling: Apparatus
200 Football: Wrestling
205 Cross Country Ski: Weight Training
210 Racquet Sports
215 Aerobic Conditioning
305 Golf: Archery: Bowling
310 Track and Field

Health Education Academic Courses (PEPR)
100 Health for Better Living
211 Community Health—Public Health I
314 Elementary School Health and Safety Education
315 Secondary School Health and Safety Education
400 Field Experience in Health
411 Health Education: Public Health II
510 Modern Health for Teachers and Health Professionals
512 Principles, Practices, and Methods in Health Education
514 Methods and Materials in Health Education
516 Issues in Health Education

Physical Education Academic Courses (PEPR)
101 Basic Exercise Concepts
150 Foundations of Health, Physical Education and Recreation
181 First Aid
235 Theory of Coaching
236 Officializing Series
236 Biomechanical Analysis of Activity
300 Seminar Series
320 Physical Education for the Exceptional Child
321 Therapeutic Needs and Programs for the Exceptional Child
325 Swimming for the Exceptional Child
337 Coaching and Advanced Techniques
345 Nature and Bases of Motor Skills
368 Administration and Organization of Intramural Sports
380 Foundations of Sports Injuries
390 Physiology of Motor Activity
392 Measurement and Evaluation in Physical Education
400 Field Experience/Internship in HPER
420 Testing and Developmental Programs for the Exceptional Child
444 Administration and Development of Instructional Systems in Physical Education
445 Teaching Skills and Strategies
450 Cultural Bases of Physical Education
490 Adult Fitness and Exercise Prescription

Professional Recreation Courses (PEGR)
170 Introduction to Recreation
172 Camp Leadership
178 Playground Administration
270 Recreational Leadership
276 Outdoor Education
370 Recreation Practicum
372 Recreational Programming
375 Organization and Administration of Recreation
400 Field Experience/Internship in HPERS
470 Recreational Facilities and Areas
572 Recreation for the Aging

Open to Upperclass and Graduate Students (PEGR)
500 Studies in Health, Physical Education and Recreation
520 Physical Activities for Exceptional Children

521 Therapeutic Trends for Exceptional Children
530 Practicum in Teaching and Coaching
533 Principles and Problems of Coaching
540 Movement Education
560 Administration of Physical Education
562 Administration of Athletics
580 Studies in Athletic Training
590 Exercise Physiology
591 Evaluation in Physical Education, and Recreation
595 Analysis of Movement in Sport
598 Readings in Health, Physical Education, and Recreation

Professional Health, Physical Education and/or Recreation (PEPR/PEGR)
(Courses described in italics are approved for General Education. Course descriptions preceded by a † are open to all students.)

PEPR 100 Health for Better Living
4 hrs. Fall, Winter
†The focus of this introductory health course is to assist students in achieving an awareness of optimal physical, mental, and social health in a changing environment. Guest lectures from the community will present some of the topics considered important to the health of modern people. Preference is given to freshmen and sophomores. This is the first course in the Health Education Curriculum.

PEPR 101 Basic Exercise Concepts
1 hr. Fall, Winter
Basic developmental, biomechanical, physiological, and nutritional concepts concerning wellness and exercise will be presented.

PEPR 102 Cycling: Relaxation/Stress Management
1 hr. Fall

PEPR 105 Baseball/Softball: Volleyball
1 hr. Fall

PEPR 110 Soccer: Basketball
1 hr. Fall

PEPR 115 Tumbling: Apparatus
1 hr. Winter

PEPR 150 Foundations of Health, Physical Education and Recreation
3 hrs. Fall, Winter
An introduction to the University, the profession, and an attempt to assist the student in making a realistic appraisal of his/her own aptitudes and capabilities relevant to the profession via actual testing of personal competencies. Taken in conjunction with PEPR 101.

PEPR 170 Introduction to Recreation
3 hrs. Fall only
†An introduction to the field of recreation and the role of leisure in modern society including current trends, job opportunities in various settings, programming, and leadership

PEPR 172 Camp Leadership
3 hrs. Fall (even)
†The investigation of the responsibilities of the counselor in the camp. Exploration of the aims and values of the total camp program are emphasized.

PEPR 178 Playground Administration
2 hrs. Fall only
This course is designed to give administrative and leadership skills for summer playgrounds. All areas of playground organization, operation, program planning, and a wide range of activities will be covered.

PEPR 181 First Aid
2 hrs. Fall, Winter, Spring
†The standard course in first aid techniques leading to Red Cross certification. Open to all students.

PEPR 200 Football: Wrestling
1 hr. Fall

PEPR 205 Cross Country Ski: Weight Training
1 hr. Winter

PEPR 210 Racquet Sports
1 hr. Fall

PEPR 211 Community Health—Public Health I
3 hrs. Fall
This course deals with the historical development of the principles of organized public health activities and their application to present day life. Introduces the student to the scope of public health programs. Prerequisite: 100

PEPR 215 Aerobic Conditioning
1 hr. Winter

PEPR 235 Theory of Coaching
2 hrs. Fall, Winter
Introduction to coaching includes basic principles, covers State Athletic Handbook, budgets, scheduling, facilities, liability, public relations, relationships with staff, faculty, students, parents, press, etc.

PEPR 236 Officiating Series
1 hr. Fall, Winter
†The discussion and application of rules and officiating techniques. The student is required to officiate in out-of-class athletic programs. Prerequisites: Must have had the first level activity or permission of instructor. Open to all students.

Fall Semester: Basketball

Winter Semester: Basketball

PEPR 295 Biomechanical Analysis of Activity
2 hrs. Winter

PEPR 241 Physical Education and Recreation for Teachers
2 hrs.
This course is open only to teachers. Topics included in the course are: Program planning, making of games and equipment, accident prevention, basic motor skills, practice in games, stunts, rhythms and recreational activities will be included. Offered by extension only.

PEPR 270 Recreational Leadership
2 hrs. Winter only
A course studying the skills, knowledge, and techniques necessary to conduct social recreational programs for all ages. Creative and effective leadership stressed through observations, participation and the leading of activities. Prerequisite: PEPR 170 or permission of instructor.

PEPR 276 Outdoor Education
2 hrs. Winter only
†A course in the philosophy, methods, and materials of outdoor education emphasizing outdoor education activities for children and youth.

PEPR 295 Biomechanical Analysis of Activity
2 hrs. Fall, Winter
The analysis and measurement of human performance. Includes the examination and application of biomechanical principles to
physical education and sport activities. Prerequisite: BMED 211.

PEPR 300 Seminar Series 1-4 hrs. Fall, W, Winter
Designed to provide an opportunity for qualified students to examine and discuss a subject area in field of common interest. Enrollment by written permission of the instructor.

PEPR 305 Golf : Archery : Bowling 1 hr. Fall

PEPR 310 Track and Field 1 hr. Fall

PEPR 314 Elementary School Health and Safety Education 3 hrs. Winter only
This course is directed toward prospective elementary school teachers. It is designed to provide knowledge and experiences related to the total school health program. Prerequisite: 100, ED 371

PEPR 315 Secondary School Health and Safety Education 3 hrs. Fall only
This course is directed toward prospective secondary school teachers. Through the media of knowledge and experiences the total school health program is brought into focus as an integral part of the secondary school program. Prerequisite: 100, ED 301

PEPR 320 Physical Education for the Exceptional Child 3 hrs. Fall, Winter
The activities and games used in corrective, adaptive, and developmental programs for children with mental or physical handicaps and those with learning disabilities. An emphasis will also be placed on activities for children with perceptual handicaps and on activities to augment academic learning.

PEPR 321 Therapeutic Needs and Programs for the Exceptional Child 3 hrs. Fall
The evaluation, interpretation and planning of therapeutic and rehabilitation programs for the handicapped child. Emphasis is placed on programs for the orthopedically handicapped, the cerebral palsey, the blind, and such conditions as multiple sclerosis, muscular dystrophy, rheumatic fever and cardiac disorders. Prerequisites: BMED 211, PEPR 320, SPED 530.

PEPR 325 Swimming for the Exceptional Child 3 hrs. Fall
The study of physical and learning disabilities, values of swimming, and teaching techniques for these disabilities. Includes experience teaching exceptional children. Prerequisite: PEGN 350 WSI.

PEPR 337 Coaching and Advanced Technique 2 hrs. Fall, Winter
Coaching and advanced skills, selection of a team, preparation, officiating and conducting competitive events. Prerequisites: Must have had first level course(s) or proficiency.
Fall: Tennis, Soccer
Odd Years: Baseball, Softball
Even Years: Football
Winter: Basketball, Track/Field, Volleyball
Odd Years: Wrestling
Even Years: Gymnastics

PEPR 340 Physical Education for the Elementary Classroom Teacher 2 hrs. Fall, Winter, Spring
This course is structured for the future elementary classroom teacher and/or special education teacher. It provides experience in the participation and teaching of appropriate elementary physical education movement activities in the areas of basic skills, simple and tumbling, simple games and sports, rhythms and classroom related activities. This course is not for physical education majors or minors

PEPR 345 Nature and Bases of Motor Skills 2 hrs. Fall, Winter
Describes and analyzes the characteristic motor development patterns and evaluates the potential of children’s motor performance. Emphasis will be placed on the introduction and explanation of the psychomotor domain. Prerequisite: BMED 240 or permission of instructor.

PEPR 358 Administration and Organization of Intramural Sports 2 hrs. Fall only
The problems, policies, finances, eligibility, awards, officiating, publicity, and procedures related to the intramural program.

PEPR 370 Recreation Practicum 3 hrs. Fall, Winter, Spring
The practical field experiences in recreation for the normal and handicapped. Enrollment by permission of the instructor and acceptance of practicum proposal. Prerequisite: PEPR 372.

PEPR 372 Recreational Programming 3 hrs. Winter only
A study of the goals development and evaluation of programs in recreational settings. Practical experience in ascertaining needs and scheduling activities to meet goals will be emphasized. Prerequisite: PEPR 270.

PEPR 375 Organization and Administration of Recreation 3 hrs. Fall odd years
The study or methods of organization in recreation programs and agencies at local, state and federal levels with emphasis on administrative procedures concerning personnel, facilities-areas, legalities, financing, and supervision. Prerequisite: PEPR 370.

PEPR 380 Foundations of Sports Injuries 2 hrs. Fall, Winter
Basic first aid and emergency concepts, sports injury prevention, recognition, initial and follow-up care and studied. Principles/techniques are presented in a lecture and laboratory instructional format. Prerequisite: BMED 211, PEPR 181.

PEPR 390 Physiology of Motor Activity 2 hrs. Fall, Winter
The effects on systems of the body under stress of motor activity—cardiopulmonary function, metabolism, neuromuscular systems. Practical application of principles to strenuous physical exercise. Prerequisite: BMED 240.

PEPR 392 Measurement and Evaluation in Physical Education 2 hrs. Fall, Winter
Covers evaluation techniques in terms of understanding, interpretation, and application with emphasis on administration, selection and use of tests, interpretation of results through statistical procedures, analysis of tests available in the field and techniques for developing knowledge and skills tests.

PEPR 400 Field Experience/Internship in HPER 2-8 hrs. Fall, Winter, Spring, Summer
This course will provide indepth field experience or internships for undergraduate majors or minors in recreation, health, coaching or exceptional child. Students will be assigned to classes or positions according to their selected area of emphasis. Enrollment by permission of curriculum advisers for major or minor. Prerequisite varies with area of emphasis and requires departmental approval.

PEPR 411 Health Education: Public Health II 3 hrs. Winter (odd)
This course will analyze the relationships of public health programs, preventive medicine, and health education, techniques of group motivation and dynamics; the role of the health educator in group processes and community organization, indigenous health problems, their pathology, treatment, and control, principles of epidemiology; and public health aspects of chronic and acute disease; and special health care programs. Prerequisite: PEPR 211.

PEPR 420 Testing and Developmental Programs for the Exceptional Child 3 hrs. Winter
A study of the developmental programs of various leaders in the field and the adaptation of these theories to practical situations in the local community. The various methods of assessing the exceptional child will be discussed and practiced. Students will be involved with testing children, establishing programs for children and assessing the results of the program. Prerequisites: BMED 211, PEPR 320, SPED 430, 588.

PEPR 444 Administration and Development of Instructional Systems in Physical Education 2 hrs.
This course is designed to provide information and experience which will enable the learner to develop the skills necessary to plan and construct a comprehensive physical education curriculum based on a developmental model. Prerequisites: 100 series, PEPR 295, 345, 390, 392. Students should enroll in ED 300/301 during the same semester.

PEPR 445 Teaching Skills and Strategies 2 hrs.
This course is designed to provide information and experiences which will enable the student to implement effective physical education curricula based on a developmental model. Prerequisite: PEPR 444.

PEPR 450 Cultural Bases of Physical Education 2 hrs. Winter
The application of history, principles, sociology and philosophy of HPER to the current movements and trends in the profession. Prerequisite: PEPR 150.

PEPR 470 Recreational Facilities and Areas 3 hrs. Fall (odd)
The study of the design, use, and maintenance of recreational areas in relation to community needs, program objectives and physical surroundings.

PEPR 490 Adult Fitness and Exercise Prescription 2 hrs. Winter
The initiation, formulation, administration, and supervision of adult fitness programs will be discussed. Topics include exercise protocol, assessment tools, exercise prescription, recruitment, client identification, etc.

Professional Courses Open To Underclass and Gradate Students (PEGR).

PEGR 500 Studies in Health, Physical Education and Recreation 1-2 hrs.
In depth study of selected topics in HPER. Format can include clinics, workshops, seminars, travel and/or mini-courses, and provide opportunity to acquire skills and teaching techniques. State, national, and international authorities or consultants may be involved. Topics include: Lifetime Sports, etc.
Outdoor Education, Physical Education, Relaxation, Physical Fitness, Business Procedures

PEGR 510 Modern Health for Teachers and Health Professionals
3 hrs.
This course is designed for teachers and health professionals who have need of current knowledge in health science. The course surveys topics such as mental health, nutrition, substance abuse, physical fitness, chronic diseases, and stress management. Consideration is given to psychological, sociological and cultural factors that influence health improvement. Attention is given to special factors of health and illness of children and adolescents. This course is not open to health education majors and minors who have had 100.

PEGR 512 Principles, Practices, and Methods in Health Education
3 hrs.
This course surveys the history, philosophy, and methods of health education. The philosophical basis and practices of health education are discussed in terms of needs and capabilities of people and factors that influence their development. Emphasis is placed upon the promotion of health and prevention of disease, disability, and premature death. Curriculum development and teaching methods focus on content and strategies considered most effective in teaching disease prevention and health promotion. The course is not open to health education majors or minors who have had 314, or 315. Prerequisite: 510 or equivalent.

PEGR 514 Methods and Materials in Health Education
2 hrs.
Lectures and demonstrations with emphasis on the effective health supervision of school children, the principles and practices of health teaching in the various grades, and the interrelation of this teaching with that of other subjects in this curriculum. Prerequisite: PEPR 314/315 or consent of department.

PEGR 516 Issues in Health Education
1-3 hrs.
The focus will be placed on current health issues. May be designed to deal with one issue or several.

Drugs and Narcotics
Bio Feedback
Venereal Diseases
Stress Release
Cardiovascular Health
Parenting
Patient Education
Health Careers
Consumer Health

PEGR 520 Physical Activities for Exceptional Children
3 hrs.
Physical and recreational activities and games used in corrective, adaptive and general physical education programs for special education children.

PEGR 521 Therapeutic Trends for Exceptional Children
3 hrs.
A study of past, present and future trends in habilitation and rehabilitation programs for handicapped people.

PEGR 530 Practicum in Teaching and Coaching
1-2 hrs.
Demonstrations, participation and evaluation on teaching and coaching fundamentals in selected sports. A graduate student may apply a maximum of four credits from 530 courses toward the Master's Degree Program. Sports include: Archery, Badminton, Baseball, Basketball, Football, Golf, Field Hockey, Gymnastics, Ice Hockey, Judo, Karate, Soccer, Swimming, Track and Field, Volleyball, Wrestling, Yoga.

PEGR 535 Principles and Problems of Coaching
2 hrs.
Various dimensions and forces affecting coaching are identified and explored including educational philosophies of sport and coaching, characteristics of coaches and athletes, vital relationships, motivation, emotions, behavior, discipline, selecting and evaluation personnel, scientific principles and systems of training, the scientific principles and systems of training, the organization and planning of practices and total programs.

PEGR 540 Movement Education
2 hrs.
A concept in physical education which deals with the way children learn the basic principles of how their bodies move.

PEGR 560 Administration of Physical Education
2 hrs.
For administrative officers, as well as for teachers and directors of physical education includes a study of representative programs for physical education and discussion of standards for evaluating such programs.

PEGR 562 Administration of Athletics
2 hrs.
Discusses administrative procedures and problems connected with athletic programs, including scheduling, facilities, personnel problems, school law and liability, eligibility, finance, safety, and the conduct of athletic events.

PEGR 572 Recreation for the Aging
2 hrs. Fall
An overview of aging especially as it relates to leisure pursuits and organized recreation. Includes observation, participation and leadership of recreational activities, evaluation, emotions, behavior, discipline, selecting and evaluation personnel, scientific principles and systems of training, the organization and planning of practices and total programs.

PEGR 580 Studies in Athletic Training
1-2 hrs.
Listed with various topics. A lecture/demonstration course concerned with the prevention of injuries, diagnosis, and treatment of sports type injuries. Prerequisites: BMED 211, 240, PEPR 380.

PEGR 590 Exercise Physiology
2 hrs.
The mechanics of muscular contraction, nerve impulse conduction, oxygen exchange, and circulatory efficiency are discussed. Basic principles concerning the adaptation of the human body to stress in the form of strenuous physical exercise are applied to the training and conditioning of competitive athletics. Prerequisites: BMED 211, 240.

PEGR 591 Evaluation in Health, Physical Education, and Recreation
2 hrs.
Acquaints students with the theory, selection, construction, administration, interpretation of appropriate tests in the field. Class activity will include study and discussion of selected tests, application, scoring, interpretation, and construction of tests.

PEGR 595 Analysis of Movement in Sport
2 hrs.
The study of movement of muscles and the application of kinesiology to physical activity. Prerequisite: BMED 211.

PEGR 598 Readings in Health, Physical Education and Recreation
1-2 hrs. All Semesters
Advanced students with good academic records may elect to pursue independent study course work in a program of readings in areas of special interest. Prerequisite: Approval of the Chairperson of the Department of Physical Education.

General Physical Education
All undergraduate students must participate in general activity physical education beginning with the first semester or session of residence, until a minimum of 2 hours is completed. Classes meet two hours weekly for one semester of credit. Exceptions:

1. Any student 30 years of age or older is not required to take physical education. (122 hours required for graduation.)
2. A student in the marching band may count band participation towards two semesters of general physical education.
3. A veteran (defined as one having served one year's continuous active duty) will be exempt from the general physical education requirement.
4. A transfer student must enroll in general physical education during the first semester or session of residence at Western and thereafter each semester or session until the 2 hour requirement is completed.
5. Only a student with a severe physical disability will receive a medical waiver from the requirement. A student with a temporary or permanent physical disability may receive counseling concerning selection of courses suited to his/her limitation. A physical examination by a Health Center physician is the first step in the counseling procedure. The procedure does not have to be followed if the student feels he/she can select two courses without medical advice. The physical examination must be given during the first semester of residence if a student wishes to follow the Medical Recommendation procedure. A copy of the procedure may be obtained from the Health Center, Office #1 Oakland Gymnasium or the Main Office, Gary Physical Education Center.
6. A varsity team member may receive up to 2 credits in general physical education by enrolling in the appropriate course in the PEGN 400 series (List follows 300 level courses.)
7. Only one dance course may be used to fulfill the general physical education graduation requirement.
8. ROTC Cadets are to enroll in PEGN 132 Military Fitness I to fulfill the general physical education requirement. Permission required from ROTC.

Restrictions:
1. Up to 8 hours of general physical education will be accepted as credits toward graduation.
2. A freshman or sophomore student may not enroll in more than 1 hour of general physical education in any one semester.
3. A course cannot be repeated for credit without written authorization from the Coordinator of the General Physical Education Program to the Academic Records Office. PEGN 175 Special Activities may be repeated under different course titles, i.e. 175 Military Fitness, 175 Ice Dance, etc.
4. One of the following DANCE courses may be used:

- PEGN 100-level courses are open to all students and emphasize the beginning skills in the activity given. The student with some experience in activities marked "Beginners Only" should enroll in 200/300 level courses.

- PEGN 200-level courses are open to all students who have completed a 100-level course in the activity or the equivalent. (Prerequisite: 249 or Red Cross Intermediate Card)

- PEGN 300-level courses are open to all students desiring additional experience in an activity and who have completed the 200-level course or permission of instructor to enroll.

- PEGN 400 — A varsity athlete may receive PEGN credit by enrollment and completion of these courses. (1 credit hour each.) Enrollment by permission of instructor.

General Physical Education (PEGN)

PEGN 100 Adapted P.E. Med. Rec 1 hr.

PEGN *101 Archery 1 hr.

PEGN 102 Badminton 1 hr.

PEGN 103 Aerobic Exercise 1 hr.

Course consists of a broad spectrum of fitness exercises to music.

PEGN 104 Basketball 1 hr.

PEGN 105 Bowling 1 hr.

PEGN 106 Canoe Camping 1 hr.

The course combines the fundamentals of camping with canoeing. Terminates with a weekend camping trip by canoe.

PEGN 107 Canoeing 1 hr.

PEGN 108 Backpacking 1 hr.

PEGN 109 Cycling 1 hr.

PEGN 110 Cross Country Ski Camp 1 hr.

This course combines Cross Country skiing with outdoor living experiences.

PEGN *120 Fencing 1 hr.

PEGN 121 Field Hockey 1 hr.

PEGN *122 Golf I 1 hr.

PEGN 123 Gymnastics—Apparatus 1 hr.

PEGN 124 Gymnastics—Tumbling 1 hr.

PEGN 126 Jogging 1 hr.

PEGN *129 Ice Hockey 1 hr.

PEGN 130 Judo 1 hr.

PEGN *131 Karate 2 hrs.

PEGN 132 Military Fitness 1 hr.

PEGN 135 Outdoor Challenge 1 hr.

This course, taught in cooperation with Pretty Lake Camp, teaches teamwork, trust of others, and responsibility through outdoor physical activities. Students work together to solve problems of survival in the outdoors.

PEGN 136 Physical Fitness 1 hr.

PEGN *137 Racketball 1 hr.

PEGN 138 Rock Climbing 1 hr.

This course, taught in cooperation with Pretty Lake Camp, gives the student fundamentals of rock climbing and includes a weekend trip to cap off the experience.

PEGN 139 Relaxation 1 hr.

PEGN 140 Riffery 1 hr.

PEGN *141 Sailing 1 hr.

PEGN *142 Skating—Ice 1 hr.

PEGN 143 Skiing—Cross Country 1 hr.

PEGN *144 Skiing—Alpine 1 hr.

PEGN 146 Soccer 1 hr.

PEGN 147 Softball 1 hr.

PEGN *149 Swimming—Unable to swim in deep water 1 hr.

PEGN *160 Tennis I 1 hr.

PEGN 161 Track and Field 1 hr.

PEGN 163 Volleyball 1 hr.

PEGN 164 Wrestling 1 hr.

PEGN 165 Yoga 1 hr.

PEGN 166 Weight Training 1 hr.

Course consists of individualized weight training programs.

PEGN 167 Winter Camping 1 hr.

Course includes winter survival as well as winter camping for the hardy outdoor person.

PEGN 175 Special Activities, e.g., Wind Surfing, Kayaking, Military Sports 1 hr.

PEGN 180 Physical Education Learning Lab Activities

PEGN 200 Physical Education Learning Lab Activities 1 hr.

Guided individual instruction in a variety of physical education activities. Resources such as films, books and workshops are available to aid the student learn in a manner and rate suitable to the individual skill and knowledge. Competency testing will be used to determine achievement and place individuals at beginning, intermediate or advanced levels. Course is repeatable for up to 8 hours credit (University limit) under 200 number, with different course titles. Prerequisite: GPA of 3.0 overall.

PEGN 204 Intermediate Basketball 1 hr.

PEGN 205 Bowling—Intermediate 1 hr.

PEGN 208 Intermediate Backpacking 1 hr.

PEGN 220 Fencing—Intermediate 1 hr.

PEGN 222 Golf II 1 hr.

PEGN 229 Ice Hockey 1 hr.

PEGN 231 Karate 1 hr.

PEGN 236 Intermediate Physical Fitness 1 hr.

This course is for the student desiring a higher level of fitness, training for marathons, triathlons, and/or weight competition.

PEGN 237 Racketball—Intermediate 1 hr.

PEGN 241 Sailing—Intermediate 1 hr.

PEGN 242 Skating—Ice-Figure 1 hr.

PEGN 244 Intermediate Alpine Skiing 1 hr.

PEGN 246 Intermediate Soccer 1 hr.

PEGN 249 Swimming—Intermediate 1 hr.

PEGN 250 Advanced Swimming 1 hr.

Students will build on skills learned in Intermediate Swimming and learn to develop these skills in order to enter the Life Saving course. Prerequisite: PEGN 249

PEGN **251 Swimming—Lifesaving 2 hrs.

PEGN 252 Swim Conditioning 1 hr.

PEGN **253 Swimming-Speed 1 hr.

PEGN **254 Swimming—Springboard—Diving 1 hr.

PEGN 260 Tennis II 1 hr.

PEGN 263 Volleyball Intermediate 1 hr.


PEGN 360 Tennis—Intermediate 1 hr.
Special Education Courses (SPED)

SPED 474 Directed Teaching in Special Education
4-10 hrs.
See Description under Education and Professional Development, the College of Education.

SPED 512 In-Service Professional Development
1-4 hrs.
This course is designed for teachers, counselors, psychologists, social workers and others interested in studying selected aspects of special education at appropriate locations, such as state hospitals and special schools. A variety of instructional experiences are provided, including conferences. Credit not applicable toward a graduate degree in Special Education.

SPED 527 Exceptional Learners in Regular Elementary Programs
3 hrs.
This course is designed for prospective elementary teachers. Emphasis is placed on the types of exceptional learners found in elementary programs. Required adaptations and modifications, and available resources and services for these learners are stressed. Prerequisites: Consent of department. Not acceptable for Special Education majors or for an Endorsement Program in Special Education.

SPED 529 Exceptional Learners in Regular Secondary Programs
3 hrs.
This course is designed for prospective secondary teachers. Emphasis is placed on the types of exceptional learners found in secondary programs. Required adaptations and modifications, and available resources and services for these learners are stressed. Prerequisites: Consent of department. Not open for Secondary Education majors or for an Endorsement Program in Special Education.

SPED 530 Education of Exceptional Persons
3 hrs.
This course deals primarily with the problems of individuals who are atypical in terms of their sensory, physical, mental, emotional, and learning characteristics. Emphasis is placed on developing an understanding of the psychological, sociological, philosophical, legal, and educational aspects of each type of exceptionality, including education in the Least Restrictive Environment. Prerequisite: Consent of department.

SPED 531 Practicum in Special Education
2 hrs.
Students enrolled in this course are assigned to special classes in public or residential schools serving exceptional children and youth. Observation and participation are combined with weekly seminars. Undergraduate students mapping in special education are required to enroll in SPED 530 and 531 concurrently. Admission to this offering will be determined by the number of placement opportunities available. Graded on a credit/no credit basis. Prerequisites: ED 250 and consent of department.

SPED 532 Nature and Needs of the Mentally Retarded
4 hrs.
A course especially intended for teachers of mentally retarded individuals. Also recommended for school counselors, psychologists, social workers and other auxiliary personnel. Course objectives include an understanding of the causes, diagnoses, classification and interpretation of mental deficits. Prerequisites: SPED 530 and consent of department.

SPED 533 Diagnostic and Prescriptive Techniques in Special Education
4 hrs.
A thorough study of educational diagnostic instruments and techniques will precede the student's utilization of these measures in evaluating exceptional persons in his/her curricular area. Diagnostic findings are translated into individualized educational prescriptions. For majors enrolled in Special Education curricula and to be taken concurrently with SPED Education 534. Prerequisite: Consent of department.

SPED 534 Curricular and Instructional Provisions for Exceptional Children and Youth
4 hrs.
Critical issues in determining curricular expectations for atypical individuals will be analyzed. Essentials in ascertaining appropriate behavior for these pupils will be combined with identifying and evaluating a variety of educational methods and materials. Students enrolled in this course will be expected to delineate behavioral goals for those evaluated in SPED 533 and translate diagnostic data into meaningful education programs. Prerequisites: Concurrent enrollment in SPED 533 and consent of department.

SPED 535 Adapting Teaching Strategies for Exceptional Persons
3 hrs.
This course consists of a combination of classroom and field based experiences designed to integrate the philosophy and techniques of inquiry teaching into the Clinical Teaching Model. Students are provided content and resources in science and mathematics for use with handicapped learners.

SPED 542 Introduction to the Severely Impaired
3 hrs.
This course is designed to provide basic knowledge about the severely impaired.
including mental, physical, emotional, and sensory impairments. The problem of severe impairment are examined in light of biomedical, legal, sociological, and educational perspectives. Special emphasis within the perspective of education includes information regarding management, assessment, instruction, and organization. Prerequisite: Consent of department.

SPED 543 Orthopedic Conditions—Therapeutic and Educational Implications 4 hrs.
This course is intended for teachers of physically handicapped and otherwise health impaired individuals. Course objectives include a knowledge of the medical conditions leading to orthopedic impairments and an understanding of the psycho-social implications of such impairments. Emphasis is also given to the educational and therapeutic needs of physically impaired children and youth. Prerequisites: SPED 530 and consent of the department.

SPED 544 Educating the Severely Impaired 3 hrs.
This course develops specific skills in the assessment, prescription, implementation, and evaluation of educational programs for the severely impaired. Course content focuses upon the areas of mobility, communication, sensorimotor development, self-help skills, cognition, and adaptive behavior. Prerequisite: Consent of department.

SPED 560 Educational Provisions for Handicapped Adolescents and Young Adults 3 hrs.
An introductory course to the special education of adolescents and young adults. It will provide the student with knowledge and awareness about the components of secondary and post-school special education programs. Focus is placed on the physical, intellectual, emotional, and social development of adolescents and young adults. Academic, social, career, and vocational needs and programs of handicapped adolescents and adults are discussed. Prerequisite: Consent of department.

SPED 588 Behavior Disorders in School-Aged Learners 3 hrs.
This course deals with the psychoeducational aspects of disturbed or disturbing behavior as related to the school program. Issues and problems associated with normal development, concepts of diagnosis, and the incidence of maladjustment are reviewed. The characteristics, causes, diagnosis, and treatment of the effects of such conditions as psychoneurosis, mental subnormality, juvenile delinquency, psychosis, learning disability, and social dissonance in children are examined in terms of their educational implications. Therapeutic, environmental, and classroom interventions are presented and strategies for prevention analyzed. Prerequisites: SPED 530 and consent of department.

SPED 589 Programs and Intervention Strategies for the Socially and Emotionally Maladjusted 4 hrs.
This course is open to majors in Special Education curricula emphasizes techniques and procedures applicable to socially-emotionally maladjusted individuals in various special or public school settings. Current theories, contemporary programs and trends in behavioral change and management are reviewed and discussed. Prerequisites: SPED 588 and consent of department.

SPED 591 Braille and Other Communication Methods 2 hrs.
Provides students with a basic knowledge of the braille literary code—reading and writing, and an overview of other communication methods available to the visually impaired. Prerequisite: Consent of department.

SPED 593 Methods and Techniques of Teaching Braille and Other Areas of Communication 3 hrs.
Explores various methods and techniques of teaching essential communication skills—braille, typing, social communication, handwriting, abacus computation, the use of electronic devices and other media to the visually impaired. Opportunity for supervised practical application of methods are afforded to the student. Prerequisite: Consent of department.

SPED 598 Readings in Special Education 1-4 hrs.
Designed for advanced students interested in independent study. Topics chosen must be approved by the instructor and head of the department. May be repeated for credit. Prerequisite: Consent of department.
The mission of the College of Engineering and Applied Sciences supports the three fundamental goals of the University mission of education, research, and service. The College recognizes that its primary clientele are the people and industries of the State of Michigan. The education goals are to provide balanced undergraduate and graduate programs designed to prepare individuals for professional careers, and to inculcate in students the ability to continue to learn on their own. Each academic degree program is structured to achieve these goals and to encourage student growth through participation in a wide range of extracurricular opportunities.

The research goals are to generate knowledge and resource for basic technologies. Applied research is emphasized and is structured to assist industry in design and development. Modern laboratory and research facilities enhance the undergraduate educational experience.

The service goals are to apply the extensive human and physical resources of the College to the needs of the community, state, and nation, and to assist in economic development. It also includes a commitment to serve the various professions represented by the disciplines of the College.

The College of Engineering and Applied Sciences offers undergraduate programs in several curricula and majors that prepare graduates for productive careers in a wide variety of fields. Students should refer to the programs listed throughout the College section of this Bulletin for specific information relative to the academic program of interest.

The College also offers graduate programs leading to Master’s degrees in Home Economics, Teaching of Vocational Education, Manufacturing Administration, Operations Research, Electrical Engineering, Mechanical Engineering, and Paper Science and Engineering. Students interested in a graduate program should see the WMU Graduate Bulletin for more information.

Institutes

APPLIED MECHANICS INSTITUTE
Meshulam Groper, Director
Established with monies from the State of Michigan, the Applied Mechanics Institute is a new facility for academic and industrial collaboration in applied mechanics. The Institute is a resource for basic and applied research in solid mechanics, machines and structures, fluid mechanics, liquids and gases, and materials behavior. Available resources include a computer aided engineering facility: machines for testing parts, structures, and materials; environmental chambers, and metallurgical evaluation and analysis facilities. Services are available under contract.

COMPUTER AIDED ENGINEERING CENTER
Gregory B. Lozeau, Director
Serving both WMU faculty and students as well as regional business and industry is the Computer Aided Engineering Center. The Center employs state-of-the-art CAD/CAM (Computer Aided Design/Computer Aided Manufacturing) equipment that enhances technical educational programs and provides training for regional industrial personnel. The facility houses a VAX 11/785 supermini computer equipped with a floating point processor and has 1.1 gigabytes of memory. The VAX is networked with other WMU computer systems and with computers throughout the State.

ENERGY LEARNING CENTER
Richard C. Schubert, Director
The Energy Learning Center is an educational laboratory for energy-related courses in the College of Engineering and Applied Sciences and sponsors information and demonstration projects for the general public. Its activities focus on alternative energy forms with a particular emphasis on solar energy. The Center works with commercial and residential clients designing and testing energy systems, and sponsors community education seminars for teachers, heating contractors, builders, lending institutions, and other interested parties.

INSTITUTE OF TECHNOLOGICAL STUDIES
Robert E. Boughner, Director
The Institute of Technological Studies has been established to permit the College of Engineering and Applied Sciences to better serve commerce and industry in Southwestern Michigan. Services include providing engineering consultation for specific problems; programming and delivery of short courses, symposia, and workshops; as well as the design and conducting of experimental tests. Experimental facilities include reciprocating and jet engine dynamometers; paper, printing, and recycled fibre pilot plants; environmental test chamber; wind tunnel; solar energy test center; anechoic chamber; Rf screened chambers; ergonomics laboratory; and an advanced manufacturing systems laboratory.

These facilities are all supported by a computer-aided engineering center complete with a VAX 11/785 central processor, 3-D graphics design terminals, and attendant peripherals.

MATERIALS INSTITUTE FOR INNOVATION AND ENTERPRISE
Jay Easwaran, Director
In response to the growing use of plastics, ceramics, and composite materials in every product category, WMU established the Materials Institute for Innovation and Enterprise to provide a resource for industries interested in exploiting advanced materials technologies emerging from the laboratory stage. The
Institute offers testing services, design and development, training, research, and prototype parts manufacturing. Testing and research services are available under contract.

PAPER AND PRINTING PILOT PLANTS
Carlo F. Shuster, Director
The Department of Paper and Printing Science and Engineering offers laboratory and classroom facilities to support educational and research opportunities in papermaking and printing. Industrial seminars are offered during the summer months and training is available by special arrangement.

Extensive testing and research facilities are available for industrial use through the pilot plant. Specific equipment available includes a fourdrinier paper machine, an aqueous coater, a supercalender, a non-aqueous coater, a recycling plant, cylinder former and continuous digester. The papermaking process can be studied at all stages beginning with the tree or waste paper through the finished product. Testing of paper and paper products and process research and development are available under contract.

The Printing Center houses cut sheet and small web printing operations as well as major web-fed flexographic, rotogravure, and offset presses. The Center serves as a resource for the papermaking, printing, packaging, and publishing industries.

Academic Advising
A central advising office is maintained for the convenience of College of Engineering and Applied Sciences students. Because prerequisites are strictly enforced and it is essential to follow the program plans that appear in the curricula descriptions, students must contact their academic adviser in the first semester of enrollment at Western Michigan University. Failure to meet with the adviser on a regular basis may result in difficulty receiving requested class schedules and/or delayed graduation.

Advisers are available to assist in program planning, to recommend electives appropriate to the student's educational objectives, to discuss employment opportunities, and to help with general academic problems. Transfer credit and all course substitutions must be recommended by the adviser and approved by the appropriate department curriculum committee.

Prerequisites
Prerequisites are designed to both increase the probabilities of successful completion of the course and to insure the proper conduct of the course. Therefore, prerequisites are strictly enforced in all departmental courses. Exceptions must be accepted by the department no later than the end of the "add" period of the semester or session.

Enrollment
Enrollment will not be honored in any course when other students are requesting that course if the student does not attend the first class meeting (lecture or lab) unless prior arrangements have been made with the instructor. Students are responsible for processing drop slips with the Registration Office before the end of the drop/add period if fees are to be refunded.

Credit Hour Definition for the College of Engineering and Applied Sciences
An undergraduate credit hour is a unit of academic measurement nominally equivalent to 3 hours of work per week on the part of the student. Thus, for a course in which 3 credits are earned, a student can expect to work 9 hours per week (4 credits, 12 hours per week, etc.) in various combinations of lecture hours (50 minutes), laboratory hours, and home study.

Standard of Academic Honesty
All courses offered by the College will be conducted in concert with the high standards of the University as stated in the Student Guide to Academic Honesty. Each student is expected to support these standards by neither giving nor accepting assistance on tests, and by submitting only his or her own work for credit. Violations of the standard of academic honesty will result in appropriate disciplinary action. Such disciplinary action may include a failing grade in the course, reassignment of work, dismissal from the university, probation, or dismissal from the University.

Computer Use in College Programs
Most degree programs offered in the College of Engineering and Applied Sciences require extensive use of computers. This is particularly true in engineering and engineering related disciplines. Although Western Michigan University and the College provide adequate computer facilities for student use, many students find it advantageous to have their own computer (students are not required to purchase one). The University maintains special marketing arrangements with several major computer manufacturers and is therefore able to offer substantial discounts to students and faculty for the purchase of microcomputers and software. Interested students may obtain current information about the purchase of computer equipment from the College of Engineering and Applied Sciences Advising Office (Room 203B, Kohnman Hall) or their academic adviser.

Professional and Honorary Societies
The College and each department have student branches of professional and honorary societies whose purpose is to provide opportunities for students to become more directly involved with specific activities in their areas of interest. Students interested in enrolling their understanding of the professional field in which they intend to work are encouraged to participate in one of these societies. Students may obtain further information by contacting their academic adviser or department chair.

Scholarships
Many scholarships are available to both freshmen and upperclass students in the College of Engineering and Applied Sciences. The majority of these scholarships available specifically for students in the College are administered by the individual departments of the College. A listing may be found in the "Financial Aid and Scholarships" section of this catalog.

Engineering Programs
Engineering Students
Three common characteristics are prevalent among students who are attracted to engineering. All show an interest in problem-solving—not only to know how, but why, something works. Second, engineering students possess a degree of technical aptitude—the ability to think in mathematical and scientific terms—which, third, is coupled with a strong interest in mathematics and the sciences.

A majority of engineering students are involved in one or more of the several professional organizations that have student chapters on campus. Such involvement enhances the "textbook learning" by providing students with opportunities to interact with other students having similar interests, to gain a closer look at the profession they have chosen to enter, and to plan and direct programs and projects.

Engineering Graduates
Undergraduate engineering programs offered by the College of Engineering and Applied Sciences prepare graduates for immediately productive careers and for continued professional practice in industry. A survey of graduates indicated WMU engineering alumni held positions of president, vice president, owner, plant manager, chief engineer, senior design engineer, sales manager, and lawyer. Students interested in advanced studies in engineering may pursue a Master of Science degree in Electrical Engineering, Mechanical Engineering, Operations Research, Paper Science and Engineering, or Manufacturing Administration at WMU.

Graduation Requirements
Bachelor of Science in Engineering
The baccalaureate programs in engineering are designed to be completed in four consecutive years. A student must meet all the requirements listed in any one of the catalogs in effect during the four year period immediately prior to the date of graduation.

Professional Registration
Graduates of engineering programs are encouraged to seek professional registration. Eligibility requirements in Michigan are established by the State Board of Professional Engineers. In general, only graduates of EAC/ABET accredited engineering programs are eligible to be licensed in Michigan. Students interested in professional registration should consult with their department adviser.

Admission to Engineering Programs
ADMISSION TO PRE-ENGINEERING ADMISSION
All students admitted to the University and planning to pursue one of the following curricula will be enrolled in the Pre-engineering (PE) curriculum.
Aircraft Engineering (ACE)  
Automotive Engineering (AME)  
Computer Systems Engineering (CSE)  
Electrical Engineering (EE)  
Industrial Engineering (IEN)  
Mechanical Engineering (ME)  
Paper Engineering (PAE)  
General Engineering (GE, not available on campus)

University admission standards are used for enrollment in PE. Students admitted for PE should have appropriate academic preparation.

Academic Advising
All students enrolled in the PE curriculum will receive academic advising by the College of Engineering and Applied Sciences.

Enrollment Restrictions
Pre-engineering (PE) students will not be permitted to enroll in any course offered by the College of Engineering and Applied Sciences at the 300 level or above that is required in any of the engineering curricula.

PRE-ENGINEERING CURRICULUM REQUIREMENTS
Displayed below are the courses required in the Pre-engineering curriculum for all students planning to pursue one of the engineering curricula listed above. See the respective department catalog entry for full degree requirements.

Common Core Courses Required for All Curricula
- MATH 122, 123, 272: 12 cr. hr.
- CHEM 101 or 102: 4 cr. hr.
- PHYS 210 and 211: 8 cr. hr.
- General Education AREA I, II, OR IV
- General Education AREA I OR II

Additional Courses Required by Curricula
- Aircraft Engineering: CS 106, EE 210, IE 102, ME 256, and PHYS 212 OR PHYS 342 OR PHYS 352 OR CHEM 120. See the Department of Engineering Technology for complete Aircraft Engineering curriculum requirements.
- Automotive Engineering: CS 106, EE 210, IE 102, ME 256, and PHYS 212 OR PHYS 342 OR PHYS 352 OR CHEM 120. See the Department of Engineering Technology for complete Automotive Engineering curriculum requirements.
- Computer Systems Engineering: CS 111, EE 210, EE 250, IE 102, and PHYS 212. See the Department of Electrical Engineering for complete Computer Systems Engineering curriculum requirements.
- Electrical Engineering: CS 306, EE 210, IE 102, ME 256, and PHYS 212. See the Department of Electrical Engineering for complete Electrical Engineering curriculum requirements.
- Industrial Engineering: EE 210, IE 102, ME 253, and PHYS 212 OR CHEM 120. See the Department of Industrial Engineering for complete Industrial Engineering curriculum requirements.
- Mechanical Engineering: CS 106, IE 102 OR PHYS 212 OR CHEM 120. See the Department of Mechanical Engineering for complete Mechanical Engineering curriculum requirements.
- Paper Engineering: CHEM 120, CS 106, IE 102, ME 253, and PAPP 204. See the Department of Paper and Printing Science and Engineering for complete Paper Engineering curriculum requirements.

General Engineering (not available on campus) CS 306, IE 102 OR PHYS 342 OR ENGL 105, ME 232 OR other required engineering science courses, ME 256, and PHYS 212 OR CHEM 120. See “General Engineering” later in this section for complete curriculum requirements.

ADMISSION TO AN ENGINEERING CURRICULUM
The student seeking a baccalaureate degree in Aircraft Engineering (ACE), Automotive Engineering (AME), Computer Systems Engineering (CSE), Electrical Engineering (EE), Industrial Engineering (IEN), Mechanical Engineering (ME), Paper Engineering (PAE), or General Engineering (GE, not available on campus) may apply for formal admission to one of these engineering curricula after successfully completing the pre-engineering curriculum requirements. Only students who have demonstrated the potential for success will be admitted to an engineering curriculum.

1. All students seeking admission to a degree-granting engineering curriculum must submit an application following procedures established by the College of Engineering and Applied Sciences. Upper level transfer students may complete an application prior to their first semester of enrollment. The College of Engineering and Applied Sciences processes admission applications to engineering curricula and makes admission decisions to these programs.

2. Admission to an engineering curriculum is dependent on successful completion of all required courses or approved alternatives in the PE curriculum with no grade less than “C.” Only students in good academic standing as defined by the University are eligible for consideration for admission to an engineering curriculum.

3. Students in an engineering curriculum will be advised by a faculty adviser from that curricular area.

4. There are no established enrollment limits for admission to engineering curricula.

PREREQUISITES
Students entering the General Engineering program should have completed approximately 60 semester hours at Grand Rapids Junior College or other area colleges. Course work should include:

- Calculus: Analytical Geometry and Calculus (12 hours), Linear Algebra and Differential Equations (4 hours)
- Chemistry: General Chemistry (4 hours)
- Physics: Calculus-based Physics (8 hours)
- Engineering: Statics (3 hours), Dynamics (3 hours), Introduction to Drawing (3 hours)
- Computer Science: Introduction to Data Processing (3 hours), Computer Programming (2 hours)
- Physical Education: 2 (hours)
- Humanities and Fine Arts. (3 hours)
- Social and Behavioral Sciences. (6 hours)
- College Writing. (3 hours)

NOTE: Determination of equivalency of transfer courses for WMU courses is subject to departmental and college interpretation when a student is accepted into the program.

The General Engineering program consists of 63 semester hours of course work. Courses are offered during the fall, winter, and spring semesters.

PROGRAM REQUIREMENTS
- Mathematics—4 hours
- Probability
- Mechanical Engineering—16 hours
- Material Science
- Thermodynamics
- Mechanical Engineering Lab
- Mechanics of Materials
- Control Systems
- Electrical Engineering—11 hours
- Circuit Analysis
- Machines and Electronic Circuits
- Digital Logic
- Industrial Engineering—19 hours
- Work Design
- Engineering Economy
- Report Preparation
- Statistical Quality Control
- Simulation Modeling and Analysis
- Operations Control in Industry
- Senior Design Project—6 hours
- Humanities and Fine Arts—3 hours of 300 level course or higher
- Non-Western World—4 hours of 300 level course or higher

Production Technology Bachelor of Science Degree

This manufacturing oriented program is designed for the mature individual with a two-year AAS degree in a technical field, who has industrial work experience, and who desires to pursue the Bachelor of Science degree. The degree requirement includes the 60-hour AAS degree, plus 60 hours of technically related work at Western Michigan University and two hours of physical education, for a program total of 122 hours.

There are two parts to this program.

1. Levels of Achievement
- Graphics: The ability to make and read working drawings, and an understanding of computer applications in drafting
- Materials and Processing: A knowledge of two process areas and the properties of standard materials.
• Science and Mathematics: A knowledge of the principles of mathematics, physics, and chemistry, and proficiency in a computer language.
• Electricity-Electronics: A knowledge of the principles of circuits, electronics, and electrical machinery as applied to production systems.
• Production Management: An understanding of the principles of manufacturing, supervision, economics, accounting, human relations, and communications.

All students will enroll in AAS 397 Orientation upon admission to determine the student's competence in each of the above areas based upon AAS course work and work experience. The work of the 60-hour block of course work to be taken at Western Michigan University, is indicated under Area Requirements, below.

2. Area Requirements
The student and the adviser will jointly determine the selection of courses designed to meet the professional (vocational) needs of the student. This selection is in part based upon the student’s prior experience in the areas of concentration shown below.
• Mechanical Materials Processing
• Electricity-Electronics
• Supervision-Management
• Other

The program of courses will be designed to develop in the student the facility for technical analysis appropriate to the Area Requirements, to include the elements and principles of mathematics, science, computer language, the applied science such as engineering mechanics, electricity/electronics, and advanced manufacturing theory.

AAS degree holders with no industrial experience may join the Production Technology program if they agree to enroll and successfully complete three semesters of cooperative education in order to gain this work experience. The cooperative education credits generated will not count as part of the 60-hour technical block.

General Programs
General programs in the College of Engineering and Applied Sciences are designed to meet specific student needs not satisfied by any other curricula in the college.

General College Curriculum (GCA)
Charon L. Sanford, Adviser

Non-engineering students who have not decided on a particular program in the College of Engineering and Applied Sciences may initially enroll in the General College Curriculum (GCA).

Written permission of the academic adviser is required to enroll in this curriculum beyond the second year.

Pre-Architecture
Charon L. Sanford, Adviser

The following is a typical pre-architecture program for students who wish to pursue an architecture degree at another college or university. Total hours are 60-64.

Recommended Semester Requirements
Math .............................................. 4
Computer Language ........................ 2
Physics ........................................... 6
Natural Science ................................. 4
Economics ...................................... 3
Social Science ................................. 7-8
English .......................................... 4
Humanities ..................................... 12
Drawing ......................................... 6
Electives ........................................ 8-15

Engineering and Applied Sciences College Courses (AAS)

AAS 397 Orientation
1 hr. Fall, Winter, Spring, Summer
Provides the Production Technology student with the opportunity to define and develop an educational program in order to achieve a vocational goal. Prerequisites: Production Technology major and permission of the Production Technology Program adviser, Room 2038, Kohrman Hall.

AAS 497 General University Studies
(Variable Credit) Fall, Winter, Spring, Summer
Evaluation of work experience and/or course work relevant to the area of specialty in the Technical Scientific area studies. Prerequisite: Permission of the Technical-Scientific Studies adviser, Room 2038, Kohrman Hall.

Related Academic Programs

ENGINEERING COOPERATIVE EDUCATION PROGRAM
Lawrence A. Williams, Coordinator

Students enrolled in engineering and related degree curricula may gain experience and knowledge about a professional field of interest by enrolling in a cooperative education program or in a field experience course. Additional information may be obtained from the Coordinator in Room 1005, Trimpe Distributive Education Building. Students are usually selected in pairs and alternate by semester between campus and industry. While on the job, the student must be enrolled in the course IE 300, Co-operative Education. During their employment periods, Co-op students are paid an appropriate salary by their employer.

Cooperative education students work in such areas as manufacturing, assembly, research, design, quality control, and safety. They may perform tests, prepare engineering drawings, collect and record data, design tools and fixtures, and assist in supervision. The student’s cooperative program is closely supervised by a college coordinator.

OTHER COOPERATIVE EDUCATION PROGRAMS

Other cooperative education programs are available in consumer resources and technology in the fields of food and petroleum distribution and fashion management, marketing and merchandising. The arrangement of work assignments varies by curriculum.

FOUNDRY PROGRAM
Any student enrolled in an engineering or related curriculum and interested in a career in the metal casting industry may be admitted into the Foundry Program. While engaged in this special program, the student must also meet the requirements for a B.S. degree offered by the College of Engineering and Applied Sciences. The Foundry Program is designed to allow the student an opportunity to elect various specific interest courses while earning a degree in any standard curriculum.

Foundry Program students must join the student chapter of the American Foundrymen’s Society and register with the Foundry Educational Foundation. Upon reaching the sophomore year, it is recommended that all students apply for the Co-operative Education Program by contacting the coordinator of Engineering Cooperative Education in agreement with many sponsoring industries. Students following the Foundry Program are eligible to be considered for scholarship awards made available each semester by the Foundry Educational Foundation.
CONSUMER RESOURCES AND TECHNOLOGY

Sue S. Coates, Chair
Max E. Benne
Linda L. Dannison
Frank M. Gambino
Gail A. Havens
Jack T. Humbert
John R. Lindbeck
Maja Petersens
Norman E. Slack
Nancy H. Steinhau
Darrel B. Thomas
Donna R. Van/Westrienen
Patricia B. Viard
Lawrence A. Williams

The Department of Consumer Resources and Technology offers education in the value and efficient use of human and material resources, and in the development of the skills and knowledge appropriate to careers that accommodate the needs of the consumers at the various levels of the economic process.

Curricula offered in the department include:

- Agriculture
- Dietetics
- Fashion Merchandising
- Food Distribution
- Food Service Administration
- Individual and Family Relationships
- Industrial Education Teaching
- Interior Design
- Petroleum Distribution
- Textiles and Apparel Technology
- Vocational Education Teaching

Minors offered in the department include:

- Family Life Education (Teaching)
- Food Occupations (Teaching)

Academic Advising

Name 2038, Kohlrain Hall. An academic advisor is available to assist in individual program planning, recommend electives appropriate to a student’s educational objectives, discuss employment opportunities, and help solve academic problems.

Substitutions and transfer credit must be approved by departmental advisers.

Vocational Education

Students desiring to become qualified as teachers of Vocational Home Economics, Vocational Technical Education (Drafting, Graphic Arts, Metal Working, Power/Automotives, Woodworking), or Distributive Education must complete the appropriate study program found under Vocational Education in the College of Engineering and Applied Sciences section of the catalog.

Requirements

Candidates for the Bachelor of Science degree must complete the following program of 122 semester hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>First Semester</td>
<td>15</td>
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<tr>
<td>Second Semester</td>
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<td>Third Semester</td>
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<td>Fourth Semester</td>
<td>16</td>
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<td>Fifth Semester</td>
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<tr>
<td>Sixth Semester</td>
<td>15</td>
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<tr>
<td>Seventh Semester</td>
<td>16</td>
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<tr>
<td>Eighth Semester</td>
<td>15</td>
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</tbody>
</table>

Work Experience Programs

Programs offered in agriculture, fashion merchandising, food service administration, interior design, food distribution, and petroleum distribution are designed to develop occupational competencies in their respective areas. These programs, which are sponsored jointly with industries, provide students with an opportunity to complete a four-year program leading to a Bachelor of Science degree.

Cooperative education programs particularly in food distribution and petroleum distribution use an alternate semester-in-school and semester-on-the-job approach and provide students with valuable field experience.

Additional Information

General information regarding counseling, scholarships and special programs of interest to students in this department may be found under the beginning of the College of Engineering and Applied Sciences section of the catalog.

Enrollment will not be honored in any course when other students are requesting that course. If the student does not attend the first class meeting (lecture or lab) unless prior arrangements have been made with the instructor. Students not attending courses for whatever reasons are responsible for processing drop slips with the Registration Office if fees are to be refunded and an "X" grade avoided.

Agriculture

Bachelor of Science Degree

Adviser: Dr. Max Benne

The agriculture curriculum is a four-year degree program that deals with the production, distribution, and service aspects of the agricultural industry. The student Agriculture Club provides additional opportunities for professional interaction and experiences.

Requirements

Candidates for the Bachelor of Science degree must complete the following program of 122 semester hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
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<tbody>
<tr>
<td>First Semester</td>
<td>15</td>
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<tr>
<td>Second Semester</td>
<td>15</td>
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<tr>
<td>Third Semester</td>
<td>15</td>
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<tr>
<td>Fourth Semester</td>
<td>16</td>
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<tr>
<td>Fifth Semester</td>
<td>16</td>
</tr>
<tr>
<td>Sixth Semester</td>
<td>15</td>
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<tr>
<td>Seventh Semester</td>
<td>16</td>
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<td>Eighth Semester</td>
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<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRT 202</td>
<td>Field Experience</td>
<td>3</td>
</tr>
<tr>
<td>CRT 362</td>
<td>Principles of Horticulture</td>
<td>4</td>
</tr>
<tr>
<td>SOC 200</td>
<td>Principles of Sociology</td>
<td>3</td>
</tr>
<tr>
<td>General Education Elective*</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Approved Elective</td>
<td></td>
<td>3</td>
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<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRT 361</td>
<td>Introduction to Soils</td>
<td>4</td>
</tr>
<tr>
<td>MGMT 200</td>
<td>Business Statistics</td>
<td>OR</td>
</tr>
<tr>
<td>FCL 340</td>
<td>Legal Environment</td>
<td>3</td>
</tr>
<tr>
<td>AREA 1</td>
<td>General Education*</td>
<td>3</td>
</tr>
<tr>
<td>General Education Elective*</td>
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<td></td>
</tr>
<tr>
<td>Approved Elective</td>
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<td>3</td>
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</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRT 362</td>
<td>Landscape Gardening</td>
<td>3</td>
</tr>
<tr>
<td>CRT 365</td>
<td>Farm Organizations and Management</td>
<td>4</td>
</tr>
<tr>
<td>ACTY 201</td>
<td>Accounting Concepts and Applications</td>
<td>OR</td>
</tr>
<tr>
<td>ACTY 210</td>
<td>Principles of Accounting</td>
<td>3</td>
</tr>
<tr>
<td>AREA 111</td>
<td>General Education*</td>
<td>3</td>
</tr>
<tr>
<td>Approved Elective</td>
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</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>CRT 366</td>
<td>Agriculture Marketing and Finance</td>
<td>4</td>
</tr>
<tr>
<td>AREA 111</td>
<td>General Education*</td>
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<td>Approved Elective</td>
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>CRT 364</td>
<td>Land Use and Soil Conservation</td>
<td>4</td>
</tr>
<tr>
<td>General Education Elective*</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Approved Elective</td>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

* At least two of these courses must be at the 300-400 level

Dietetics

Bachelor of Science Degree

Adviser: Dr. Maja Petersens

A student completing a Bachelor of Science degree in Dietetics is eligible to apply for an internship in a hospital, food clinic, or industrial food service as approved by the American Dietetics Association.

After the internship, the dietitian is eligible for positions in hospitals such as food administrator, therapeutic dietitian, or teaching dietitian, for positions in commercial food establishments such as restaurants, hotels, airlines, food service in the armed forces, industrial facilities, and school cafeterias, and community nutrition positions. The Student Dietetic Association of Southwest Michigan provides additional involvement of students with dietetic professionals.

Requirements

Candidates for the Bachelor of Science degree must complete the following program of 122 semester hours. A grade of “C” or better must be earned in courses with a CRT prefix and in other specified courses presented for graduation. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>First Semester</td>
<td>14</td>
</tr>
<tr>
<td>Second Semester</td>
<td>16</td>
</tr>
<tr>
<td>Third Semester</td>
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</tr>
<tr>
<td>Fourth Semester</td>
<td>16</td>
</tr>
<tr>
<td>Fifth Semester</td>
<td>16</td>
</tr>
<tr>
<td>Sixth Semester</td>
<td>15</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 110</td>
<td>Algebra I</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MATH 111</td>
<td>Algebra II</td>
<td>.3</td>
</tr>
<tr>
<td>COM 104</td>
<td>Business and Professional Speech</td>
<td>3</td>
</tr>
<tr>
<td>CS 105</td>
<td>Introduction to Computers</td>
<td>3</td>
</tr>
<tr>
<td>AREA 111</td>
<td>General Education*</td>
<td>3</td>
</tr>
<tr>
<td>Approved Elective</td>
<td></td>
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<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>CRT 261</td>
<td>Agronomy</td>
<td>4</td>
</tr>
<tr>
<td>CRT 266</td>
<td>Food and Society</td>
<td>3</td>
</tr>
<tr>
<td>ECON 201</td>
<td>Principles of Economics (Micro)</td>
<td>3</td>
</tr>
<tr>
<td>AREA 111</td>
<td>General Education*</td>
<td>4</td>
</tr>
<tr>
<td>PEGN</td>
<td>Physical Education</td>
<td>1</td>
</tr>
</tbody>
</table>

CONSUMER RESOURCES AND TECHNOLOGY 165
### College of Engineering and Applied Sciences

#### Second Semester—16 hours
- COM 170 Interpersonal Communication I 3
- PSY 194 General Psychology 3
- BMED 112 Introduction to Biomedical Sciences 3
- General Education Elective* 3
- Approved Elective 3

#### Third Semester—14 hours
- CRT 100 Career Seminar 1
- CRT 165 Food Science Principles 3
- CRT 260 Nutrition 3
- SOC 200 Principles of Sociology 3
- CHEM 120 General Chemistry II 4

#### Fourth Semester—16 hours
- CRT 368 Quantity Foods 4
- CRT 100 Career Seminar 1
- CRT 260 Nutrition 3
- CRT 126 Fashion Merchandising I 3
- CRT 155 Design Principles 3
- IE 102 Technical Communication 3

#### Second Semester—16 hours
- CRT 221 Fashion Analysis 3
- CRT 226 Fashion Merchandising II 3
- CIS 102 Introduction to Information Processing 3
- OR
- CS 105 Introduction to Computers 3
- AREA III General Education* 4
- PEGN Physical Education 1
- Elective 2

#### Third Semester—15 hours
- CRT 202 Field Experience 3
- CRT 425 Merchandising Practicum 3
- CRT 429 Internship 3
- CRT 326 History of Costume I 3
- MGMT 300 Fundamentals of Management 3
- MKTG 270 Professional Selling 3
- MKTG 370 Marketing 3

#### Sixth Semester—16 hours
- CRT 327 History of Costume II 3
- BIS 242 Business Communication 3
- ENGL 374 Writing Course (Above 100 level) 3
- Area II General Education* 3
- AREA III General Education* 3

#### Seventh Semester—16 hours
- CRT 329 Promotion and Coordination 3
- MGMT 352 Personnel Management 3
- MGMT 404 Business and Society 3
- Area II General Education* 3
- Area IV General Education* 4

#### Eighth Semester—14 hours
- CRT 202 Field Experience 3
- CRT 425 Merchandising Practicum 3
- CRT 429 Internship 3
- Area I General Education* 3
- Area III General Education* 3
- Area IV General Education* 3

### Fashion Merchandising

**Bachelor of Science Degree**
Adviser: Ms. Rebecca Marvin

The fashion merchandising curriculum is designed for students wishing to pursue careers in buying and/or management in large department stores, specialty shops, and boutiques. Manufacturing, fabrication, buying offices, and various types of media are related fields of interest for students with this orientation. The student organization, FABS, provides additional fashion experiences and interaction with fashion professionals.

Third year fashion merchandising students have the option of attending the Fashion Institute of Technology, New York, New York, for one or two semesters if a 3.0 grade point average has been maintained.

**Requirements**
Candidates for the Bachelor of Science degree must complete the following program of 122 semester hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Courses</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>First Semester</td>
<td>CRT 100 Career Seminar</td>
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</tr>
<tr>
<td></td>
<td>CRT 126 Fashion Merchandising I</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>CRT 155 Design Principles</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>IE 102 Technical Communication</td>
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<td></td>
<td>OR</td>
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<tr>
<td></td>
<td>BIS 142 Informational Writing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PEGN Physical Education</td>
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<tr>
<td></td>
<td>General Education Elective*</td>
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</tr>
<tr>
<td>Second Semester</td>
<td>CRT 221 Fashion Analysis</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>CRT 226 Fashion Merchandising II</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>CIS 102 Introduction to Information Processing</td>
<td>3</td>
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<tr>
<td></td>
<td>CS 105 Introduction to Computers</td>
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<td></td>
<td>AREA III General Education*</td>
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<tr>
<td></td>
<td>Elective</td>
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<tr>
<td>Third Semester</td>
<td>CRT 202 Field Experience</td>
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</tr>
<tr>
<td></td>
<td>CRT 425 Merchandising Practicum</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>CRT 429 Internship</td>
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<tr>
<td></td>
<td>CRT 326 History of Costume I</td>
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<td>MGMT 300 Fundamentals of Management</td>
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<td>Fourth Semester</td>
<td>CRT 327 History of Costume II</td>
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<td></td>
<td>BIS 242 Business Communication</td>
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<tr>
<td></td>
<td>ENGL 374 Writing Course (Above 100 level)</td>
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<td>Fifth Semester</td>
<td>CRT 202 Field Experience</td>
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<td>CRT 425 Merchandising Practicum</td>
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<td>CRT 429 Internship</td>
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<td>Elective</td>
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<td>Sixth Semester</td>
<td>CRT 202 Field Experience</td>
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<td>CRT 425 Merchandising Practicum</td>
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<td></td>
<td>CRT 429 Internship</td>
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<td>Area I General Education*</td>
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</tr>
</tbody>
</table>

### Food Distribution

**Bachelor of Science Degree**
Adviser: Frank Gambino, Richard Neschich

This work-study program is one of only six four-year programs in food distribution in the nation leading to management careers in the food industry. Required participation in the two-week industry tour, weekly food forums featuring experts from the food field, and active membership in Sigma Phi Omega, professional business fraternity, provide many opportunities for interaction of students with professionals in the food industry. Students develop, present, and participate in a food management conference held each spring on Western Michigan University’s campus.

**Requirements**
- Candidates for the Bachelor of Science degree must complete the following program of 122 semester hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall, plus three spring/summer sessions.
- First Semester—15 hours
  - CRT 130 Food Distribution Industry | 3 |
  - CRT 205 Supermarket Foods | 3 |
  - AREA I General Education* | 3 |
  - AREA II General Education* | 3 |
  - AREA III General Education* | 3 |
  - AREA IV General Education* | 3 |
  - AREA V General Education College Writing | 3 |
  - PEGN Physical Education | 1 |

### Second Semester—16 hours
- CRT 132 Food Distribution Merchandising | 3 |
- BIS 242 Business Communication | 3 |
- COM 104 Business and Professional Speech | 3 |
- OR
  - COM 130 Public Speaking | 3 |
  - AREA I General Education* | 3 |
  - AREA IV General Education* | 3 |

### Third Semester—16 hours
- CRT 231 Food Distribution Supervision | 3 |
- ACTY 210 Principles of Accounting | 3 |
- CRT 202 Field Experience | 3 |
- Area II General Education* | 3 |

### Fourth Semester—16 hours
- CRT 232 Food Distribution Operations | 3 |
- FCL 340 Legal Environment | 3 |
- MGMT 300 Fundamentals of Management | 3 |
- Area IV General Education* | 3 |
- Area V General Education College Writing | 3 |
- PEGN Physical Education | 1 |
- Area VI General Education Elective* | 3 |

### Spring/Summer—3 hours
- CRT 202 Field Experience | 3 |

### Third Semester—15 hours
- CRT 309 Industry Survey | 3 |
- CRT 202 Field Experience | 3 |
- Area II General Education Elective* | 3 |

### Fourth Semester—16 hours
- CRT 302 Coordinated Distribution Practices | 3 |
- Area II General Education Elective* | 3 |

### Spring/Summer—9 hours
- CRT 309 Industry Survey | 3 |
- CRT 202 Field Experience | 3 |
- Area II General Education Elective* | 3 |

### Fifth Semester—6 hours
- CRT 300 Coordinated Distribution Practices | 3 |
- Area II General Education Elective* | 3 |

### Sixth Semester—16 hours
- CRT 232 Food Distribution Operations | 3 |
- FCL 340 Legal Environment | 3 |
- MGMT 300 Fundamentals of Management | 3 |
- Area IV General Education Elective* | 3 |

### Spring/Summer—3 hours
- CRT 302 Coordinated Distribution Practices | 3 |

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**Note:** The table above provides a general overview of the curriculum. For detailed course descriptions and specific requirements, please refer to the university’s official academic catalog.
Seventh Semester—16 hours
CRT 331 Food Distribution Managerial Processes .................. 3
CRT 438 Current Issues in Food Distribution .................. 3
ECON 202 Principles of Economics I ................. 4
PSY 206 Psychology of Adjustment .................. 3
Sophomore Seminar .................. 1
Approved Elective .................. 7
Eighth Semester—16 hours
CRT 332 Food Distribution Systems Control .................. 3
CRT 436 Problems in Food Distribution .................. 3
CRT 500 Seminar in Distribution .................. 3
Required Related Elective .................. 7
* At least two of these courses must be at the 300-400 level.

Food Service Administration
Bachelor of Science Degree
Adviser: Ms. Donna VanWestrienen

The food service administration curriculum is scientifically oriented for in-depth study of foods in relation to the business field. Students may pursue supervisory/managerial careers in commercial food institutions in the equipment field, food research, public utility companies, mass media productions, quality testing, technical writing, or governmental food agencies. Student Food Service Association (FOSSA) activities provide additional professional experiences.

Requirements
Candidates for the Bachelor of Science degree must complete the following program of 122 semester hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall.

First Semester—16 hours
CRT 100 Career Seminar .................. 1
CHEM 101 General Chemistry .................. 4
MATH 110 Algebra I .................. 3
AREA I General Education .................. 4
PEGN Physical Education .................. 1

Second Semester—14-15 hours
BIOC 101 Animal Biology (4 hours) .................. 3
BME 112 Introduction to Biomedical Science .................. 3
MATH 116 Finite Mathematics with Applications .................. 3
Required Related Elective .................. 3
PEGN Physical Education .................. 1
Approved Elective .................. 5

Third Semester—16 hours
CRT 165 Food Science Principles .................. 3
CRT 205 Topics: Microwave Nutrition .................. 1
CRT 260 Nutrition .................. 3
BME 230 Microbiology and Man .................. 3
ECON 201 Principles of Economics I (Micro) .................. 3
Required Related Elective .................. 3

Fourth Semester—15 hours
CRT 202 Field Experience .................. 3
Approved Elective .................. 3
ECON 202 Principles of Economics II (Micro) .................. 3
PSY 194 General Psychology .................. 3
CS 105 Introduction to Computers .................. 3

Fifth Semester—14 hours
CRT 205 Catering .................. 1
Approved Elective .................. 3
ANTH 220 Cultural Anthropology .................. 3
MGMT 352 Personnel Management .................. 3
IE 402 Supervision of Industrial Operations .................. 3
AREA I General Education .................. 4

Sixth Semester—15 hours
CRT 368 Quantity Foods .................. 4
Required Related Elective .................. 4
Approved Elective .................. 8

Seventh Semester—16 hours
CRT 590 Project/Problems in CRT .................. 3
Required Related Elective .................. 3
Approved Elective .................. 10
* At least two of these courses must be at the 300-400 level.

** Required Related Electives—choose 15 hours from the following list:

** MGMT 200 Business Statistics .................. 3
ACTY 210 Principles of Accounting I .................. 3
ACTY 211 Principles of Accounting II .................. 3
BIS 242 Business Communication .................. 3
MGMT 300 Fundamentals of Management .................. 3
FCL 320 Business Finance .................. 3
FCL 340 Legal Environment .................. 3
FCL 341 Business Law .................. 3
MKTG 370 Marketing .................. 3

*** Approved Electives—choose 6 hours from the following list:

CRT 468 Advanced and Experimental Foods .................. 4
Required Related Elective .................. 3
Approved Elective .................. 4

Eighth Semester—16 hours
CRT 590 Project/Problems in CRT .................. 3
Required Related Elective .................. 3
Approved Elective .................. 10

* At least two of these courses must be at the 300-400 level.

Individual and Family Relationships
Bachelor of Science Degree
Adviser: Dr. Linda L. Dammion

The individual and family relationships curriculum is an interdisciplinary program designed with flexibility to meet individual needs and goals. This program is also intended for those desiring to pursue a Master's degree program in home economics, counseling, and other related fields. The student organization, New Dimensions, provides additional opportunities for professional interaction and experiences.

Requirements
Candidates for the Bachelor of Science degree must complete the following program of 122 semester hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall.

First Semester—16 hours
CRT 110 Transitions to Adulthood .................. 3
SOC 122 Death, Dying and Bereavement .................. 3
Required Related Elective .................. 3

Second Semester—16 hours
CRT 200 Consumer Education .................. 3
CRT 214 Human Growth and Development .................. 3
SOC 190 Men and Women in Contemporary Society .................. 3
Required Related Elective .................. 3
AREA I General Education .................. 3
PEGN Physical Education .................. 1

Third Semester—15 hours
CRT 210 Sex Education-Intro to Human Sexuality .................. 3
Required Related Elective .................. 3
AREA IV General Education .................. 6
General Education Elective .................. 6

Fourth Semester—16 hours
CRT 266 Food and Society .................. 3
Required Related Elective .................. 3
AREA III General Education .................. 4
Approved Electives .................. 3

Fifth Semester—15 hours
CRT 318 Mate Selection and Marriage .................. 3
CS 105 Introduction to Computers .................. 3
Required Related Elective .................. 3
AREA I General Education .................. 3
Approved Elective .................. 3

Sixth Semester—15 hours
SOC 314 Ethnic Relations .................. 3
Required Related Electives .................. 3
AREA III General Education .................. 6
Approved Elective .................. 6

Seventh Semester—14 hours
CRT 413 Marriage and Family in Maturity .................. 3
Required Related Elective .................. 3
Approved Elective .................. 8

Eighth Semester—15 hours
CRT 415 Effective Parenting .................. 3
COM 517 Theories of Interpersonal Communications .................. 3
Required Related Elective .................. 3
General Education Elective .................. 3
Approved Elective .................. 3

* Required Related Electives

BAS 300 Black Experience .................. 3
COM 170 Interpersonal Communications .................. 3
CRT 202 Professional Field Experience .................. 3
PEPR 100 Health for Better Living .................. 3
HHS 530 Clinical Theory/Health & Human Services ................. 1-4
PSY 194 General Psychology .................. 3
PSY 250 Abnormal Psychology .................. 3
SOC 210 Modern Social Problems .................. 3
SOC 362 Criminology .................. 3
SOC 564 Juvenile Delinquency & the Community .................. 3
SWRK 100 Introduction to Social Services .................. 3

** At least two of these courses must be at the 300-400 level.

Industrial Education Curriculum
Bachelor of Science Degree
Adviser: John R. Lindbeck

The Industrial Education curriculum is designed to prepare teachers of industrial education for the junior and senior high school levels. The student must select one major and one minor from the technical areas available. An industrial education teaching minor is available to
students not majoring in industrial education, and includes 20 hours of technical courses plus six hours of professional vocational education courses. VE 342 and VE 344.

1. Minimum hours required for this curriculum 122 hrs.

2. General Education Requirements 40 hrs.
   - 3 semester hours of written communications and MATH 110, 111, and 101 or equivalent are required.

3. Technical major in one of the following areas 30 hrs.
   - General Industrial Arts
   - Drafting
   - Graphic Arts
   - Metalworking
   - Power-Energy
   - Woodworking

4. Technical minor in any one of the above areas other than the major 20 hrs.

5. Professional Education Courses 22 hrs.
   - ED 250 Human Development and Learning 4
   - ED 301 Teaching and Learning 3
   - ED 322 Teaching of Reading (Secondary) 3
   - ED 450 School and Society 3
   - ED 475 Directed Teaching (Secondary) 9

6. Professional Vocational Education Courses 6 hrs.
   - VE 342 Course Planning and Construction 3
   - VE 344 Teaching Practical Arts and Vocational Education 3

7. Physical Education 2 hrs.
   - To include CS 105 Introduction to Computers

### Interior Design

**Bachelor of Science Degree**

Adviser: Ms. Rebecca Marvin

Interior design is an interdisciplinary curriculum for the student who desires a career in residential or commercial interior design, retailing home furnishings or visual merchandising, marketing of building products, or in the interior design aspects of the building construction and real estate fields. Active student chapters of the American Society of Interior Design and the Institute of Business Designers provide additional opportunities for professional activities.

**Requirements**

Candidates for the Bachelor of Science degree must complete the following program of 122 semester hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall.

**First Semester—13 hours**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>CRT 150</td>
<td>Introduction to Interior Design</td>
<td>3</td>
</tr>
<tr>
<td>CRT 155</td>
<td>Design Principles</td>
<td>3</td>
</tr>
<tr>
<td>ET 131</td>
<td>Introduction to Building Practices</td>
<td>3</td>
</tr>
<tr>
<td>IE 102</td>
<td>Technical Communication</td>
<td>2</td>
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<tr>
<td>OR</td>
<td>Speech</td>
<td>3</td>
</tr>
<tr>
<td>BIS 142</td>
<td>Informational Writing</td>
<td>3</td>
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<tr>
<td>PEGN</td>
<td>Physical Education</td>
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**Second Semester—16 hours**

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<tbody>
<tr>
<td>ET 330</td>
<td>Woods and Materials for the Interior Designer</td>
<td>3</td>
</tr>
<tr>
<td>COM 104</td>
<td>Business and Professional Speech</td>
<td>3</td>
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<tr>
<td>ET 141</td>
<td>Introduction to Technical Drawing</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 107</td>
<td>Chemistry of Textiles and Design</td>
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**Third Semester—15 hours**

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<tr>
<td>CRT 220</td>
<td>Textiles I</td>
<td>3</td>
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<tr>
<td>CRT 251</td>
<td>Period Interiors I</td>
<td>3</td>
</tr>
<tr>
<td>CRT 254</td>
<td>Interior Design Materials</td>
<td>3</td>
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<tr>
<td>ART 221</td>
<td>History of Art</td>
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<tr>
<td>ET 241</td>
<td>Interior Design Graphics I</td>
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**Fourth Semester—14 hours**

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<tbody>
<tr>
<td>CRT 205</td>
<td>Topics in Consumer Resources and Technology</td>
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<tr>
<td>CRT 252</td>
<td>Period Interiors II</td>
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<tr>
<td>CRT 255</td>
<td>Lighting for Interiors</td>
<td>3</td>
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<tr>
<td>ET 341</td>
<td>Interior Design Graphics II</td>
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<tr>
<td>ECON 201</td>
<td>Principles of Economics</td>
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**Fifth Semester—17 hours**

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<tr>
<td>CRT 202</td>
<td>Field Experience</td>
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<tr>
<td>CRT 300</td>
<td>Careers in Interiors</td>
<td>3</td>
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<tr>
<td>CRT 350</td>
<td>Textiles for Interiors</td>
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<tr>
<td>MKTG 270</td>
<td>Professional Selling</td>
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<td>AREA III</td>
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**Sixth Semester—15 hours**

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<td>Sketching for Interior Designers</td>
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<td>CRT 351</td>
<td>Contract Design I</td>
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</tr>
<tr>
<td>CRT 451</td>
<td>Contract Design II</td>
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<tr>
<td>ACTY 201</td>
<td>Accounting Concepts and Applications</td>
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<td>General Education</td>
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**Seventh Semester—17 hours**

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<td>Visual Design Techniques</td>
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<td>CRT 451</td>
<td>Contract Design II</td>
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<tr>
<td>ACTY 210</td>
<td>Principles of Accounting</td>
<td>3</td>
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<tr>
<td>AREA II</td>
<td>General Education</td>
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<td>AREA IV</td>
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**Eighth Semester—15 hours**

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<tr>
<td>CRT 459</td>
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<td>MGMT 210</td>
<td>Small Business Management</td>
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<tr>
<td>OR</td>
<td>Fundamentals of Management</td>
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<tr>
<td>MGMT 300</td>
<td>General Education Elective</td>
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<td>Approved Elective</td>
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</table>

* At least two of these courses must be at the 300-400 level.

### Petroleum Distribution

**Bachelor of Science Degree**

Adviser: Lawrence A. Williams

This is the only four-year program in petroleum management and distribution in the nation and involves learning in the classroom and from on-the-job experiences in alternating semesters in the petroleum field. Additional interaction of students with industry experts occurs through a two-week industry tour and an active advisory board of petroleum professionals.

**Requirements**

Candidates for the Bachelor of Science degree must complete the following program of 122 semester hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall, plus three spring or summer sessions.

**First Semester—16 hours**

<table>
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<tr>
<td>CRT 135</td>
<td>Introduction to Petroleum Industry</td>
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<tr>
<td>IE 102</td>
<td>Technical Communication</td>
<td>3</td>
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<tr>
<td>CHEM 102</td>
<td>General Chemistry I</td>
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**Second Semester—15 hours**

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<thead>
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<tr>
<td>CRT 132</td>
<td>Food Distribution Merchandising</td>
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<tr>
<td>CS 105</td>
<td>Introduction to Computers</td>
<td>3</td>
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<td>BIS 242</td>
<td>Business Communication</td>
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<td>AREA I</td>
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</tr>
<tr>
<td>AREA II</td>
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**Spring/Summer—3 hours**

<table>
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<tr>
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<tbody>
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<td>MATH 116</td>
<td>Finite Mathematics with Applications</td>
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**Third Semester—14 hours**

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<tr>
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<td>Mass Merchandising</td>
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<td>ACTY 210</td>
<td>Principles of Accounting</td>
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<tr>
<td>ECON 201</td>
<td>Principles of Economics (Micro)</td>
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</tr>
<tr>
<td>ET 222</td>
<td>Fuels and Lubricants</td>
<td>3</td>
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**Fourth Semester—15 hours**

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<tbody>
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<td>ACTY 211</td>
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<td>ECON 202</td>
<td>Principles of Economics (Micro)</td>
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<td>COM 104</td>
<td>Business and Professional Speech</td>
<td>3</td>
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<tr>
<td>OR</td>
<td>Public Speaking</td>
<td>3</td>
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<tr>
<td>MKTG 370</td>
<td>Marketing</td>
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**Spring/Summer—6 hours**

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<tbody>
<tr>
<td>CRT 302</td>
<td>Coordinated Distribution Practices</td>
<td>3</td>
</tr>
<tr>
<td>CRT 309</td>
<td>Industry Survey</td>
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**Fifth Semester—14 hours**

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>MGMT 300</td>
<td>Fundamentals of Management</td>
<td>3</td>
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<tr>
<td>AREA IV</td>
<td>General Education</td>
<td>4</td>
</tr>
<tr>
<td>PEGN</td>
<td>Physical Education</td>
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<tr>
<td>COM 232</td>
<td>Discussion</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**Sixth Semester—12 hours**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRT 337</td>
<td>Distribution/Handling of Petroleum Products</td>
<td>3</td>
</tr>
<tr>
<td>AREA III</td>
<td>General Education</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 305</td>
<td>Practical Writing</td>
<td>3</td>
</tr>
<tr>
<td>PEGN</td>
<td>Physical Education</td>
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**Spring/Summer—3 hours**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>CRT 302</td>
<td>Coordinated Distribution Practices</td>
<td>3</td>
</tr>
</tbody>
</table>

**Seventh Semester—12 hours**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>CRT 305</td>
<td>Preparing for Employment</td>
<td>3</td>
</tr>
<tr>
<td>CRT 336</td>
<td>Petroleum Jobber Operations</td>
<td>3</td>
</tr>
<tr>
<td>CRT 430</td>
<td>Mass Merchandising</td>
<td>3</td>
</tr>
<tr>
<td>AREA II</td>
<td>General Education</td>
<td>3</td>
</tr>
</tbody>
</table>

**Eighth Semester—12 hours**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>CRT 432</td>
<td>Issues in Oil</td>
<td>3</td>
</tr>
<tr>
<td>CRT 500</td>
<td>Seminar in Distribution</td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

### Textile and Apparel Technology

**Bachelor of Science Degree**

Adviser: Ms. Rebecca Marvin

The textile and apparel technology curriculum is designed for students interested in careers in the creative, protective, functional, and communicative aspects of clothing and textiles. Students will develop a required career direction option through the selection of electives in consultation with a department adviser in preparation for a variety of positions in the textile and apparel or related industries.
A specialized career direction may be developed through the interface of textile/apparel requirements with other academic disciplines. Students may consider choices in design, drafting, construction, quality control, manufacturing or CAD/CAM operations.

Requirements
Candidates for the Bachelor of Science degree must complete the following program of 122 semester hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall.

First Semester—15 hours
CR 124 Clothing Construction
CR 155 Design Principles
CHEM 107 Chem of Textiles and Design Media
PEGN Physical Education
Elective

Second Semester—15 hours
CR 220 Textiles
Option Requirement* 3
COM 170 Interpersonal Communication
PSY 194 General Psychology
Elective* 3

Third Semester—16 hours
CR 224 Experimental Clothing Techniques
CR 415 Effective Parenting
IE 102 Technical Communication
PEGN Physical Education
SOC 200 Principles of Sociology

Fourth Semester—15 hours
Option Requirement* 3
CR Elective* ** 3
ECON 105 Introduction to Computers
AREA IV General Education*** 3

Fifth Semester—15 hours
CR 222 Flat Pattern Design
CR 326 History of Costume I
General Education Elective*** 2
Elective** 7

Sixth Semester—15 hours
CR 327 History of Costume II
CR 420 Advanced Textiles
Option Requirements* 3
AREA III General Education*** 4
CS 105 Introduction to Computers

Seventh Semester—16 hours
CR 524 Social and Psychological Aspects of Clothing
CR Elective** 1
Option Requirement* 3
AREA I General Education*** 3
Elective* 6

Eighth Semester—15 hours
CR Elective* 3
Option Requirement* 6
General Education Elective*** 6
*Electives (21-26 hours depending on career direction courses) and option requirements (18-23 hours) must be planned and approved with an adviser.
**CR electives—10 hours from the following list:
CR 100 Career Seminar
CR 202 Field Experience
CR 205 Topics in CRT
CR 209 Consumer Education
CR 222 Flat Pattern Design (repeatable)
CR 221 Fashion Analysis
CR 224 Experimental Clothing (repeatable)

CR 320 Visual Merchandising
CR 324 Dressmaker Tailoring
CR 329 Promotion and Coordination
CR 350 Textiles for Interiors
CR 405 Travel/Study Seminar
CR 429 Internship

At least two of these courses must be at the 300-400 level.

Minors
Requirements
Students should consult with the appropriate department adviser to plan one of the following minors.

FAMILY LIFE EDUCATION (TEACHING)
REQUISITE COURSES—18 hours
CR 110 Transitions to Adulthood
CR 210 Introduction to Human Sexuality
CR 214 Human Growth and Development
CR 318 Mate Selection and Marriage
CR 410 Teaching of Sex Education in the School
CR 415 Effective Parenting

ELECTIVES—6 hours
Choose six hours from the following courses with ** applied toward General Education credit.
ANTH 221 Cultural Anthropology 3
Biol 101 Animal Biology 3
BMED 240 Human Physiology 4
BAS 314 The Black Community 3
BAS 320 Ecology and The Black Community 3
COM 170 Interpersonal Communication I 3
CR 202 Field Experience 3
CR 209 Consumer Education 3
CR 266 Food and Society 3
CR 413 Marriage and Family in Maturity 3
CR 524 Socio-Psychological Aspects of Clothing 3
GHUM 316 Mass Media: Messages and Manipulation 4
PSY 160 Child Psychology 3
PSY 194 General Psychology 3
Soc 122 Death, Dying and Bereavement 3
Soc 190 Men and Women in Contemporary Society 3
Soc 200 Principles of Sociology 3
Soc 210 Modern Social Problems 3
Soc 320 Introduction to Social Psychology 3

FOOD OCCUPATIONS (TEACHING)
REQUISITE COURSES—24 hours
CR 165 Food Science Principles 3
CR 202 Field Experience 4
CR 260 Nutrition 3
CR 368 Quantity Foods 4
CR 466 Institutional Management 4
CR 598 Independent Study in Consumer Resources and Technology 1
VE 542 Occupational Education (Foods) 4
VE 543 Coordination Techniques in Cooperative Education 3

Elective courses, if needed, to complete the 24 semester hours:
ACTY 201 Accounting Concepts and Application 3
MGMT 352 Personnel Management 3
ECON 201 Principles of Economics 3
CECP 580 Principles and Philosophy of Guidance 2
PSY 194 General Psychology 3
Soc 200 Principles of Sociology 3

Additional requirement:
Completion of two years (4000 clock hours) of relevant work experience in food service industry. 2000 of these hours may be completed in an equivalent directed supervised program. (See CR 202 above.)

Consumer Resources and Technology Courses (CRT)
Courses described in italics are approved for General Education. Numbers following course title indicate hours of lecture and laboratory per week during a semester (lecture hours-laboratory hours).

CR 100 Career Seminar (1-0)
1 hr. Fall, Winter
Orientation to special career opportunities in fashion, textile, interior design or foods and hospitality, featuring resource guest speakers. Specific sections per area of emphasis.

CR 110 Transitions to Adulthood (3-0)
3 hrs. Winter
A study of interpersonal relationships and the physical and emotional development of the person in early and later adolescence.

CR 124 Clothing Construction (2-3)
3 hrs. Fall, Winter
Basic construction techniques, pattern alteration, fitting and design as related to the individual construction of garments. Text available for those desiring placement in upper level courses.

CR 125 Fashion Merchandising I (3-0)
3 hrs. Fall
An overview of retailing and introduction to fashion merchandising and functions of buying and selling of merchandise, with special attention given to principles of merchandise selection, sources of buying information, and responsibilities of buyers in various types of firms.

CR 130 Food Distribution Industry (3-0)
3 hrs. Fall, Winter
An introductory course in the study of food distribution, its history, evolution, and structure with emphasis on the growing importance of the store unit. Basic principles and practices of the industry considered.

CR 132 Food Distribution Merchandising (3-0)
3 hrs. Fall, Winter
Designed to acquaint the student with the various merchandising techniques peculiar to food distribution. Buying, display, promotion, turnover, pricing for profit, and increasing departmental sales emphasized. Resource people from the industry utilized to enrich classroom activities.

CR 135 Introduction to Petroleum Industry (3-0)
3 hrs. Fall, Winter
An introductory course in the study of the petroleum industry, its history, exploration, drilling, production, refining, distribution, service station records and sales, general economics and structure of the industry. The course includes orientation necessary for student to understand the cooperative work program and the student's responsibility to such a program.

CR 150 Introduction to Interior Design (3-0)
3 hrs. Fall, Winter
Basic study of the elements and principles of designing and furnishing interiors.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Type</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRT 155</td>
<td>Design Principles (2-3)</td>
<td>3 hrs. Fall, Winter</td>
<td>Introduction to basic principles and elements of design and color fundamentals, with application prevalently in the fields of fashion, textiles, and interior design.</td>
<td></td>
</tr>
<tr>
<td>CRT 160</td>
<td>Introduction to Agriculture (4-0)</td>
<td>4 hrs. Fall, Winter</td>
<td>An introduction to the principles and practices of food, fiber, and tobacco production, and agriculture's role in today's society and economy.</td>
<td></td>
</tr>
<tr>
<td>CRT 161</td>
<td>Animal Industry (4-0)</td>
<td>4 hrs. Fall</td>
<td>Fundamental concepts of livestock and poultry production in the United States. An introduction to types, breeds, selection, and management of livestock and poultry.</td>
<td></td>
</tr>
<tr>
<td>CRT 164</td>
<td>Practical Vegetable Gardening (1-3)</td>
<td>2 hrs. Spring</td>
<td>The basic concepts and fundamental practices of vegetable growing for the home gardener.</td>
<td></td>
</tr>
<tr>
<td>CRT 165</td>
<td>Food Science Principles (2-3)</td>
<td>3 hrs. Fall</td>
<td>Relationship of food science principles to basic food preparation techniques. Prerequisite: CHEM 101.</td>
<td></td>
</tr>
<tr>
<td>CRT 202</td>
<td>Field Experience (1-3)</td>
<td>3 hrs. Winter, Spring</td>
<td>On-the-job experience under supervision of department with cooperating organizations. Written materials and performance appraisal required. Department majors only.</td>
<td></td>
</tr>
<tr>
<td>CRT 205</td>
<td>Topics in Consumer Resources and Technology</td>
<td>3 hrs. Winter, Spring</td>
<td>Individual topics in five/ten/fifteen week formats, ranging in 1-3 hours of credit. Student may elect up to 6 hours of credit if topics vary. Topics to be announced.</td>
<td></td>
</tr>
<tr>
<td>CRT 209</td>
<td>Consumer Education (3-0)</td>
<td>3 hrs. Fall, Winter</td>
<td>A study of the information available to consumers in our economy with emphasis on personal decision making in money management and product and services choices, and consumer protection.</td>
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</tr>
<tr>
<td>CRT 210</td>
<td>Sex Education—An Introduction to Human Sexuality (3-0)</td>
<td>3 hrs. Fall, Winter, Spring</td>
<td>Covers various aspects of human sexuality, trends in moral values and behavior patterns, anatomy and physiology of human reproduction, and current issues in sex education.</td>
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</tr>
<tr>
<td>CRT 214</td>
<td>Human Growth and Development (2-3)</td>
<td>3 hrs. Fall</td>
<td>A study of physical, social, emotional, and intellectual growth of young people. Three hours per week required participation and observation in youth-oriented centers. (Hours are arranged).</td>
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</tr>
<tr>
<td>CRT 220</td>
<td>Flat Pattern Design (2-3)</td>
<td>3 hrs. Winter</td>
<td>A study of the drafting techniques employed in the flat pattern method for designing clothing. May be repeated once. Prerequisite: CRT 124.</td>
<td></td>
</tr>
<tr>
<td>CRT 222</td>
<td>Experimental Clothing Techniques (2-3)</td>
<td>3 hrs. Fall</td>
<td>Experiences in clothing construction with emphasis on special problems relative to various fabrics and design. May be repeated once. Prerequisite: CRT 124.</td>
<td></td>
</tr>
<tr>
<td>CRT 225</td>
<td>Computers in Distribution</td>
<td>3 hrs. Fall</td>
<td>A course intended to develop the awareness of the use of computers in areas of distribution such as agriculture, fashion, petroleum, food, and vocational teacher preparation and to increase the student's skill in using microcomputers for financial records and planning, market analysis, inventory, and equipment control and production planning. Credit cannot be earned for both CRT 225 and either CS 105, BIS 102, or SOC 182.</td>
<td></td>
</tr>
<tr>
<td>CRT 226</td>
<td>Fashion Merchandising II (3-0)</td>
<td>3 hrs. Winter</td>
<td>Fundamentals of merchandising mathematics and its use in the retail industry, including elements of profit and loss statements, purchase discounts and dating, mark-up, markdown, and OPEN-TO-BUY computation.</td>
<td></td>
</tr>
<tr>
<td>CRT 228</td>
<td>Non-Textile Products (3-0)</td>
<td>3 hrs. Fall</td>
<td>Craftsmanship and design as related to non-textile merchandise, raw material sources, manufacturing processes, uses and selections. Select section according to curriculum.</td>
<td></td>
</tr>
<tr>
<td>CRT 229</td>
<td>Menswear (3-0)</td>
<td>3 hrs. Fall</td>
<td>The course includes history, terminology, fabrics, garments, accessories, and the organizational structure peculiar to this industry. Prerequisite: CRT 220.</td>
<td></td>
</tr>
<tr>
<td>CRT 231</td>
<td>Food Distribution Supervision (3-0)</td>
<td>3 hrs. Fall, Winter</td>
<td>A course emphasizing leadership concepts and techniques in supervising and developing people in food distribution. Attention directed toward organizational principles, labor relations, understanding people, communication, coaching, and building a store team. Periodic lectures from industry resource people enrich classroom instruction.</td>
<td></td>
</tr>
<tr>
<td>CRT 232</td>
<td>Food Distribution Operation (3-0)</td>
<td>3 hrs. Fall, Winter</td>
<td>Designed to acquaint the student with the principles and methods used in the operation of food distribution units with regard to efficiency in organization, planning, and control. Resource people from food distribution augment the instructional program.</td>
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</tr>
<tr>
<td>CRT 235</td>
<td>Properties and Application of Petroleum Products (3-0)</td>
<td>3 hrs. Winter</td>
<td>A comprehensive study of the properties of petroleum products such as fuels, lubricants, greases, naphthas, waxes, pesticides, and petroleum chemicals, and the application and uses of these products in manufacturing, transportation, agriculture, and by the individual consumer.</td>
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</tr>
<tr>
<td>CRT 236</td>
<td>Service Station Supervision (3-0)</td>
<td>3 hrs. Fall</td>
<td>The responsibilities and activities of the petroleum company salesperson and supervisor are emphasized as they relate to retail establishments. Such items as merchandising policies, advertising, inventory, product knowledge, plant layout, location, equipment, and selling to the consumer are included.</td>
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<tr>
<td>CRT 251</td>
<td>Period Interiors I (3-0)</td>
<td>3 hrs. Fall</td>
<td>Influences and characteristics in period decoration and furniture of historical interiors and exteriors from antiquity up to English Victorian.</td>
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</tr>
<tr>
<td>CRT 252</td>
<td>Period Interiors II (3-0)</td>
<td>3 hrs. Winter</td>
<td>Influences and characteristics in period decoration and furniture of historical interiors and exteriors from Early American through contemporary.</td>
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</tr>
<tr>
<td>CRT 254</td>
<td>Interior Design Materials</td>
<td>3 hrs. Fall</td>
<td>A study of products and finishing materials for the interior environment which considers basic materials, manufacturing processes and the generic characteristics of goods specified by the interior designer. Prerequisites: CRT 150, ET 141.</td>
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<tr>
<td>CRT 255</td>
<td>Lighting for Interiors (2-3)</td>
<td>3 hrs. Winter</td>
<td>Considers light as an element of design and investigates its role in designing interiors. Material covered will emphasize the practicalities of appropriate fixture location and specification, blueprint reading and budgets. Prerequisites: CRT 150, ET 131, ET 141.</td>
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</tr>
<tr>
<td>CRT 256</td>
<td>Sketching for Interior Designers</td>
<td>2 hrs. Winter</td>
<td>Development of hand drawing skills pertinent to Interior Designers by emphasizing non-mechanical perspective, controlled line quality and presentation. Prerequisites: CRT 155, ET 241.</td>
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<tr>
<td>CRT 260</td>
<td>Nutrition (3-0)</td>
<td>3 hrs. Fall</td>
<td>A study of the essential nutrients and their function in the human body. Prerequisites: CHEM 101 or BIOL 101 or 107, BMED 112.</td>
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<tr>
<td>CRT 261</td>
<td>Agronomy (Crop Production) (4-0)</td>
<td>4 hrs. Fall, Winter</td>
<td>The principles of crop production, management, breeding, weed control, and crop quality are considered as they relate to field crops.</td>
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<tr>
<td>CRT 262</td>
<td>Principles of Horticulture (4-0)</td>
<td>4 hrs. Fall</td>
<td>Basic principles of modern horticulture including the study of fruits, vegetables, flowers, ornamental trees, turf management, plant propagation, and nursery culture.</td>
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<tr>
<td>CRT 265</td>
<td>Meal Management (3-0)</td>
<td>3 hrs. Winter</td>
<td>A study of the odd-years meals Planning, preparing, and serving meals with emphasis on meal quality and on time, money, and energy management. Prerequisite: CRT 165.</td>
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<tr>
<td>CRT 266</td>
<td>Food and Society (3-0)</td>
<td>3 hrs. Fall, Winter</td>
<td>Study of the effects of culture and environment on the problems of food production and meeting nutrient needs in western and non-western countries.</td>
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</tr>
<tr>
<td>CRT 300</td>
<td>Careers in Interiors (1-0)</td>
<td>1 hr. Fall</td>
<td>A survey of the diversified career opportunities available in the interior design industry.</td>
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</tbody>
</table>
| CRT 302     | Coordinated Distribution Practices               | 3 hrs. Fall, Winter, Spring | Advanced supervised work experience under the supervision of the University and the participating company. Written reports required, and a performance appraisal of the
The food distribution industry for controlling 3hrs. Fall, Winter
Extensive investigation of basic elements involved in a job search, including job resume, letter of application, career resources and establishing contacts, and questions and kinesics in the job interview.

CRT 309 Industry Survey (3-0)
3 hrs. Spring, Summer
Trips are made to representative businesses and industrial establishments to observe such functions as production, transportation, storage, distribution, and marketing. Company representatives address the class on the phases listed. Written reports are made of the visit, and a fee for transportation and housing is required from each student.

CRT 318 Male Selection and Marriage (3-0)
3 hrs. Fall, Winter, Spring
Exploration of research, literature, and practical issues related to courtship, mate selection, and marriage, marital communications, conflict resolution, and family relationships included.

CRT 320 Visual Merchandising (3-0)
3 hrs. Fall, Winter
Specific development of display fundamentals in composition, lighting, color, sign, motion, ideas, organization and management, installation, budget, tools, props, materials, mannequins, store planning, point of purchase, exhibits, showrooms, and special promotion. Prerequisite: CRT 155.

CRT 324 Dressmaker Tailoring (2-3)
3 hrs. Winter
Construction of tailored garments using time-saving methods. A minimum of two garments will be completed. Prerequisite: CRT 124, 224, or consent of instructor.

CRT 326 History of Costume I (3-0)
3 hrs. Fall
Survey of the development of costume from prehistoric people to the French Revolution and its application to contemporary dress.

CRT 327 History of Costume II (3-0)
3 hrs. Winter
Survey of the development of costume from the French Revolution to present day with emphasis on 20th century designers and analysis of historic fashion cycles and current trends as a basis for future prediction and design.

CRT 329 Promotion and Coordination (3-0)
3 hrs. Fall, Winter
Principles and special techniques and sources of information important in presenting fashion products. Prerequisites: CRT 126, CRT 155.

CRT 331 Food Distribution Managerial Processes (3-0)
3 hrs. Fall, Every fourth Spring beginning Spring 1988
A study of advanced techniques in the development of food distribution personnel. Emphasis will be placed on job understanding, career dynamics, performance review, performance interview, behavior principles, and career discussions including appraising promotability. Classroom practice of these techniques using role-playing procedures. Prerequisite: CRT 231.

CRT 332 Food Distribution Systems Control (3-0)
3 hrs. Fall, Every fourth Spring beginning Spring 1988
An analysis of the systems and controls used in the food distribution industry for controlling operations, maximizing profits and minimizing costs, the use of special operating data and ratios to measure performance, budget manpower, and forecast sales and profits, as well as other strategies and control systems applicable to food distribution. Prerequisite: CRT 232.

CRT 336 Petroleum Jobber Operations (3-0)
3 hrs. Fall
A study of petroleum jobber operations with special emphasis on heating oil, including degree day forecasting, delivery dispatch, credit and collection control, sales and cost analyses, employee productivity, and operating expense accounting with the use of electronic processing.

CRT 337 Distribution and Handling of Petroleum Products (3-0)
3 hrs. Winter
A study of wholesale and retail distribution channels used by major and independent companies. The transportation and handling of petroleum products from the oilfield to the retail outlet. The analysis of a sales territory and the selection of a service station site.

CRT 350 Contract Design I (2-3)
3 hrs. Winter
Introduces the design of the business environment. Concentrates on offices and the use of systems products. Prerequisites: CRT 155, CRT 205, CRT 251, CRT 255, CRT 350, and ET 354.

CRT 359 Visual Design Techniques (2-3)
3 hrs. Fall, Winter
Course involves the designing or specifying of store furnishings, fixtures and lighting necessary in coordinating promotional exhibits. Course also addresses signage development, prop construction, showroom design and layout. Prerequisite: CRT 155.

CRT 360 Feeding and Animal Nutrition (4-0)
4 hrs. Winter
The science of feeding, caring for, and managing livestock, including the formulation of rations for beef, dairy, sheep, swine, poultry, and horses.

CRT 361 Introduction to Soils (4-0)
4 hrs. Fall, Winter
The origin and development of soils as natural entities with certain inherent characteristics. Basic relationships between soils and plants and the principles involved in the practical use and conservation of the soil. Prerequisite: CHEM 100 or one unit H.S. Algebra and Chemistry

CRT 362 Landscape Gardening (3-0)
3 hrs. Winter or Spring
Care and planting of trees, flowers and shrubs, lawn establishment and care, identification and selection of planting materials.

CRT 363 Landscape Design (3-0)
3 hrs. Winter or Spring
Emphasis in this course will be placed on the environmental approach to landscaping. This concept considers the relationship between a house and its lot and consequently their relationship to the neighborhood, the community, and ultimately the whole region.
CRT 430 Mass Merchandising (3-0)
3 hrs. Fall, Winter
Mass merchandising competencies of profit economics, merchandising, space allocation, supervision pricing inventory control, advertising, sales ratio, and merchandise security developed through performance objectives. Prerequisite: Junior standing.

CRT 432 Issues in Oil (1-2)
3 hrs. Winter
A study of the current issues affecting the petroleum industry. This is a capstone course for petroleum distribution majors using a seminar approach. Prerequisite: Senior standing or permission of instructor.

CRT 436 Problems in Food Distribution (3-0)
3 hrs. Winter, Every fourth Spring beginning Spring 1985
An integrating course designed for advanced students using an analytical approach to solving problems of an internal nature in food distribution firms. This is a capstone course for Food Distribution majors using the case problem method. Open only to seniors.

CRT 438 Current Issues in Food Distribution (3-0)
3 hrs. Winter, Every fourth Spring beginning Spring 1985
A study of current issues external to the firm affecting the food distribution industry. It provides an opportunity for the study of relevant issues normally beyond the scope of regular departmental offerings. Open only to seniors.

CRT 450 Residential Design (2-3)
3 hrs. Winter
Creation of artistic home interiors with materials of interior design, including the preparation of renderings and purchasing data for residential work. Prerequisites: CRT 155, CRT 251, CRT 252, CRT 255, CRT 350, ET 131, ET 341.

CRT 451 Contract Design II (3-3)
3 hrs. Fall
Courses investigating the design of business/commercial interiors with an emphasis on the total design process in developing complex architecturally oriented projects. Prerequisites: CRT 351, CRT 450.

CRT 459 Senior Studio (2-3)
3 hrs. Winter
Capstone course in investigation and execution of special problems and projects in the field of interior design. Prerequisite: CRT 450, CRT 451.

CRT 460 Advanced Nutrition (3-0)
3 hrs. Fall
Recent developments in nutrition through readings and experiences. Students may elect to work as peer educators in the Sindecuse Health Center's Weight Control Program. Prerequisites: CRT 260, BMED 240, CHEM 365.

CRT 461 Diet and Disease (4-0)
4 hrs. Winter
Study of the dietary treatment of impaired digestive and metabolic conditions. Planning of diets and reports of current research. Students may elect to work as peer educators in the Sindecuse Health Center's Weight Control Program. Prerequisites: CRT 460, dietetics major or consent of instructor.

CRT 462 Community Nutrition (3-0)
3 hrs. Winter-Even Years
Explores the role of nutrition in the health of a community. Field trips will emphasize professional competencies necessary for dietitians working in various community situations. Prerequisite: Junior or senior in dietetics.

CRT 466 Institutional Management (4-0)
4 hrs. Fall-Odd Years
Application of institutional administration principles, including job analyses, labor policies, personnel problems, cost control, and food service equipment to different food service systems. Prerequisite: CRT 260.

CRT 468 Advanced and Experimental Foods (3-3)
4 hrs. Fall
Concentrated study of advanced principles of food preparation, development of experimental techniques, and opportunities for individual studies. Prerequisites: CHEM 101, CRT 165.

CRT 469 Home Management and Equipment (3-0)
3 hrs. Winter-Even Years
A study of principles, functions, care, and application of home equipment as related to theory and principles of home management.

CRT 500 Seminar in Distribution (3-0)
2-4 hrs. Fall, Winter
An intensive study of problems related to distribution involving investigative processes, gathering of data/information, and analysis and presentation of findings. This seminar is especially recommended for seniors and graduates in all programs of distribution.

CRT 522 Textile Clinic (2-0)
2 hrs. Summer
Investigation of textile problems, resources, and research. Prerequisite: CRT 220 or permission of instructor.

CRT 524 The Socio-Psychological Aspects of Clothing (3-0)
3 hrs. Fall-Odd Years
Study of dress and adornment as related to human behaviors. An interdisciplinary approach to clothing-related research and non-verbal communication, person perception, and group conformity.

CRT 565 Problems in Nutrition (3-0)
3 hrs. Summer
A discussion of current problems in nutrition. Not open to dietetics majors. Prerequisite: CRT 260 or equivalent.

CRT 580 Project/Problems in Consumer Resources and Technology
Variable 1-4 hrs. Fall, Winter, Spring
Directed independent project in specialized curricula within Consumer Resources and Technology. Prerequisite: Department approval.

CRT 598 Independent Study in Consumer Resources and Technology
1-6 hrs. Fall, Winter, Spring
Directed independent advanced study in subject matter area not otherwise treated in departmental courses. Department approval required prior to enrollment.

ELECTRICAL ENGINEERING
Cassius A. Hesselberth, Chair
Gurbux Alag
Charles A. Davis
Sam Esmail
John W. Gessink
Dean Johnson
Joseph Kelemen
John L. Mason
S. H. Mousavinedzhad
Joseph J. Root
Frank Severance
Lambert R. VanderKooi

The Electrical Engineering Department offers curricula designed primarily to prepare personnel for professional careers in electrical engineering or computer engineering.

Cooperative Education
Students may elect the cooperative plan of education. In this plan, the student alternates a semester of study on campus with a semester of compensated industrial experience. Students may work in any area in which electrical engineers and computer engineers may be found.

Academic Advising
Students should contact the electrical engineering academic adviser as early as possible. The adviser is available to assist in individual program planning, to recommend electives appropriate to a student's educational objectives, to discuss employment opportunities, and to help solve academic problems. Substitutions and transfer credit must be approved by a departmental adviser, curriculum committee, and department chairman. The academic adviser is located in Room 203B, Kohrman Hall, (616) 383-0545.

Additional Information
General information regarding advising, scholarships, and special programs of interest to students in this department may be found under the beginning of the Engineering and Applied Sciences' section of the catalog.

Enrollment will not be honored in any course when other students are requesting that course if the student does not attend the first class meeting (lecture or lab) unless prior arrangements have been made with the instructor. Students not attending courses are responsible for processing drop slips with the Registration Office if fees are to be refunded.

Prerequisites are designed to both increase the probabilities of successful completion of the course as well as to insure the proper conduct of the course. Therefore, prerequisites will be strictly enforced in all departmental courses. Exceptions must be accepted by the department no later than the end of the add period of the semester or session.
Computer Systems Engineering

Bachelor of Science in Engineering (Computer Systems) Degree

The computer systems engineering program is primarily for those interested in the design, analysis, and implementation of electronic digital systems.

Admission
1. To be admitted to this Engineering curriculum, a student must complete all Pre-engineering requirements with grades of "C" or better. These requirements may be found in the beginning of the College of Engineering and Applied Sciences section. The Pre-engineering course requirements for this curriculum are in darker print in the schedule below.
2. Students seeking admission to this curriculum must submit an application following procedures established by the College of Engineering and Applied Sciences. Upper level transfer students may complete an application prior to their first semester of enrollment. Only students in good academic standing as defined by the University will be admitted to this curriculum.

Computer Systems Engineering Program Requirements
Candidates for the Bachelor of Science in Engineering (Computer Systems) degree must satisfy the following requirements in addition to those required by Western Michigan University:

1. A "C" average or better must be earned in courses presented for graduation with an EE, IE, or ME prefix.
2. No more than two grades of "D" or "DC" in courses presented for graduation may be counted for graduation.
3. Complete the following program of 128 semester credit hours. The schedule below is an example of one leading to graduation in eight semesters, beginning with fall. Pre-engineering requirements are in darker print.

First Semester—15 hours
MATH 122 Calculus I 4
CHEM 120 General Chemistry I 4
CS 250 Digital Logic I 3
IE 102 Technical Communication 3
PEGN Physical Education* 1

Second Semester—15 hours
MATH 123 Calculus II 4
PHYS 210 Mechanics and Heat 4
CS 111 Computer Programming I 3
AREA I General Education* 3
PEGN Physical Education 1

Third Semester—16 hours
PHYS 212 Introductory Modern Physics 4
EE 250 Digital Logic II 3
CS 251 Programming in FORTRAN 2
AREA II General Education* 3

Fourth Semester—16 hours
MATH 374 Intro Linear Alg. and Diff. Equations 4
PHYS 210 Introductory Modern Physics 4
CS 212 Computer Programming II 3
EE 251 Digital Systems II 4

First Semester—15 hours
MATH 310 Discrete Mathematical Structures 3
EE 221 Electronics I 3
EE 310 Network Analysis 3
EE 355 Digital Logic II 3
CS 223 Computer Organization and Assembly Language 3

Sixth Semester—16 hours
EE 350 Digital Electronics 4
EE 357 Computer Architecture 3
EE 371 Linear Systems 3
EE 380 Probabilistic Methods in Signal and Systems Analysis 3
CS 331 Design and Analysis of Algorithms and Data Structures 3

Seventh Semester—18 hours
EE 481 Electrical Engineering Design I 2
CS 554 Operating Systems 3
CS 485 Programming of Languages 3
AREA II General Education* 3
ME Engineering Science Elective 3
Departmental Approved Elective 4

Eighth Semester—16 hours
EE 455 Digital Signal Processing 3
EE 451 Digital Systems II 3
EE 482 Electrical Engineering Design II 3
AREA I General Education* 3
AREA IV General Education* 4

*At least two of these courses must be at the 300-400 level.

Electrical Engineering
Bachelor of Science in Engineering (Electrical) Degree

The electrical engineering program is designed to meet the needs of those students who plan to seek employment in such areas as electric power, electronics, communication, instrumentation, and controls.

Admission
1. To be admitted to this Engineering curriculum, a student must complete all Pre-engineering requirements with grades of "C" or better. These requirements may be found in the beginning of the College of Engineering and Applied Sciences section. The Pre-engineering course requirements for this curriculum are in darker print in the schedule below.
2. Students seeking admission to this curriculum must submit an application following procedures established by the College of Engineering and Applied Sciences. Upper level transfer students may complete an application prior to their first semester of enrollment. Only students in good academic standing as defined by the University will be admitted to this curriculum.

Electrical Engineering Program Requirements
Candidates for the Bachelor of Science in Engineering (Electrical) degree must satisfy the following requirements in addition to those required by Western Michigan University:

1. A "C" average or better must be earned in courses presented for graduation with an EE, IE, or ME prefix.
2. No more than two grades of "D" or "DC" in courses presented for graduation may be counted for graduation.
3. Complete the following program of 128 semester credit hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall. Pre-engineering requirements are in darker print.

First Semester—15 hours
MATH 122 Calculus I 4
CHEM 120 General Chemistry I 4
CS 250 Digital Logic I 3
IE 102 Technical Communication 3
PEGN Physical Education* 1

Second Semester—16 hours
MATH 123 Calculus II 4
PHYS 210 Mechanics and Heat 4
CS 111 Computer Programming I 3
AREA I General Education* 3

Third Semester—16 hours
PHYS 212 Introductory Modern Physics 4
EE 250 Digital Logic II 3
CS 251 Programming in FORTRAN 2
AREA II General Education* 3

Fourth Semester—16 hours
MATH 374 Intro Linear Alg. and Diff. Equations 4
PHYS 210 Introductory Modern Physics 4
EE 250 Digital Logic II 3
CS 251 Programming in FORTRAN 2
AREA II General Education* 3

*At least two of these courses must be at the 300-400 level.

Electrical Engineering Courses (EE)

Courses described in italics are approved for General Education. Numbers following course title indicate hours of lecture and laboratory per week during a semester (lecture hours-laboratory hours).

EE 100 Fundamentals of Circuits and Electronics (2-3) 3 hrs. Fall, Winter, Spring
Basic principles of electricity, magnetic devices, and electronics. May not be used as
EE 101 Fundamentals of Electronics and Machines (3-3)
3 hrs. Fall, Winter, Summer
Basic principles, characteristics, and applications of semiconductor devices, AC machines, and DC machines. May not be used as prerequisite for other EE courses. Cannot be used as credit in engineering curricula. Prerequisite: EE 100.

EE 210 Circuit Analysis (3-3)
4 hrs. Fall, Winter, Spring
Analysis of linear electric circuits using methods based on Kirchhoff’s laws and network theorems. Simple RL and RC transient. Sinusoidal steady state analysis. Prerequisites: PHY 211 or taken concurrently. MATH 123.

EE 211 Machines and Electronic Circuits (3-3)
4 hrs. Fall, Winter, Summer
Introduction to machines and electronics for non-electrical engineering students. Principles of operation, characteristics, ratings, and applications of transformers, alternators, motors, diodes, and transistors. EE and CSE students may not use credit in EE 211 toward graduate EE degree. Prerequisite: EE 210.

EE 221 Electronics I (3-3)
4 hrs. Fall, Winter
Analysis and design of electronic circuits and systems, diode circuits, transistor biasing and stabilization, simple and large signal models. Computer-aided analysis and design of multi-stage circuits. Prerequisites: EE 210, PHY 211.

EE 250 Digital Logic (I-2-3)
3 hrs. Fall, Winter, Summer
Analysis and design of combinational and sequential logic systems. Prerequisite: MATH 111 or equivalent.

EE 251 Digital Systems I (3-3)
4 hrs. Fall, Winter
Machine and assembly language programming of small computers. Introduction to microcomputer architecture and interfacing. Prerequisites: EE 250, CS 106 or CS 111 or CS 306.

EE 310 Network Analysis (3-0)
3 hrs. Fall, Winter
Classical and transform methods of network analysis, signals and waveforms. Fourier series and Fourier transforms. Frequency response. Prerequisites: EE 210, CS 112 or CS 306, MATH 374, PHY 211.

EE 320 Electronics II (3-3)
4 hrs. Fall, Winter
Analysis, design, and construction of modern electronic circuits using solid-state devices and integrated circuits, field effect transistors, basic logic gates, multivibrators, operational amplifiers, frequency response analysis and phosphodes. Prerequisites: EE 221, EE 310.

EE 330 Electrical Machinery (3-3)
4 hrs. Fall, Winter
Three-phase analysis. Analysis and design of transformers, electromechanical devices, and machines. Prerequisites: EE 310, EE 361.

EE 350 Digital Electronics (3-3)
4 hrs. Fall, Winter, Summer
The electrical and logic aspects of digital integrated circuits and their applications. Prerequisites: EE 221, EE 355.

EE 355 Digital Logic II (3-0)
3 hrs. Fall, Spring
Systems level design of digital logic circuits using hardwired and programmable system controllers. Introduction to asynchronous sequential logic circuits. Prerequisite: EE 250.

EE 357 Computer Architecture (3-0)
3 hrs. Winter
Structural organization and hardware design of digital computers. Processing and control units, arithmetic algorithms, input-output systems, and memory systems. Prerequisites: CS 223, EE 251, EE 355.

EE 361 Electromagnetic Fields (4-0)
4 hrs. Fall, Winter
A study of the fundamental laws and engineering applications of electric and magnetic fields. Maxwell’s Equations. Prerequisites: MATH 374, PHY 211.

EE 371 Linear Systems (3-0)
3 hrs. Fall, Winter
Systems and their models, state variable formulation. Convolution, feedback systems and their analysis, S-plane and frequency response. Prerequisite: EE 310.

EE 380 Probabilistic Methods of Signal and System Analysis (3-0)
3 hrs. Fall, Winter, Spring
Introduction to probability, random variables, random processes, correlation functions, spectral density, response of linear system to random inputs, optimum linear systems. Prerequisite: EE 310.

EE 420 Power Electronics (3-3)
4 hrs. Winter, Spring
Analysis and design of industrial electronic systems, power sources, motor controls, timing and sequencing circuits. Industrial applications of solid state devices. Laboratory analysis of industrial equipment. Prerequisites: EE 250, EE 320, EE 330.

EE 430 Electrical Power Systems (3-0)
3 hrs. Fall
Transmission lines, network analysis, loadflow, system faults, fault calculation, transients, and system stability. Prerequisite: EE 330.

EE 451 Digital Systems II (2-3)
3 hrs. Winter
Analysis and design of microcomputer-based digital systems. Prerequisites: EE 221, EE 251.

EE 455 Digital Signal Processing (3-0)
3 hrs. Winter

EE 460 Communication Systems (3-0)
3 hrs. Fall
Introduction to digital and analog communication systems. Design constraints of noise and bandwidth, comparison of various modulation techniques, and statistical methods. Information and channel capacity. Prerequisites: EE 371, EE 380.

EE 470 Feedback Systems (3-0)
3 hrs. Fall, Winter
Design principles of linear and non-linear feedback systems in both the frequency and time domain. Prerequisites: EE 371, EE 380.

EE 481 Electrical Engineering Design I (1-3)
2 hrs. Fall, Winter
First of a two-semester sequence on engineering design in which students work in teams on approved design projects. A preliminary design is expected at the conclusion of this course. Prerequisite: Consent of department chairperson.

EE 482 Electrical Engineering Design II (0-6)
3 hrs. Fall, Winter, Spring
Senior electrical engineering design project. A continuation of EE 481. A formal written report and a formal presentation is required at the end of the semester. Prerequisite: EE 481.

EE 490 Independent Research and Development
1-4 hrs. Fall, Winter, Spring, Summer
Individual research or special project in Electrical Engineering. Open only to juniors and seniors having the approval of the faculty member under whom the student will work and the approval of the department chair. Students may register more than once, not to exceed 4 hours.

EE 495 Topics in Electrical Engineering
1-4 hrs.
A specialized course dealing with some particular area of electrical engineering not included in other course offerings. May be repeated for credit with a different topic. Prerequisite: Consent of department.

EE 498 Readings in Electrical Engineering
1-4 hrs. Fall, Winter, Spring, Summer
A course in which advanced students may elect to pursue a program of readings in areas of special interest. Prerequisite: Permission of the instructor with whom the student wishes to work.

EE 499 Studies in Electrical Engineering
1-4 hrs. Fall, Winter, Spring, Summer
A program of independent study to provide advanced students with the opportunity to explore a topic of interest under the guidance of a faculty member. Prerequisite: Permission of the instructor with whom the student wishes to work.

EE 501 Introductory Power Systems (3-0)
3 hrs. Fall
An introduction to electrical power systems for non-electrical engineering students. Prerequisites: EE 211, MATH 374.

EE 520 Solid-State Devices (3-0)
3 hrs.
Semiconductor materials and solid state devices, atomic structure, quantum mechanics, crystalline structures, transport phenomena, thermal effects, and recombination. Devices include P-N junctions, tunnel diodes, IMPATT diodes, BJT's, and JFET's. Prerequisites: EE 361 and EE 221.

EE 530 Power System Analysis I (3-0)
3 hrs. Winter
Modern systems, control, optimization, network theories, matrix language, computer methods, steady state. Prerequisite: EE 430.

EE 550 Time-varying Fields (3-0)
3 hrs.
Electrodynamics, Maxwell’s equations, Boundary value problems and solutions of Helmholtz Equation in different coordinate systems, Green’s functions, transmission lines and wave guides. Introduction to perturbational and variational methods. Engineering EM background needed for more advanced topics. Prerequisite: EE 361.

EE 561 Data Communications (3-0)
3 hrs.
Overview of digital communications systems and networks; analysis of current standards, design techniques, routing procedures, and protocols. Prerequisites: EE 355 and EE 380.

EE 570 Digital Control Systems (3-0)
3 hrs.
State variable technique, controllability and observability, digital control system design in state or output feedback, maximum principle, optimal linear regulator-deterministic, and stochastic state observers. Prerequisite: EE 455.
Academic Advising
Students should contact their adviser as early as possible. The adviser is available to assist in individual program planning, recommend electives appropriate to a student’s educational objectives, discuss employment opportunities, and help solve academic problems. Substitutions and transfer credit must be approved by the adviser, the curriculum committee, and the department chairman. The academic adviser is located in Room 2038, Kohrman Hall, phone (616) 383-0545. Because of prerequisites and limited offering times, students must consult with an academic adviser for proper course sequence.

Additional Information
General information regarding admissions, advising, scholarships, and special programs of interest to students in this department may be found at the beginning of the College of Engineering and Applied Sciences section of the catalog.

Aviation students may qualify for the F.A.A. Airframe and Powerplant License with some additional coursework. A specially approved curriculum must be completed prior to taking the F.A.A. examination. Qualiﬁed students will be admitted to the program by departmental advisers.

Credit by examination may be allowed with appropriate evidence of preparation, experience, or certiﬁcation. Credit by examination will not be granted for ET 402, Multi-Engine Flight.

Additional Costs
Special lab fees are in effect for flight courses to cover the cost of airplane operation. The fee is subject to change without notice and currently varies from $250 to $1,800, depending on the course.

Students are required to have their own tools and laboratory courses to help cover cost of materials and services.

Cooperative Education
Students may elect the cooperative plan of education. In this plan, the student alternates a semester of study on campus with a semester of compensated industrial experience. Students may work in such areas as manufacturing, product development, quality control, and maintenance management of major companies, as well as any type of automotive or aircraft engineering activity.

Approved Electives
Electives must be approved by the department academic adviser. While choice of electives is intended to provide ﬂexibility for students, they must be selected to provide a thrust and add strength to the individual’s program. Non-related courses will not normally be approved.

Enrollment
Enrollment will not be honored in any course when other students are requesting that course if the student does not attend the ﬁrst class meeting (lecture or lab), unless prior arrangements have been made with the instructor. Students not attending classes for whatever reason, are responsible for processing drop slips with the Registration Ofﬁce if fees are to be refunded.

Satisfactory completion of ﬁrst year courses is required before enrollment in subsequent courses.

Enrollment in flight courses is subject to a waiting list which is maintained at the aviation building and administered according to departmental policy. Students will be permitted to enroll in advanced ﬂight courses on the basis of results of the department’s Pilot Proﬁle Analysis program. Participation in this program is required of all ﬂight students.

Aircraft Engineering
Bachelor of Science in Engineering (Aircraft) Degree
The aircraft engineering curriculum offers preparation for careers in the aviation industry in manufacturing, product development, ﬂight test engineering, technical sales, and other areas requiring application of engineering skills and knowledge.

Admission
1. To be admitted to this Engineering curriculum, a student must complete all Pre-engineering requirements with grades of “C” or better. These requirements may be found in the beginning of the College of Engineering and Applied Sciences section. The Pre-engineering course requirements for this curriculum are in darker print in the schedule below.

2. Students seeking admission to this curriculum must submit an application following procedures established by the College of Engineering and Applied Sciences. Upper level transfer students may complete an application prior to their ﬁrst semester of enrollment. Only students in good academic standing as deﬁned by the University will be admitted to this curriculum.

Aircraft Engineering Requirements
Candidates for the Bachelor of Science in Engineering (Aircraft) degree must satisfy the following requirements in addition to those required by Western Michigan University.

1. A “C” average or better must be earned in required courses with an AAE, EE, ET, IE, or ME prefix.

2. No more than two grades of “D” or “DC” in courses presented for graduation may be counted for graduation.

3. Complete the following program of 133 semester credit hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall. Pre-engineering requirements are in darker print.

First Semester—16 hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 122</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 101 or 102</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>CS 106</td>
<td>BASIC for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>ET 110</td>
<td>Aeronautics</td>
<td>3</td>
</tr>
<tr>
<td>AREA I</td>
<td>General Education</td>
<td>3</td>
</tr>
<tr>
<td>PEGN</td>
<td>Physical Education</td>
<td>1</td>
</tr>
</tbody>
</table>

Second Semester—17 hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 123</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 210</td>
<td>Mechanics and Heat</td>
<td>4</td>
</tr>
<tr>
<td>ET 142</td>
<td>Engineering Graphics</td>
<td>3</td>
</tr>
<tr>
<td>IE 102</td>
<td>Technical Communication</td>
<td>3</td>
</tr>
<tr>
<td>AREA I</td>
<td>General Education</td>
<td>3</td>
</tr>
</tbody>
</table>

Third Semester—18 hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 272</td>
<td>Vector and Multivariate Calculus</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 211</td>
<td>Electricity and Light</td>
<td>4</td>
</tr>
<tr>
<td>AAE 261</td>
<td>Aircraft Systems</td>
<td>3</td>
</tr>
<tr>
<td>EE 210</td>
<td>Circuit Analysis</td>
<td>4</td>
</tr>
<tr>
<td>ME 256</td>
<td>Statics</td>
<td>3</td>
</tr>
</tbody>
</table>
### Aircraft and Automotive Engineering Courses (AAE)

Numbers following course title indicate hours of lecture and laboratory per week during a semester (lecture hours lab hours).

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Title</th>
<th>Credits</th>
<th>Fall</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAE 261</td>
<td>Aircraft Systems and Propulsion</td>
<td>2-2</td>
<td>3 hrs.</td>
<td>Fall</td>
</tr>
<tr>
<td>AAE 265</td>
<td>Power Transmission Systems</td>
<td>2-2</td>
<td>3 hrs.</td>
<td>Fall</td>
</tr>
<tr>
<td>AAE 361</td>
<td>Aerodynamics and Performance</td>
<td>3-0</td>
<td>3 hrs.</td>
<td>Winter</td>
</tr>
<tr>
<td>AAE 367</td>
<td>Instrumentation and Testing</td>
<td>2-2</td>
<td>3 hrs.</td>
<td>Fall</td>
</tr>
<tr>
<td>AAE 465</td>
<td>Vehicle Dynamics</td>
<td>3</td>
<td>2 hrs.</td>
<td>Fall</td>
</tr>
<tr>
<td>AAE 466</td>
<td>Automotive Engineering Lab</td>
<td>3</td>
<td>3 hrs.</td>
<td>Fall</td>
</tr>
<tr>
<td>AAE 468</td>
<td>Engine Systems Design</td>
<td>3</td>
<td>3 hrs.</td>
<td>Fall</td>
</tr>
<tr>
<td>ME 232</td>
<td>Thermodynamics I</td>
<td>3</td>
<td>2 hrs.</td>
<td>Fall</td>
</tr>
<tr>
<td>ME 250</td>
<td>Material Science I</td>
<td>3</td>
<td>3 hrs.</td>
<td>Fall</td>
</tr>
<tr>
<td>ME 257</td>
<td>Mechanics of Materials</td>
<td>3</td>
<td>3 hrs.</td>
<td>Fall</td>
</tr>
<tr>
<td>ME 258</td>
<td>Dynamics</td>
<td>3</td>
<td>2 hrs.</td>
<td>Fall</td>
</tr>
<tr>
<td>ME 259</td>
<td>Material Science II</td>
<td>3</td>
<td>3 hrs.</td>
<td>Fall</td>
</tr>
<tr>
<td>ME 257</td>
<td>Mechanics of Materials</td>
<td>3</td>
<td>3 hrs.</td>
<td>Fall</td>
</tr>
<tr>
<td>ME 258</td>
<td>Dynamics</td>
<td>3</td>
<td>2 hrs.</td>
<td>Fall</td>
</tr>
<tr>
<td>ME 259</td>
<td>Material Science II</td>
<td>3</td>
<td>3 hrs.</td>
<td>Fall</td>
</tr>
</tbody>
</table>

### Admission

1. To be admitted to this Engineering curriculum, a student must complete all Pre-engineering requirements with grades of "C" or better. These requirements may be found in the beginning of the College of Engineering and Applied Sciences section. The Pre-engineering course requirements for this curriculum are in darker print in the schedule below.

2. Students seeking admission to this curriculum must submit an application following procedures established by the College of Engineering and Applied Sciences. Upper level transfer students may compete an application prior to their first semester of enrollment. Only students in good academic standing as defined by the University will be admitted to this curriculum.

### Automotive Engineering Degree Requirements

Candidates for the Bachelor of Science in Engineering (Automotive) degree must satisfy the following requirements in addition to those required by Western Michigan University.

1. "C" average or better must be earned in required courses with an AAE, EE, ET, IE, or ME prefix.
2. No more than two grades of "D" or "DC" in courses presented for graduation may be counted for graduation.
3. Complete the following program of 128 semester credit hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall. Pre-engineering requirements are in darker print.

### First Semester—16 hours

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
<th>Fall</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAE 263</td>
<td>Fuel Metering Systems</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>EE 211</td>
<td>Machines and Electronic Circuits</td>
<td>4</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>ME 232</td>
<td>Thermodynamics I</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>ME 250</td>
<td>Material Science I</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>ME 257</td>
<td>Mechanics of Materials</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>ME 258</td>
<td>Dynamics</td>
<td>3</td>
<td>2 hrs.</td>
</tr>
<tr>
<td>Approved Science Elective</td>
<td>4</td>
<td>4 hrs.</td>
<td>Fall</td>
</tr>
</tbody>
</table>

### Second Semester—17 hours

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
<th>Fall</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAE 264</td>
<td>Vehicle Systems and Power</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>IE 102</td>
<td>Technical Communication</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>AREA I</td>
<td>General Education*</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>AREA II</td>
<td>General Education*</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
</tbody>
</table>

### Third Semester—18 hours

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
<th>Fall</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAE 361</td>
<td>Aerodynamics and Performance</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>AAE 364</td>
<td>Electronic Systems</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>MATH 374</td>
<td>Introduction to Linear Algebra and Differential Equations</td>
<td>4</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>PHYS 211</td>
<td>Electricity and Light</td>
<td>4</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>AAE 265</td>
<td>Power Transmission Systems</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>EE 210</td>
<td>Circuit Analysis</td>
<td>4</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>ME 256</td>
<td>Statics</td>
<td>3</td>
<td>Fall</td>
</tr>
</tbody>
</table>

### Fourth Semester—17 hours

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
<th>Fall</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAE 263</td>
<td>Fuel Metering Systems</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>EE 211</td>
<td>Machines and Electronic Circuits</td>
<td>4</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>ME 250</td>
<td>Material Science I</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>ME 257</td>
<td>Mechanics of Materials</td>
<td>3</td>
<td>3 hrs.</td>
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<tr>
<td>ME 258</td>
<td>Dynamics</td>
<td>3</td>
<td>2 hrs.</td>
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<tr>
<td>Approved Science Elective</td>
<td>4</td>
<td>4 hrs.</td>
<td>Fall</td>
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### Fifth Semester—17 hours

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
<th>Fall</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAE 264</td>
<td>Vehicle Systems and Power</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>IE 102</td>
<td>Technical Communication</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>AREA I</td>
<td>General Education*</td>
<td>3</td>
<td>3 hrs.</td>
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<tr>
<td>AREA II</td>
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### Sixth Semester—18 hours

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<th>Winter</th>
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<tbody>
<tr>
<td>AAE 361</td>
<td>Aerodynamics and Performance</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>AAE 364</td>
<td>Electronic Systems</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>MATH 374</td>
<td>Introduction to Linear Algebra and Differential Equations</td>
<td>4</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>PHYS 211</td>
<td>Electricity and Light</td>
<td>4</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>AAE 265</td>
<td>Power Transmission Systems</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>EE 210</td>
<td>Circuit Analysis</td>
<td>4</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>ME 256</td>
<td>Statics</td>
<td>3</td>
<td>Fall</td>
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### Seventh Semester—17 hours

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Credits</th>
<th>Fall</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAE 264</td>
<td>Vehicle Systems and Power</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>IE 102</td>
<td>Technical Communication</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>AREA I</td>
<td>General Education*</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>AREA II</td>
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### Eighth Semester—13 hours

<table>
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<tr>
<th>Course Title</th>
<th>Credits</th>
<th>Fall</th>
<th>Winter</th>
</tr>
</thead>
<tbody>
<tr>
<td>AAE 361</td>
<td>Aerodynamics and Performance</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>AAE 364</td>
<td>Electronic Systems</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>MATH 374</td>
<td>Introduction to Linear Algebra and Differential Equations</td>
<td>4</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>PHYS 211</td>
<td>Electricity and Light</td>
<td>4</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>AAE 265</td>
<td>Power Transmission Systems</td>
<td>3</td>
<td>3 hrs.</td>
</tr>
<tr>
<td>EE 210</td>
<td>Circuit Analysis</td>
<td>4</td>
<td>4 hrs.</td>
</tr>
<tr>
<td>ME 256</td>
<td>Statics</td>
<td>3</td>
<td>Fall</td>
</tr>
</tbody>
</table>

### Additional Requirements

- Approved Science Elective
- General Education Courses
- Subsonic, incompressible aerodynamics and aircraft performance, with emphasis on design considerations. Prerequisite: ME 356 or concurrent.

### Principles of Automotive Engineering

- Application of electricity and electronics to the design, operation, and service requirements of vehicle systems including power systems. Emphasis on analysis and synthesis of system functions and design parameters. Prerequisites: AAE 261 or AAE 264, CS 106, EE 211 or concurrent.

### Additional Courses

- AAE 365 Electronic Systems (2-2) 3 hrs. Fall
- AAE 366 Automotive Engineering Lab (2-2) 3 hrs. Fall
- AAE 367 Instrumentation and Testing (2-2) 3 hrs. Fall
- ME 358 Mechanism Analysis | 3 | 3 hrs. | Fall |
- ME 359 Fluid Mechanics | 3 | 3 hrs. | Fall |

### Additional Notes

- All courses are 3-credit unless otherwise noted.
- The above timeline is an example of one leading to graduation in eight semesters, beginning in fall. Pre-engineering requirements are in darker print.
- The Pre-engineering course requirements for this curriculum are in darker print in the schedule below.
- All upper level transfer students must complete a minimum of 40 semester hours of upper-level coursework at WMU.
- Approved Science Elective includes any course numbered 200 or above.
- General Education Courses include any course numbered 100 or above.
- Subsonic, incompressible aerodynamics and aircraft performance, with emphasis on design considerations. Prerequisite: ME 356 or concurrent.
social, ethical, aesthetic, and technical considerations. Preliminary planning will be accomplished for the major senior design project. Prerequisite: AAE 367.

AAE 462 Aircraft Aerodynamic Design (3-0) 3 hrs. Fall
Aerodynamic design of aircraft emphasizing performance, stability, and control characteristics. Prerequisite: ET 461 or taking concurrently.

AAE 463 Aircraft Structural Design (3-0) 3 hrs. Fall
Structural design of aircraft emphasizing structural integrity under imposed static and dynamic loads. Design considerations include weight, cost, and mission constraints.

AAE 464 Aircraft Engine Lab (0-6) 3 hrs. Winter
Aerodynamic and structural analysis of aircraft. Emphasis on design and application of wind tunnel and flight testing techniques.

AAE 465 Aircraft Fasteners and Materials (3-0) 3 hrs. Fall
Design of aircraft and truck suspensions, steering, brakes, drive lines, and frames. Vehicle handling, structural requirements, and safety systems. Prerequisites: ME 358, ME 365.

AAE 466 Automotive Engineering Lab (0-6) 3 hrs. Winter
Special topics in automobile design including problems of performance and economy, compatibility of engine and transmission, aerodynamic design applications, and noise and vibration control. Prerequisites: AAE 461, AAE 466, AAE 475.

AAE 467 Combustion Engine Processes (3-0) 3 hrs. Fall
Combustion process investigation and cycle analysis. Comparison of actual and ideal combustion using thermodynamic and chemical analysis. Prerequisites: AAE 263, ME 232.

AAE 468 Machine Design (3-0) 3 hrs. Winter
Advanced topics in automobile design including optimization of power transmission using a systems approach. All types of powerplants are considered with laboratory exercises oriented toward development of an optimized powerplant system. Prerequisites: AAE 467, ME 358, ME 365.

AAE 472 Compressible Aerodynamics (3-0) 3 hrs. Fall
The aerodynamics of high subsonic, transonic, and supersonic flight will be studied with an emphasis on designing aircraft for these flight speeds. Prerequisite: AAE 361.

AAE 475 Vehicle Structural Design (3-0) 3 hrs. Fall
Structural design of automotive vehicles, emphasis on maintaining structural integrity under imposed loads while optimizing weight and cost. Prerequisites: AAE 461 or concurrent, ME 365.

**Engineering Technology Programs**

**Automotive Technology and Management**

Bachelor of Science Degree

The automotive technology and management curriculum prepares students for positions in supervision or management, sales, and service where technical knowledge of automobile construction and operation is necessary.

**Requirements**

Candidates for the Bachelor of Science degree must satisfy the following requirements in addition to University requirements stated elsewhere in this bulletin:

1. A "C" average or better must be earned in required courses with an EE, ET, or IE prefix.
2. No more than two grades of "D" or "DC" in courses presented for graduation may be counted for graduation.
3. Complete the following program of 128 semester credit hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall.

**First Semester—16 hours**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ET 121</td>
<td>Automotive Chassis</td>
<td>3</td>
</tr>
<tr>
<td>MATH 118</td>
<td>Precalculus Mathematics</td>
<td>4</td>
</tr>
<tr>
<td>IE 102</td>
<td>Technical Communication</td>
<td>3</td>
</tr>
<tr>
<td>CS 105</td>
<td>Introduction to Computers</td>
<td>3</td>
</tr>
<tr>
<td>ET 150</td>
<td>Introduction to Manufacturing</td>
<td>3</td>
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**Second Semester—15 hours**

<table>
<thead>
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<th>Course</th>
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</thead>
<tbody>
<tr>
<td>ET 124</td>
<td>Automotive Engines</td>
<td>3</td>
</tr>
<tr>
<td>ET 142</td>
<td>Engineering Graphics</td>
<td>3</td>
</tr>
<tr>
<td>MATH 200</td>
<td>Calculus with Applications</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 110</td>
<td>General Physics I</td>
<td>4</td>
</tr>
<tr>
<td>PEGN</td>
<td>Physical Education</td>
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**Third Semester—17 hours**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>ET 222</td>
<td>Fuels and Lubricants</td>
<td>3</td>
</tr>
<tr>
<td>ECON 201</td>
<td>Principles of Economics</td>
<td>3</td>
</tr>
<tr>
<td>EE 100</td>
<td>Fundamentals of Circuits and Electronics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 111</td>
<td>General Physics II</td>
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<tr>
<td>CHEM 103</td>
<td>General Chemistry</td>
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**Fourth Semester—16 hours**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ET 221</td>
<td>Automatic Transmissions</td>
<td>3</td>
</tr>
<tr>
<td>EE 101</td>
<td>Fundamentals of Electronics and Machines</td>
<td>3</td>
</tr>
<tr>
<td>ACTY 210</td>
<td>Principles of Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ET 281</td>
<td>Statics and Strength of Materials</td>
<td>4</td>
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**Fifth Semester—16 hours**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ET 224</td>
<td>Automotive Fuel and Electrical Systems</td>
<td>3</td>
</tr>
<tr>
<td>ACTY 211</td>
<td>Principles of Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ET 256</td>
<td>Properties of Materials</td>
<td>4</td>
</tr>
<tr>
<td>COM 104</td>
<td>Business and Professional Speech</td>
<td>3</td>
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<tr>
<td>BIS 242</td>
<td>Business Communication</td>
<td>3</td>
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**Sixth Semester—17 hours**

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>MGMT 300</td>
<td>Fundamentals of Management</td>
<td>3</td>
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<tr>
<td>MGMT 200</td>
<td>Business Statistics</td>
<td>3</td>
</tr>
<tr>
<td>ET 381</td>
<td>Thermo-Fluid Dynamics</td>
<td>4</td>
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<td>AREA II</td>
<td>General Education*</td>
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**Seventh Semester—15 hours**

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<tr>
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<td>Automotive Service Management</td>
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<tr>
<td>FCL 320</td>
<td>Business Finance</td>
<td>3</td>
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<td>AREA IV</td>
<td>General Education*</td>
<td>3</td>
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<tr>
<td>MKTG 370</td>
<td>Marketing</td>
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**Eighth Semester—16 hours**

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</tr>
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<tbody>
<tr>
<td>ET 421</td>
<td>Automechanics</td>
<td>3</td>
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<tr>
<td>IE 422</td>
<td>Conference Leadership</td>
<td>3</td>
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<tr>
<td>FCL 340</td>
<td>Legal Environment</td>
<td>3</td>
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<tr>
<td>AREA I</td>
<td>General Education*</td>
<td>3</td>
</tr>
<tr>
<td>Approved Elective</td>
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</tr>
</tbody>
</table>

* At least two of these courses must be at the 300-400 level.

**Aviation Technology and Operations**

Bachelor of Science Degree

The aviation technology and operations curriculum provides preparation for a variety of positions in operations management, technical support areas of the aviation industry. The technical management option leads to careers in areas such as technical sales or service, production, and general aviation administration. The professional pilot option prepares general aviation pilots who are competitive in both technical and business backgrounds. The aviation maintenance management option emphasizes aircraft systems, reliability and maintainability, licensing requirements, and repair facility management.

**Requirements**

Candidates for the Bachelor of Science degree must satisfy the following requirements in addition to University requirements stated elsewhere in this bulletin:

1. A "C" average or better must be earned in required courses with an EE, ET, or IE prefix.
2. No more than two grades of "D" or "DC" in courses presented for graduation may be counted for graduation.
3. Complete one of the following programs. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall, plus a spring or summer session for the maintenance management option.

**A. TECHNICAL MANAGEMENT OPTION—128 hours**

<table>
<thead>
<tr>
<th>Semester</th>
<th>Courses</th>
<th>Credits</th>
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<tbody>
<tr>
<td>First Semester—15 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ET 110</td>
<td>Aeroscience</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 106</td>
<td>Elementary Physics</td>
<td>4</td>
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<tr>
<td>MATH 200</td>
<td>Calculus with Applications</td>
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</tr>
<tr>
<td>IE 102</td>
<td>Technical Communication</td>
<td>3</td>
</tr>
<tr>
<td>PEGN</td>
<td>Physical Education</td>
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<tr>
<td>Second Semester—16 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ET 118</td>
<td>Aircraft Structures</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 103</td>
<td>General Chemistry I</td>
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<tr>
<td>CS 106</td>
<td>BASIC for Engineers</td>
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<td>MATH 260</td>
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<td>ET 142</td>
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<td>Physical Education</td>
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<tr>
<td>Third Semester—17 hours</td>
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<td></td>
</tr>
<tr>
<td>ET 117</td>
<td>Aircraft Reciprocating Powerplants</td>
<td>3</td>
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<tr>
<td>EE 100</td>
<td>Fundamentals of Circuits and Electronics</td>
<td>3</td>
</tr>
<tr>
<td>COM 104</td>
<td>Business and Professional Speech</td>
<td>3</td>
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<tr>
<td>BIS 242</td>
<td>Business Communication</td>
<td>3</td>
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<tr>
<td>AREA IV</td>
<td>General Education*</td>
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<tr>
<td>Fourth Semester—18 hours</td>
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<tr>
<td>ET 222</td>
<td>Fuels and Lubricants</td>
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<tr>
<td>ET 213</td>
<td>Airframe Hydraulic, Pneumatic, and Auxiliary Systems</td>
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<tr>
<td>EE 101</td>
<td>Fundamentals of Electronics and Machines</td>
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<td>ET 205</td>
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<td>Principles of Economics</td>
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<td>AREA I</td>
<td>General Education*</td>
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<tr>
<td>Fifth Semester—17 hours</td>
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<tr>
<td>ET 311</td>
<td>Powerplant Systems Evaluation and Testing</td>
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<tr>
<td>ET 280</td>
<td>Transportation in the U.S.</td>
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<tr>
<td>ACTY 201</td>
<td>Accounting Concepts and Applications</td>
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<tr>
<td>AREA II</td>
<td>General Education*</td>
<td>3</td>
</tr>
<tr>
<td>AREA V</td>
<td>General Education*</td>
<td>4</td>
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<tr>
<td>Sixth Semester — 15 hours</td>
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<tr>
<td>ET 313 Aircraft Electrical Systems</td>
<td>3</td>
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<tr>
<td>ET 310 Airport Management</td>
<td>OR</td>
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<tr>
<td>ET 317 Air Transportation</td>
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<tr>
<td>IE 328 Quality Assurance and Control</td>
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<tr>
<td>MGMT 300 Fundamentals of Management</td>
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<td>FCL 340 Legal Environment</td>
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<table>
<thead>
<tr>
<th>Seventh Semester — 16 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ET 415 Aircraft Turbine Powerplants</td>
</tr>
<tr>
<td>IE 320 Engineering Cost Analysis</td>
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<tr>
<td>MGMT 360 Quantitative Methods for Business Decisions</td>
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<tr>
<td>ECON 400 Managerial Economics</td>
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<tr>
<td>IE 326 Operations Planning and Control</td>
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<tr>
<td>FCL 320 Business Finance</td>
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<tr>
<td>IE 402 Supervision of Industrial Operations</td>
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<table>
<thead>
<tr>
<th>Eighth Semester — 14 hours</th>
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<tbody>
<tr>
<td>Approved Elective</td>
</tr>
<tr>
<td>IE 422 Conference Leadership</td>
</tr>
<tr>
<td>MKTG 370 Marketing</td>
</tr>
<tr>
<td>AREA I General Education*</td>
</tr>
</tbody>
</table>

* At least two of these courses must be at the 300-400 level.

B. PROFESSIONAL PILOT OPTION — 128 hours

Enrollment in flight courses is usually subject to a waiting list. A private pilot license is required to enroll in flight courses in this curriculum. Candidates for flight courses must complete an application at the aviation building before registering for these courses.

First Semester — 15 hours
- ET 110 Aerospace | 3 |
- PHYS 105 Elementary Physics | 3 |
- MATH 200 Calculus with Applications | 4 |
- IE 102 Technical Communication | 3 |
- PEGN Physical Education | 1 |

Second Semester — 17 hours
- ET 117 Aircraft Reciprocating Powerplants | 4 |
- CHEM 103 General Chemistry I | 4 |
- GEOG 105 Our Physical Environment | 4 |
- MATH 260 Elementary Statistics | 4 |
- CS 106 BASIC for Engineers | 3 |

Third Semester — 16 hours
- ET 118 Aircraft Structures | 3 |
- EE 100 Fundamentals of Circuits and Electronics | 3 |
- GEOG 225 Introduction to Meteorology and Climatology | 4 |
- ET 280 Transportation in the U.S. | 3 |
- COM 104 Business and Professional Speech | 3 |

Fourth Semester — 16 hours
- ET 213 Airframe Hydraulic, Pneumatic and Auxiliary Systems | 4 |
- ET 222 Fuels and Lubricants | 3 |
- EE 101 Fundamentals of Electronics and Machines | 3 |
- ET 205 Aviation Safety | 2 |
- ECON 201 Accounting Principles | 3 |

Fifth Semester — 16 hours
- ET 216 Aircraft Structural Repair | 3 |
- ET 311 Powerplant Systems Evaluation and Testing | 4 |
- ET 313 Aircraft Electrical Systems | 3 |
- IE 320 Supervision of Industrial Operations | 3 |
- PEGN Physical Education | 1 |

Sixth Semester — 15 hours
- MGMT 300 Fundamentals of Management | 3 |
- ET 316 Avionics Systems | 3 |
- ET 310 Airport Management | OR |
- ET 317 Air Transportation | 3 |
- COM 104 Business and Professional Speech | 3 |
- FCL 340 Legal Environment | 3 |

Spring/Summer — 10 hours
- ET 318 Aircraft Service and Management | 5 |
- ET 312 Powerplant Service and Management | 5 |

Seventh Semester — 15 hours
- ET 315 Propulsion Systems Performance | 3 |
- ET 416 Maintenance Regulations | 2 |
- MKTG 370 Marketing | 3 |
- BIS 242 Business Communication | 3 |
- AREA IV General Education* | 4 |

Eighth Semester — 14 hours
- ET 418 Systems Reliability and Maintainability | 4 |
- ET 415 Aircraft Turbine Powerplants | 4 |
- IE 402 Supervision of Industrial Operations | 3 |
- AREA V General Education* | 4 |

* At least two of these courses must be at the 300-400 level.

C. AVIATION MAINTENANCE MANAGEMENT OPTION — 138 hours

First Semester — 17 hours
- ET 110 Aerospace | 3 |
- ET 117 Aircraft Reciprocating Powerplants | 4 |
- PHYS 105 Elementary Physics | 4 |
- MATH 200 Calculus with Applications | 4 |
- CS 106 BASIC for Engineers | 3 |
- PEGN Physical Education | 1 |

Second Semester — 16 hours
- ET 117 Aircraft Reciprocating Powerplants | 4 |
- CHEM 103 General Chemistry I | 4 |
- IE 102 Technical Communication | 3 |
- ET 142 Engineering Graphics | 3 |
- AREA I General Education* | 3 |

Third Semester — 17 hours
- ET 213 Airframe Hydraulic, Pneumatic and Auxiliary Systems | 4 |
- ET 222 Fuels and Lubricants | 3 |
- EE 100 Fundamentals of Circuits and Electronics | 3 |
- MATH 260 Elementary Statistics | 3 |
- ET 280 Transportation in the U.S. | 3 |

Fourth Semester — 16 hours
- ET 256 Properties of Materials | 4 |
- ACTY 201 Accounting Concepts and Applications | 3 |
- EE 101 Fundamentals of Electronics and Machines | 3 |
- ECON 201 Principles of Economics | 3 |
- ET 205 Aviation Safety | 2 |
- PEGN Physical Education | 1 |

Fifth Semester — 16 hours
- ET 216 Aircraft Structural Repair | 3 |
- ET 311 Powerplant Systems Evaluation and Testing | 4 |
- ET 313 Aircraft Electrical Systems | 3 |
- AREA II General Education* | 3 |
- AREA I General Education* | 3 |

Sixth Semester — 15 hours
- MGMT 300 Fundamentals of Management | 3 |
- ET 316 Avionics Systems | 3 |
- ET 310 Airport Management | OR |
- ET 317 Air Transportation | 3 |
- COM 104 Business and Professional Speech | 3 |
- FCL 340 Legal Environment | 3 |

Spring/Summer — 10 hours
- ET 318 Aircraft Service and Management | 5 |
- ET 312 Powerplant Service and Management | 5 |

Seventh Semester — 15 hours
- ET 315 Propulsion Systems Performance | 3 |
- ET 416 Maintenance Regulations | 2 |
- MKTG 370 Marketing | 3 |
- BIS 242 Business Communication | 3 |
- AREA IV General Education* | 4 |

Eighth Semester — 14 hours
- ET 418 Systems Reliability and Maintainability | 4 |
- ET 415 Aircraft Turbine Powerplants | 4 |
- IE 402 Supervision of Industrial Operations | 3 |
- AREA V General Education* | 4 |

* At least two of these courses must be at the 300-400 level.

Construction Supervision and Management

Bachelor of Science Degree

The construction supervision and management curriculum prepares students for entry positions in construction planning, management, or development. Technical, business, and human relations knowledge and skills are developed in classroom settings and on residential and commercial construction job sites.

Requirements

Candidates for the Bachelor of Science degree must complete the following program of 128 semester credit hours as well as University requirements stated elsewhere in this bulletin.

1. A "C" average or better must be earned in required courses with an EE, ET, IE, or ME prefix.
2. No more than two grades of "D" or "DC" in courses presented for graduation may be counted for graduation.
3. Complete the following program of 128 semester hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall, with two spring and/or summer sessions.

First Semester — 16 hours
- ET 131 Introduction to Building Practices | 3 |
- ET 141 Introduction to Technical Drawing | 3 |
- CS 105 Introduction to Computers | 3 |
- CHEM 103 General Chemistry I | 4 |
- IE 102 Technical Communication | 3 |

Second Semester — 15 hours
- ET 110 Aerospace | 3 |
- ET 117 Aircraft Reciprocating Powerplants | 4 |
- PHYS 105 Elementary Physics | 4 |
- MATH 200 Calculus with Applications | 4 |
- CS 106 BASIC for Engineers | 3 |
- PEGN Physical Education | 1 |

Third Semester — 16 hours
- ET 213 Airframe Hydraulic, Pneumatic and Auxiliary Systems | 4 |
- ET 222 Fuels and Lubricants | 3 |
- EE 100 Fundamentals of Circuits and Electronics | 3 |
- MATH 260 Elementary Statistics | 3 |
- ET 280 Transportation in the U.S. | 3 |

Fourth Semester — 16 hours
- ET 256 Properties of Materials | 4 |
- ACTY 201 Accounting Concepts and Applications | 3 |
- EE 101 Fundamentals of Electronics and Machines | 3 |
- ECON 201 Principles of Economics | 3 |
- ET 205 Aviation Safety | 2 |
- PEGN Physical Education | 1 |

Fifth Semester — 16 hours
- ET 216 Aircraft Structural Repair | 3 |
- ET 311 Powerplant Systems Evaluation and Testing | 4 |
- ET 313 Aircraft Electrical Systems | 3 |
- AREA II General Education* | 3 |
- AREA I General Education* | 3 |

Sixth Semester — 15 hours
- MGMT 300 Fundamentals of Management | 3 |
- ET 316 Avionics Systems | 3 |
- ET 310 Airport Management | OR |
- ET 317 Air Transportation | 3 |
- COM 104 Business and Professional Speech | 3 |
- FCL 340 Legal Environment | 3 |

Spring/Summer — 10 hours
- ET 318 Aircraft Service and Management | 5 |
- ET 312 Powerplant Service and Management | 5 |

Seventh Semester — 15 hours
- ET 315 Propulsion Systems Performance | 3 |
- ET 416 Maintenance Regulations | 2 |
- MKTG 370 Marketing | 3 |
- BIS 242 Business Communication | 3 |
- AREA IV General Education* | 4 |

Eighth Semester — 14 hours
- ET 418 Systems Reliability and Maintainability | 4 |
- ET 415 Aircraft Turbine Powerplants | 4 |
- IE 402 Supervision of Industrial Operations | 3 |
- AREA V General Education* | 4 |

* At least two of these courses must be at the 300-400 level.
Engineering Graphics
Bachelor of Science Degree

The engineering graphics curriculum deals with symbolic communication related to product and tooling activities of industry including documentation methods, graphic science, industrial processes, and materials. Selection of approved electives allows tailoring the thrust of the program toward business, supervision, or technical areas such as cast metals, plastics, or computers.

Program Requirements

Candidates for the Bachelor of Science degree must satisfy the following requirements in addition to University requirements stated elsewhere in this bulletin:

1. A “C” average or better must be earned in courses presented for graduation with an EE, ET, or IE prefix.
2. No more than two grades of “D” or “DC” in courses presented for graduation may be counted for graduation.
3. Complete the following program of 128 semester credit hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall.

First Semester—17 hours

ET 142 Engineering Graphics ........................................ 3
ET 150 Introduction to Manufacturing ......................... 3
MATH 118 Precalculus Mathematics .............................. 4
CHEM 103 General Chemistry I .................................... 4
CS 105 Introduction to Computers ................................. 3

Second Semester—17 hours

ET 246 Introduction to Computer Aided Design ............... 3
EE 100 Fundamentals of Circuits and Electronics .......... 3
PHYS 111 General Physics II .................................. 4
COM 104 Business and Professional Speech .................. 3
PEGN Physical Education ..................................... 1

Third Semester—17 hours

ET 256 Properties of Materials .................................. 4
CS 236 Principles of Accounting ................................ 3
ET 258 Statics and Strength of Materials ....................... 3
ECON 201 Principles of Economics .............................. 3

Fourth Semester—17 hours

ET 342 Machine Drafting .......................................... 3
ET 354 Metrology .................................................. 3
CS 306 Introductory Programming ................................ 3
AREA I General Education .................................... 3
PEGN Physical Education ..................................... 1

Fifth Semester—16 hours

ET 348 Programming for Computer Aided Design ......... 3
AREA II General Education .................................... 3

Sixth Semester—16 hours

ET 142 Engineering Graphics ........................................ 3
ET 150 Introduction to Manufacturing ......................... 3
MATH 118 Precalculus Mathematics .............................. 4
CHEM 103 General Chemistry I .................................... 4
CS 105 Introduction to Computers ................................. 3

Engineering Metallurgy
Bachelor of Science Degree

The engineering metallurgy curriculum is an applied program of study in materials including process control, product development, production, and supervision. Selection of approved electives allows tailoring the program toward business, supervision, or technical areas such as cast metals and metal fabrication.

Program Requirements

Candidates for the Bachelor of Science degree must satisfy the following requirements in addition to University requirements stated elsewhere in this bulletin:

1. A “C” average or better must be earned in courses presented for graduation with an EE, ET, or IE prefix.
2. No more than two grades of “D” or “DC” in courses presented for graduation may be counted for graduation.
3. Complete the following program of 128 semester credit hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall.

First Semester—15 hours

ET 142 Engineering Graphics ........................................ 3
MATH 118 Precalculus Mathematics .............................. 4
CHEM 101 General Chemistry I .................................... 4
CHEM 102 General Chemistry II ................................... 4
CS 105 Introduction to Computers ................................. 3

Second Semester—16 hours

ET 246 Introduction to Computer Aided Design ............... 3
EE 100 Fundamentals of Circuits and Electronics .......... 3
PHYS 111 General Physics II .................................. 4
COM 104 Business and Professional Speech .................. 3
PEGN Physical Education ..................................... 1

Third Semester—17 hours

ET 256 Properties of Materials .................................. 4
CS 236 Principles of Accounting ................................ 3
ET 258 Statics and Strength of Materials ....................... 3
ECON 201 Principles of Economics .............................. 3

Fourth Semester—17 hours

ET 342 Machine Drafting .......................................... 3
ET 354 Metrology .................................................. 3
CS 306 Introductory Programming ................................ 3
AREA I General Education .................................... 3
PEGN Physical Education ..................................... 1

Fifth Semester—16 hours

ET 348 Programming for Computer Aided Design ......... 3
AREA II General Education .................................... 3

Sixth Semester—16 hours

ET 342 Machine Drafting .......................................... 3
ET 354 Metrology .................................................. 3
CS 306 Introductory Programming ................................ 3
AREA I General Education .................................... 3

Industrial Design
Bachelor of Science Degree

The curriculum in industrial design is a blend of technology, business, art, and general studies with courses in mechanical design, drafting, illustration, programming, design philosophy, and
practices. This program prepares designers with the aesthetic and technical potential to set new directions in product development and design, based on knowledge of materials, processes, quality, and production standards.

Requirements
Candidates for the Bachelor of Science degree must satisfy the following requirements in addition to University requirements stated elsewhere in this bulletin:

1. A "C" average or better must be earned in required courses with an EE, ET, or IE prefix.
2. No more than two grades of "D" or "DC" in courses presented for graduation may be counted for graduation.
3. Complete the following program of 128 semester hours. The schedule below is an example of one leading to graduation in eight semesters beginning in fall.

First Semester—15 hours
ET 142 Engineering Graphics ..............................
MATH 118 Precalculus Mathematics .....................
ART 103 Foundation 2D Design ...........................
ET 143 Industrial Design Studio ...........................

Second Semester—17 hours
ET 144 Descriptive Geometry .............................
ET 147 Industrial Design Studio ..........................
ET 150 Introduction to Manufacturing ...................
ART 102 Foundation 2D Design ...........................
PHYS 110 General Physics I ..............................
IE 102 Technical Communication ........................

Third Semester—17 hours
ET 248 Technical Illustration I ...........................
ET 243 Industrial Design Studio ..........................
ET 245 Design for Manufacturing ........................
CS 105 Introduction to Computers ........................
ART 103 Theory of Art .............................
MATH 200 Calculus with Applications ..................

Fourth Semester—17 hours
ET 242 Production Drafting ..............................
ET 281 Statics and Strength of Materials .................
AREA I General Education, Art Elective* ............... 
ET 247 Industrial Design Studio ..........................
COM 104 Business and Professional Speech ............
ART 231 Sculpture .............................

Fifth Semester—16 hours
ET 246 Introduction to Computer Aided Design ........
ET 256 Properties of Materials ..........................
ET 152 General Metals ................................
ECON 201 Principles of Economics .....................
ACTY 210 Principles of Accounting .....................

Sixth Semester—15 hours
FCL 340 Legal Environment ............................
ET 343 Industrial Design Studio ..........................
PEGN 201 Physical Education ...........................
AREA II General Education* ...........................
PAPR 150 Introduction to Graphic Arts .................

Seventh Semester—16 hours
ART 245 Graphic Design ..............................
ART 240 Painting .......................................... 
MGMT 451 Administrative Behavior .....................
ET 347 Industrial Design Studio ..........................
AREA IV General Education* ...........................
PEGN Physical Education ..............................

Eighth Semester—15 hours
ET 445 Product Design and Development .................
ET 447 Industrial Design Studio ..........................
ART 248 Photography ......................................

Manufacturing Engineering Technology
Bachelor of Science Degree
The manufacturing engineering technology curriculum offers preparation for entry positions in manufacturing industries. Understanding of materials and production processes equips graduates to plan manufacturing practices and to develop tools, machines, and systems necessary for efficient production. Program options allow students to specialize in cast metals technology, plastics technology, or wood products manufacturing.

1. A "C" average or better must be earned in required courses with an EE, ET, ME, or IE prefix.
2. No more than two grades of "D" or "DC" in courses presented for graduation may be counted for graduation.
3. Complete the following program of 128 semester hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall.

First Semester—16 hours
ET 150 Introduction to Manufacturing ..................
ET 142 Engineering Graphics ..........................
MATH 118 Precalculus Mathematics .....................
CS 105 Introduction to Computers ........................

Second Semester—15 hours
ET 132 Wood Processing ................................
MATH 200 Calculus with Applications ..................
PHYS 110 General Physics I ..............................
COM 104 Business and Professional Speech ............

Third Semester—17 hours
ET 154 Machining Fundamentals ........................
ET 242 Production Drafting ..............................
PHYS 111 General Physics II ............................
CHEM 103 General Chemistry I ..........................
AREA I General Education* ...........................

Fourth Semester—17 hours
ET 246 Introduction to Computer Aided Design ........
ET 250 Plastics Properties and Processing ..............
ET 256 Properties of Materials ..........................
ET 281 Statics and Strength of Materials .................

Fifth Semester—17 hours
ET 354 Metrology ........................................
ET 381 Thermo-Fluid Dynamics ..........................
MATH 260 Elementary Statistics ........................
ECON 201 Principles of Economics .....................
EE 101 Fundamentals of Electronics and Machines ....

Sixth Semester—17 hours
ET 358 Computer Aided Manufacturing ..................
ET 352 Pattern Making and Casting .....................
ET 356 Welding and Fabrication ........................
ME 375 Experimental Stress Analysis .................
AREA IV General Education* ...........................

Seventh Semester—15 hours
ET 357 Pressworking .....................................
IE 326 Operations Planning and Control ...............
IE 422 Conference Leadership ...........................
AREA I General Education* ...........................
Approved Elective .......................................

Eighth Semester—14 hours
ET 458 Automated Manufacturing Systems ..............
IE 328 Quality Assurance and Control .................
AREA I General Education* ...........................
Approved Elective .......................................

Wood Manufacturing Option (total hours for graduation—128)
In place of ET 356, ET 357, and 3 hours of approved electives, the following courses must be completed:

ET 353 Physical Metallurgy I .............................
ET 355 Advanced Metal Casting ........................
ET 452 Die Casting ........................................
IE 300 Internship (in Foundry Industry) ...............
IE 402 Supervision of Industrial Operations ..........

Plastics Option (total hours for graduation—130)
In place of ET 357 and 7 hours of approved electives, the following courses must be completed:

ET 350 Production Thermoplastic Processing ............
ET 450 Engineering Polymers and Composites ...........
ET 451 Plastics Assembly and Testing ..................
ET 459 Mold Design and Construction .................

Manufacturing Technology Minor
The manufacturing technology minor is available to College of Business students majoring in business-related fields. It is recommended that students selecting the manufacturing technology minor fulfill their General Education Area III requirements by taking CHEM 101 or 103 and/or PHYS 106. The manufacturing technology minor totals 15 semester credit hours including three required courses and two approved elective courses selected in consultation with a student’s major adviser.

REQUISITE COURSES—10 hours
ET 142 Engineering Graphics ...........................
ET 150 Introduction to Manufacturing Processes ....

APPROVED ELECTIVES—6 hours
Select two (2) courses.
EE 100 Fundamentals of Circuits and Electronics ....
EE 101 Fundamentals of Electronics and Machines 
EE 256 Properties of Materials ..........................
EE 250 Digital Logic I .................................

* At least two of these courses must be at the 300-400 level.
Theory, operation, troubleshooting, and regulatory structure of the industry.

Prerequisite: ET 110 or consent of department.

ET 100 Private Pilot Ground School (3-0) 3 hrs. Fall, Winter
A beginning course for students engaged in primary flight instruction or interested in such instruction. Topics include flight theory, federal air regulations, aviation weather, navigation, performance factors, and weight and balance. Upon completion, the student may take the Federal Aviation Administration written examination for private pilot.

ET 110 Aeroscience (3-0) 3 hrs. Fall
A first course in aviation including a review of aviation history, theory of flight, aerodynamics, performance, weight and balance, helicopter theory, and regulatory structure of the industry. Prerequisite: PHYS 106 or taking concurrently.

ET 116 Aircraft Propellers (1-3) 2 hrs. Winter
Theory, operation, troubleshooting, and servicing of aircraft propeller systems for reciprocating and turbine engines. For students seeking the A and P license. Prerequisite: ET 110 or consent of department.

ET 117 Aircraft Reciprocating Powerplants (3-2) 4 hrs. Fall, Winter
Reciprocating aircraft engine principles, designs, and operations. Laboratory work includes disassembly and inspection of engines and components and engine operation. Prerequisite: ET 110 or concurrent.

ET 118 Aircraft Structures (2-2) 3 hrs. Fall, Winter
Airframe structures and coverings including fabric, sheet metal, honeycomb, plastics, and hardware. Laboratory practice in preventive maintenance and inspection. Prerequisite: ET 110 or taking concurrently.

ET 119 Reciprocating Powerplant Overhaul (0-5) 2 hrs. Fall
Comprehensive laboratory study of aircraft reciprocating powerplants involving inspection, repair, and operational procedures for students seeking the A and P license. Prerequisite: ET 117.

ET 121 Automotive Chassis (2-3) 3 hrs. Fall, Winter
The design, operation, and service of automotive suspension, wheel alignment, steering, brakes, clutch systems, and air conditioning units. Laboratory work will involve disassembly, inspection, calculation of loads, and operations needed to restore to service.

ET 124 Automotive Engines (2-3) 3 hrs. Fall, Winter
The design, dynamic characteristics, elementary thermodynamics, and basic service techniques for automotive engines. Theory is supplemented with laboratory work involving disassembly, visual and mechanical inspection of parts, plotting charts and graphs of engine characteristics, performing service operations, assembly, and engine operation. Prerequisite: MATH 111 or equivalent.

ET 131 Introduction to Building Practices (3-0) 3 hrs. Fall, Winter
An overview of all the operations involved in constructing a residential dwelling. Emphasis is placed on understanding common practices, materials, nomenclature, and blueprint reading in construction. Careers in the construction industry are discussed. An introduction to computer activities in construction is practiced.

ET 132 Wood Processing (2-3) 3 hrs. Fall, Winter
Selecting materials for proper use, seasoning and grading of lumber, fabricated wood products, and planning and layout. Joinery applications involving clamping, adhesives and fasteners. Also included is the use of hand tools, power hand tools, and introduction to machining, and selection and application of finishing materials.

ET 141 Introduction to Technical Drawing (2-3) 3 hrs. Fall, Winter
Principles of graphic communication in engineering and technology. Topics covered are: orthographic projection, technical sketching, engineering lettering, sections, dimensioning practices, auxiliary views, pictorial drawing (oblique and isometric), and charts and graphs. Student is expected to develop a basic degree of skill in each of these areas. Current ANSI standard practices are followed.

ET 142 Engineering Graphics (2-3) 3 hrs. Fall, Winter
Principles of graphic communication in engineering and technology. Topics covered are: orthographic projection, technical sketching, engineering lettering, sections, dimensioning practices, auxiliary views, pictorial drawing (oblique and isometric), and charts and graphs. Student is expected to develop a basic degree of skill in each of these areas. Current ANSI standard practices are followed.

ET 144 Descriptive Geometry (2-3) 1 hr. Fall, Winter
Study of space concepts involving points, lines, planes, and solids. Prerequisite: ET 110.

ET 150 Introduction to Manufacturing (3-0) 3 hrs. Fall, Winter
Industrial methods employed in current manufacturing processes. Analysis of hot and cold working processes, products, materials, case studies, management techniques, manufacturing productivity, performance testing, engineering design and economic considerations.

ET 152 General Metals (2-3) 3 hrs. Fall, Winter
Metalworking technology principles and practices. Includes cutting, forming, fabricating, and finishing techniques. Prerequisite: ET 150.

ET 154 Machining Fundamentals (2-3) 3 hrs. Fall, Winter, Spring
Theory and laboratory experience in the basic techniques used in removal of machinable materials. Introduction to tools, measurements, machine use, and cutting tool geometry. Consideration of advanced machining techniques. Prerequisite: ET 150.

ET 183 Principles of Auto Maintenance (2-0) 2 hrs. Fall, Winter
A course to help the consumer become aware of automobile maintenance which can help minimize the cost and maximize automobile dependability. May be applied toward graduation requirements in automotive curricula.

ET 190 Childhood/Adulthood Crafts and Adapted Techniques (2-3) 3 hrs. Fall, Winter
Studies of crafts with emphasis on elementary, special therapeutic, and recreational activities with basic techniques and adaptable techniques in wood, leather, metal, graphics, electricity, and plastics.

ET 205 Aviation Safety (2-0) 2 hrs. Winter
Physiological and psychological factors relating to flight safety emphasizing cause and effect of airplane accidents and related problem-solving processes. Includes a systems approach to safety program development and management. Prerequisite: ET 110 or consent of department.

ET 213 Airframe Hydraulic, Pneumatic, and Auxiliary Systems (2-4) 4 hrs. Fall, Winter, Spring
Classroom and laboratory study of aircraft hydraulic and pneumatic components and systems, air conditioning and pressurization, fire detection and extinguishing systems and other auxiliary systems. Prerequisites: ET 110, CS 106 or concurrently.

ET 216 Aircraft Structural Repair (0-6) 3 hrs. Fall, Winter
Major structural repair methods including procedures for metals, plastics, composites, and welded structures. Prerequisites: ET 118, ET 256.

ET 221 Automatic Transmissions (2-2) 3 hrs. Fall, Winter
Torque converters, pumps, controls, gear trains, and holding devices used in automatic transmissions. Emphasis will be placed on principles of design, operation, application, and service of major components as well as limitations and requirements relating to lubrication, sealing and bearings. Laboratory work will involve disassembly, inspection, service operations, calculation of torque capacities, and plotting of test results on an operating unit. Prerequisite: PHYS 106.

ET 222 Fuels and Lubricants (2-2) 3 hrs. Fall, Winter
A study of petroleum products and their application to the fuel and lubricant requirements of automobiles and aircraft. Laboratory tests are conducted to ascertain octane requirements, octane numbers, viscosity, volatility, flash and fire point, grease penetration, API degree, and dropping point of grease. Prerequisite: CHEM 101 or CHEM 102 or CHEM 103.
ET 224 Automotive Fuel and Electrical Systems (3-4)
4 hrs. Fall, Winter
Theory and practice in diagnosing, adjusting and tuning modern automotive engines and electrical accessories. Laboratory practice is provided using oscilloscopes, distributor testers, generator test benches, and other engine and electrical testing equipment. Prerequisite: EE 101.

ET 230 Machine Woodworking (2-3)
3 hrs. Fall, Winter
Project analysis and design including the development of process route sheets. Specifications and function of common woodworking machines, theory, and laboratory experiences in their safe operation. Prerequisite: ET 132.

ET 233 Building Codes (3-0)
3 hrs. Fall
Application of model codes to residential and commercial structures, nonstructural and structural plan review, fire codes, codes governing the installation of the electrical, plumbing and heating elements of the building, inspection techniques, and code administration. Prerequisite: ET 131.

ET 235 Wood Frame Construction (2-3)
3 hrs. Fall
On-site building and prefabrication of floor, wall, and roof framing, exterior door, window, roofing, insulation, and preparation for interior wall coverings. Supervision and optimum value engineering framing techniques. Post and beam, pole, and heavy timber construction are also included. Prerequisite: ET 131.

ET 237 Concrete Construction and Masonry (2-3)
3 hrs. Spring
Design and control of concrete mixtures. Form design, control tests for quality concrete, and reinforced concrete structures are practiced. Pre-stressed and post-tensioned concrete construction is included. Masonry skills involving brick, block, and stone and concrete construction practices are performed on a job site. Prerequisites: ET 131, ET 235.

ET 239 Interior Trim and Finish (2-3)
3 hrs. Winter
Installation of interior wall, floor, and ceiling coverings. Interior trim, cabinet construction, hanging doors, and working with plastic laminate is practiced. Also involves kitchen layout and design activities. Prerequisite: ET 230.

ET 241 Interior Design Graphics I (2-3)
3 hrs. Fall
Designed to acquaint the student with basic architectural office techniques and to develop a degree of skill in mechanically prepared, parallel, and angular perspective drawing, proportion in perspective sketching, sketching techniques, and shades and shadows in renderings. Prerequisite: ET 141.

ET 242 Production Drafting (2-3)
3 hrs. Fall, Winter
Engineering documentation as it relates to product development, the design and material specifications of components, manufacturing process considerations, geometric tolerancing, mechanical checking, standards, and family of parts processing. Emphasis will be placed on the role that CAD plays in the production process. Prerequisites: ET 142, ET 154 or concurrent.

ET 243 Industrial Design Studio (0-3)
1 hr. Fall, Winter
Assimilation of market, manufacturing, and design information leading to presentation renderings and model. Prerequisite: ET 147.

ET 245 Design for Manufacturing (2-3)
3 hrs. Winter
Design procedures applied to product development. Consideration of function, materials, and design in ultimate product performance. An understanding of the team approach to product design and development in the manufacturing environment. Prerequisite: ET 150.

ET 246 Introduction to Computer Aided Design (2-3)
3 hrs. Fall, Winter
Principles of computer graphics technology and its applications in CAD, systems hardware and software components, and CAD systems operation. An introduction to program structure and FORTRAN programming techniques for 2D software development. Prerequisites: ET 142, CS 105.

ET 247 Industrial Design Studio (0-3)
1 hr. Fall, Winter
Applied ergonomics in product design and development, sketching, rendering, and advanced modeling building. Prerequisite: ET 243.

ET 248 Technical Illustration I (2-3)
3 hrs. Fall
Paralleling and perspective drawing, charting use of varied black and white media, texture, and percentage filament sizes as they apply to catalogs, technical manuals, reports, and sales engineering publications. Prerequisite: ET 142 or equivalent.

ET 250 Plastics Properties and Processing (2-3)
3 hrs.
Effects of polymer chemistry, additives, plasticizers, fillers, and reinforcements on the properties of plastics. Molding, forming, extrusion, casting, laminating, coating, welding, and decorating of thermoplastic and thermostet materials. Prerequisite: ET 150, CHEM 103.

ET 254 Advanced Machining (2-3)
3 hrs. Winter
Advanced theory and practice in the application of machine tool metalworking processes. Prerequisite: ET 154.

ET 256 Properties of Materials (3-0)
4 hrs. Fall, Winter, Spring
Relationship of chemical and physical properties of solids, internal structure and response to their environment. Prerequisites: CHEM 103, PHYS 106 or PHYS 110.

ET 280 Transportation in the United States (3-0)
3 hrs. Fall
A survey of transportation in the U.S. including ground, air, and sea transport systems. Historical origins, current status and problems, and alternatives for the future are discussed.

ET 281 Statics and Strength of Materials (4-0)
4 hrs. Fall, Winter, Spring
Forces on structures, moments, equilibrium, stresses and deformation in axially-loaded members, torsion members and beams. Elementary design of structural members. Prerequisite: MATH 200.

ET 300 Navigation Systems (3-0)
3 hrs. Winter
Advanced navigation systems and equipment including area navigation, pictorial displays, flight directors, and airborne radar navigation principle and interpretation. Prerequisites: ET 205, MATH 200, CS 106.

ET 301 Commercial Flight I (0-5.5)
3 hrs. Fall, Winter, Spring, Summer
Initial flight, ground, and simulator instruction in aeronautical skills and knowledge necessary for commercial flying application. Includes introduction to high performance aircraft and instrument flight. Prerequisites: Private pilot license and second class medical certificate.

ET 303 Commercial Flight II (0-5.5)
3 hrs. Fall, Winter, Spring
Continuing flight, ground, and simulator instruction in aeronautical skills, knowledge, and experience pursuant to commercial-instrument pilot certification. Particular emphasis upon use of air traffic control facilities and airways in visual as well as instrument environment. Prerequisite: ET 301.

ET 305 Commercial Flight III (0-5.5)
3 hrs. Fall, Winter, Spring, Summer
Completion of instruction and experience requirements for commercial and instrument pilot certification. Includes flight, ground, and simulator instruction. Prerequisites: ET 303, ET 300 or taking concurrently.

ET 310 Airport Management (3-0)
3 hrs. Winter
An introduction to airport operation and the duties of the airport manager. Topics studied will include the relationship between airport and community, legislation affecting airports, and planning, organizing, financing, and developing programs and services. Prerequisite: Junior standing in aviation curriculum or approval of instructor.

ET 311 Powerplant Systems Evaluation and Testing (3-2)
4 hrs. Fall, Winter
Principles of reciprocating engine fuel induction, exhaust, ignition, and propeller systems. Classroom and lab experiences covering engine instruments, engine operation and testing. Prerequisites: ET 117, EE 101.

ET 312 Powerplant Service and Management (2-10)
5 hrs. Spring
Aircraft powerplant inspection, repair and overhaul procedures including reciprocating engines, turbine engine hot section, propellers, and drive systems. Emphasis on repair station procedures, organization, and management. Prerequisites: ET 311, MGMT 300, and consent of department.

ET 313 Aircraft Electrical Systems (2-3)
3 hrs. Fall, Winter, Spring
A review of basic electricity, study and laboratory practice in aircraft electrical components and systems, electrical instrumentation, and autonav systems. Prerequisites: ET 110, EE 101.

ET 315 Propulsion System Performance (0-6)
3 hrs. Fall, Winter
Operation, testing, and diagnosis of aircraft engines and accessory systems. Application of instrumentation, dynamometers, and service test equipment. Prerequisites: ET 312, EE 101.

ET 316 Aviation Systems (2-2)
3 hrs. Fall, Winter
Advanced topics in airborne electrical and electronics systems including multiplexing, flight control, and navigation applications. Prerequisite: ET 313.

ET 317 Air Transportation (3-0)
3 hrs. Winter
Regulations, organization, and operations peculiar to the air transportation industry. Includes a study of legal aspects of air transportation and fundamentals of the air traffic control system.

ET 318 Aircraft Service and Management (2-10)
5 hrs. Summer
Airframe inspection, repair, and servicing including routine and 100-hour inspections,
minor repairs, and preventive maintenance. This study will also include management aspects of FBO service centers and related service management problems and solutions. Prerequisites: ET 213, ET 216, ET 312.

ET 322 Automotive Service Management (2-0) 2 hrs. Fall Winter
Principles involved in management of automotive repair shops including establishing objectives, organizational problems, controls, personnel management, merchandising, pricing, and customer relations. Prerequisites: Junior standing, ACTY 210, MGMT 300.

ET 326 Automotive Diagnosis (2-3) 3 hrs. Fall
Procedures and techniques used in evaluating performance and identifying malfunctions in automotive systems. Laboratory equipment as well as service shop test equipment will be used in diagnostic procedures. Prerequisites: ET 124, ET 221, ET 222, ET 224.

ET 330 Wood and Related Materials for the Interior Designer (2-3) 3 hrs. Winter
For interior design students. An introduction to woodworking materials, tools, and machining processes. Emphasis on finishing materials and their application. Also includes pad post upholstery.

ET 331 Upholstering and Wood Turning (2-3) 3 hrs. Fall

ET 332 Wood Finishing (2-3) 3 hrs. Winter
Principles and use of color in mixing and matching finishes. Purpose and characteristics of finishing materials and their interrelationships for developing finishing schedules. Application of these materials to a variety of wood species using several methods of sanding and polishing. Prerequisites: ET 132, CHEM 103.

ET 335 Soil Mechanics and Foundations (2-2) 3 hrs. Fall
Properties of soil and earth materials, soil identification, use of soils as a building and foundation material, compaction of soils, and an introduction to bearing capacities and spread footings. Foundation analysis will include piles, drilled and cast-in-place piles, lateral earth pressures, and soil pressure distribution. Design problems and soil testing will be included. Prerequisites: ET 237, ET 281, GEOL 130.

ET 337 Heating, Ventilation, and Air Conditioning (2-2) 3 hrs. Fall Winter
The design and sizing aspects needed to plan a mechanical conditioning system for a given application. Introduction to the principles of heating, ventilation, and air conditioning. Prerequisites: ET 131, ET 141, ET 235, CS 105.

ET 341 Interior Design Graphics I (2-3) 3 hrs. Winter
Study of angular and parallel perspective in interior design. Further emphasis is placed on shading, shadowing, and manipulation of drawings rendered in pencil, ink, and color as they apply to client and commercial presentation drawings. Sketching and drafting techniques are included. Introduction to computer-aided design. Prerequisite: ET 241.

ET 342 Machine Drafting (2-3) 3 hrs. Fall
Advanced study in the design and representation of machine components. Mechanical components for motion and power transmission are analyzed according to application and design constraints. CAD/CAM is incorporated at all phases of the design process. Prerequisites: ET 144, ET 242, ET 354.

ET 343 Industrial Design Studio I (1-3) 2 hrs. Fall
Design and development of a transportation product with study of materials and clay models. Prerequisite: ET 247.

ET 344 Tool Design I (2-3) 3 hrs. Fall
Basic tools, standards, and components will be applied to tooling. Tooling considerations for group technology. Prerequisite: ET 342.

ET 346 Programming for Computer-Aided Design (2-3) 3 hrs. Winter
Software development for interactive CAD. Topics include the principles of display technologies, graphic entities, storing and retrieving object data, 3D graphic displays with transformations and hidden-line removal, and menu development and software documentation. Prerequisites: ET 246, CS 306.

ET 347 Industrial Design Studio II (1-3) 2 hrs. Winter
Design and development of an industrial trade show with sketches, rendering, and model. Presentation will include market and cost studies. Prerequisite: ET 247.

ET 348 Tool Design II (2-3) 3 hrs. Winter
Part analysis for design of metal stampings, and the design of dies to produce stamped metal parts. Wire forming, cold forming, forging, and NC punching centers will be studied. Prerequisite: ET 344.

ET 350 Production Thermoplastic Processing (2-3) 3 hrs. Winter
Injection molding, blow molding, extrusion, and thermalforming. Effects of process and part quality. Effects of machine design, setup, and operation on cost and profitability. Overview of processing machinery including take off and sizing equipment. Prerequisites: ET 250, ET 256.

ET 351 Chemical Metallurgy (4-0) 4 hrs. Fall
Introduction to chemical thermodynamics, thermodynamics of the liquid and solid states, extractive metallurgy, solution chemistry, and electrochemistry. Prerequisites: ET 256, MATH 123.

ET 352 Pattern Making and Casting (2-3) 3 hrs. Fall Winter, Spring
Principles of pattern design and construction using a variety of materials and production techniques. Theory and practice in metalcasting principles using green sand, plaster, investment, centrifugal, and vacuum processes. Prerequisites: ET 132, ET 154, ET 256.

ET 353 Physical Metallurgy I (4-0) 4 hrs. Winter
Introduction to the electron theory of metals, crystal geometry, and the defect structure of metals and their application to solid state diffusion, deformation and fracture, and oxidation and corrosion of metals. Prerequisites: CHEM 101, CHEM 102, or CHEM 103; MATH 123 or MATH 200, PHYS 110.

ET 354 Metrology (2-3) 3 hrs. Fall Winter

ET 355 Advanced Metal Casting (2-3) 3 hrs. Fall Winter
A study relating metallurgical aspects of cast irons and aluminum to melting, solidification patterns and final microstructures. Current methods and techniques are included. Introduction to the principles of display technologies, graphic entities, storing and retrieving object data, 3D graphic displays with transformations and hidden-line removal, and menu development and software documentation. Prerequisites: ET 246, CS 306.

ET 356 Welding and Fabrication (2-3) 3 hrs. Fall Winter
Principles of joining metals by fusion welding, brazing, and soldering. Practices in the use of materials, tools, and equipment for gas, SMA, GTA, GMA, resistance welding and brazing, offshore and automatic flame cutting of ferrous metals. Prerequisites: ET 256, EE 100.

ET 357 Pressworking (2-3) 3 hrs. Fall Winter

ET 358 Computer-Aided Manufacturing (3-0) 4 hrs. Winter Spring

ET 359 Welding Design Analysis (3-0) 3 hrs. Winter
Production methods and design using modern techniques of electron beam welding, inert gas welding, and laser welding, and application of lasers for welding. Use of various protective enclosures, plasma arc welding, automated electronic welding, weld testing techniques. Prerequisites: ET 256, ET 281, ET 356.

ET 381 Thermo-Fluid Dynamics (4-0) 4 hrs. Winter Spring
Fundamentals of fluid mechanics, thermodynamics, and heat transfer using a unified approach. Prerequisites: ET 256, PHYS 110.

ET 382 Structural Theory and Design (3-0) 3 hrs. Winter
Design of beams, trusses, retaining walls, foot systems and columns in steel, reinforced concrete, and timber. Prerequisite: ET 281.

ET 399 Field Experience 1-6 hrs. Fall, Winter, Spring, Summer
A program of practical experience and independent study to supplement and enrich
ET 400 Aerodynamics and Flight Principles (2-0)
2 hrs. Winter
Aerodynamics and flight principles related to airplane operation and performance. An advanced course for pilots to enable them to understand and predict airplane performance in a wide range of flight applications. Prerequisites: ET 303, MATH 200, CS 106.

ET 402 Multi-Engine Flight (0-1.3)
1 hr. Fall, Winter, Spring, Summer
Principles of flight in multi-engine airplanes. Provides transition from complex single-engine airplane to procedures and techniques peculiar to multi-engine operation. Prerequisite: ET 305 or equivalent.

ET 403 Flight Instrument Fundamentals (1-5)
3 hrs. Fall, Winter, Spring, Summer
A study of airplane performance skills, flight maneuvers, critical situations, and airplane type differences emphasizing instructional methods and techniques. Features flight instruction, solo flight practice, ground instruction, and actual teaching experience after certification. Prerequisites: ET 205, ET 305, ET 400.

ET 404 Instrument Flight Instructing (1-1)
1 hr. Fall, Winter, Spring, Summer
Techniques of flight instruction applied to instrument flying. Designed to upgrade an airplane flight instructor to an instrument instructor. Instructional techniques of attitude instrument flying, flight simulator utilization, instrument enroute procedures, radio navigation, critical situations, and performance analysis. After certification, supervised teaching experience is required. Prerequisite: ET 403.

ET 405 Flight Operations Analysis (3-0)
3 hrs. Winter
Advanced topics in aircraft operations with consideration of human factors, efficiency, air traffic control, environmental problems, and equipment constraints. Prerequisites: ET 300, ET 305, ET 400 or concurrent enrollment.

ET 415 Aircraft Turbine Powerplants (3-3)
4 hrs. Fall, Winter
Reaction engine principles, gas turbine engine construction, design and operation. Includes testing and operation of jet aircraft powerplant systems. Prerequisites: MATH 122 or MATH 200, ET 263 or ET 311.

ET 416 Maintenance Regulations (2-0)
2 hrs. Fall
Regulatory impact on maintenance practices, legal considerations, specific requirements for licensing and certification of airmen, repair stations, and aircraft. Prerequisites: ET 312, ET 318.

ET 416 System Reliability and Maintainability (3-0)
3 hrs. Winter
A review of aircraft maintenance practices. Monitoring and control procedures; analysis of data essential for planning and quality control. Database management applications. Prerequisites: ET 311, ET 318, MATH 260, CS 106.

ET 419 Advanced Maintenance Systems (2-2)
3 hrs.
The final course taken prior to FAA certification of the airframe and powerplant mechanic. Each subject area required for certification will be studied and the student will demonstrate competence by passing an FAA written, oral, and practical examination administrator by a designated mechanical examiner. Students electing this course must have completed or be currently completing all courses required in the special program.

ET 421 Automotive Analysis (2-2)
3 hrs. Winter
Analysis of current designs of major automotive systems concentrating on rationale for various design approaches and combinations used, when considering engineering parameters such as standards, operating limitations, manufacturing restrictions, and reparability. Prerequisite: ET 326.

ET 423 Production Woodworking (2-3)
3 hrs. Fall

ET 433 Specifications and Estimating (3-0)
3 hrs. Fall
Reading and interpretation of the contract documents, procurement, claims, calculating specifications for a variety of structures will be utilized. Principles and theories of estimating, classifications of work and quantity survey techniques applied to different types of structures and projects will be covered. Estimating quantities and listing of work items in a standard quantity survey will be practiced. Computer application in construction estimating will be emphasized. Prerequisites: ET 335, ET 337, ET 339.

ET 434 Wood Technology (1-3)
2 hrs.
Wood and wood products as engineering materials in construction and manufacturing. Characteristics, methods of identification, and performance testing of structures. Prerequisite: Consent of department.

ET 435 Commercial Construction Methods (3-0)
3 hrs. Winter
An introduction to the principles and practices that are peculiar to heavy construction. Covers excavating equipment, cranes, dewatering, drainage, and paving. Erection methods of structural steel frame practices, vertical transportation, curtainwalls, and membrane type roofs are included. Prerequisites: ET 335, ET 382.

ET 436 Problems in Woodworking (1-3)
2 hrs.
Advanced theory and practice working with new materials and methods. Written reports and discussions based on current literature are required. Topics represent special needs of the participants. Prerequisite: Consent of department.

ET 437 Advanced Estimating and Bidding (3-0)
3 hrs. Winter
An analysis and determination of construction operations including applicable indirect and overhead costs and the preparation of bid proposals for construction costs. Costs for equipment, labor materials, subcontracts, and general conditions will be discussed. Preparation of complete bid packages using plans and specifications will be performed. Prerequisite: ET 433.

ET 439 Scheduling and Project Management (3-0)
3 hrs. Winter
The planning and control of construction projects. Construction scheduling techniques such as critical path methods (CPM) and program evaluation and review (PERT) as well as computerized graphic techniques will be practiced. Management principles as applied to the construction contractor will be emphasized. Prerequisites: ET 433, MGMT 200, MGMT 300.

ET 441 Residential Architectural Design (2-3)
3 hrs. Fall
The study of architectural plans and principles of residential structures. Plans produced and studied include floor plans, plot plans, foundation plans, electrical plans, elevations, and all necessary details and specifications. Prerequisites: ET 141, ET 131.

ET 442 Tool Design III (2-3)
3 hrs.
Designing tooling systems for producing plastic parts. A study of part design for efficient part production and considerations for tooling secondary operations. Prerequisites: ET 250, ET 348.

ET 443 Commercial Architectural Design (2-3)
3 hrs. Spring
Experience in designing light commercial structures. Study of systems planning, traffic flow and area utilization, exterior design, structural analysis and design, site design and documentation. Prerequisite: ET 441.

ET 445 Product Design and Development (2-3)
3 hrs. Winter
The team approach to the design and development of a product with complete analysis and documentation. The final presentation will include a model and written and oral reports. Prerequisites: ET 242, ET 243, ET 256.

ET 446 CAD Applications (2-3)
3 hrs. Fall
Applications programming for computer graphics. Investigation of existing graphics packages and advanced software design. Development of program applications in each student’s major area of interest. Prerequisite: ET 346.

ET 447 Industrial Design Studio (1-3)
2 hrs. Winter
Development of a final critique portfolio of student work for presentation at a graduating senior show. Prerequisite: Senior standing in Industrial Design.

ET 448 Technical Illustration II (2-3)
3 hrs. Winter
Advanced illustrating, new techniques and presentation methods. Laboratory work will center around industrial illustrating methods and computer aided illustrating aids. Prerequisite: ET 248.

ET 449 Drafting/Design Management (2-0)
2 hrs. Winter
Organizing, administration, procedures, and methods involved in personnel, planning, management, equipping an industrial drafting/design department. Includes scheduling, estimating, referencing, numbering, and changing relative to existing documentation. Will also include material related to CAD/CAM. Prerequisite: Senior standing.

ET 450 Engineering Polymers and Composites (2-3)
3 hrs.
ET 451 Plastics Assembly and Testing (2-3) 3 hrs.
Product assembly, testing, and finishing. Welding, adhesive and snap-fit assembly methods, painting, printing, plating, hot stamping, and in-mold decorating. Application of ASTM standard plastics testing methods to product design, inspection, and analysis of stress, wear, and failure characteristics. Prerequisites: ET 281, ET 350.

ET 452 Die Casting (2-3) 3 hrs. Winter
A study of the elements of the process and control limits to produce sound castings. An analysis of gating systems will be evaluated with industry computer programs. Alloys will be studied in relation to parts being produced. Prerequisite: ET 352.

ET 453 Maintenance in Manufacturing (2-3) 3 hrs. Winter, Spring
Installation, adjustment, and maintenance of equipment. Machinery monitoring, diagnostics, and maintenance systems. Prerequisite: Senior standing.

ET 454 Physical Metallurgy II (2-2) 3 hrs. Winter
Introduction to X-ray diffraction of metals, phase diagrams and solid state phase changes and phase equilibrium. Prerequisite: ET 353.

ET 455 Advanced Casting Design (2-3) 3 hrs. Fall
Failure analysis of parts as the basis for design improvement. Casting sections are evaluated for multi-directional loads. Graphic methods of determination of the moment of area and moment of inertia of regular sections. Prerequisites: ET 281, ET 352.

ET 456 Studies in Cast Metal Technology 1-2 hrs. Spring, Winter
Spring schedule course offered during the week between winter and spring. Transportation charge is required. Student will tour industrial cast metal facilities to study management, current applications, and opportunities. Prerequisite: Consent of department.

ET 457 Metal Fabrication (3-0) 3 hrs. Winter

ET 458 Automated Manufacturing Systems (2-3) 3 hrs. Winter
Applications of advanced manufacturing techniques, including robotics, programmable controllers, machine vision, interfacing of other computer controlled systems, and peripheral sub-systems for flexible manufacturing. Prerequisites: ET 359, senior.

ET 459 Mold Design and Construction (2-3) 3 hrs.
Mold and die design, processing and part requirements, molded holes and undercuts, threads, inserts, types of molds, tool-making processes, tooling, materials, special fixtures. Mold and die construction using a wide range of cavity production methods. Computer analysis of temperature, pressure, and filling characteristics of a mold. Prerequisites: ET 154, ET 250.

ET 495 Topics in Engineering Technology 1-6 hrs. Fall, Winter, Spring, Summer
A specialized course dealing with some particular area of technology not usually included in other course offerings. May be repeated for credit with different topics to a maximum of six credit hours. Prerequisite: Consent of department.

ET 498 Studies in Engineering Technology 1-3 hrs. Fall, Winter, Spring, Summer
An individual study program to supplement regular course work, arranged in consultation with a study supervisor. One to three hours credit per semester. May be repeated not to exceed six credit hours. Prerequisite: Consent of department.

INDUSTRIAL ENGINEERING
Kalash M. Balta, Chair
Brian L. Akers
David W. Aldrich
Robert E. Boughner
Asrat M. Genaidy
David M. Lyth
Richard E. Munsterman
Bob E. White
Frank K. Wolf
Robert M. Wygant
Adjunct Faculty
Joseph W. Petro
Keith H. Edmondson

The Department of Industrial Engineering offers two programs, one leading to a Bachelor of Science in Engineering (Industrial) degree and the other a Bachelor of Science in Manufacturing Administration degree. Graduates from the programs are employed in a wide variety of positions in both manufacturing and service industries. A minor in industrial engineering is available only to students majoring in mathematics with the statistics option.

Cooperative Education
Students may elect the cooperative plan of education. In this plan, the student alternates a semester of study on campus with a semester of compensated industrial experience. Students may work in such areas as manufacturing, product development, quality control, and maintenance management in major companies.

Academic Advising
Students should contact the Industrial Engineering academic adviser as early as possible. The adviser is available to assist in individual program planning, recommend electives appropriate to a student’s educational objectives, discuss employment opportunities, and help solve academic problems.

Substitutions and transfer credit must be approved by the departmental advisers, curriculum committee, and department chair. The academic adviser is located in Room 2038, Kohrman Hall, (616) 383-0545.

Additional Information
General information regarding advising, scholarships, and special programs of interest to students in this department may be found under the beginning of the Engineering and Applied Sciences’ section of the catalog.

Enrollment will not be honored in any course when other students are requesting that course and the student does not attend the first class meeting (lecture or lab), unless prior arrangements have been made with the instructor. Students not attending courses are responsible for processing drop slips with the Registration Office if fees are to be refunded.

Prerequisites are designed to both increase the probabilities of successful completion of the course as well as to insure the proper conduct of the course. Therefore, prerequisites will be strictly enforced in all departmental courses. Exceptions must be accepted by the department no later than the end of the add period of the semester or session.
### Industrial Engineering

**Bachelor of Science in Engineering (Industrial) Degree**

Accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

The Industrial Engineering curriculum provides the essential foundation, experience, and understanding in science, mathematics, humanities, and engineering so that graduates may find employment in production and service industries. This program also has a broad graduate study. The industrial engineer is particularly responsible for the improvement and development of engineering management, production planning and control, plant organization, technical design related to manufacturing processes and plant automation, inspection, plant safety, and employee and employer relations.

**Admission**

1. To be admitted to this Engineering curriculum, a student must complete all Pre-engineering requirements with grades of "C" or better. These requirements may be found in the beginning of the College of Engineering and Applied Sciences section. The Pre-engineering course requirements for this curriculum are in darker print in the schedule below.

2. Students seeking admission to this curriculum must submit an application following procedures established by the College of Engineering and Applied Sciences. Upper level transfer students may complete an application prior to their first semester of enrollment. Only students in good academic standing as defined by the University will be admitted to this curriculum.

**Industrial Engineering Program Requirements**

Candidates for the Bachelor of Science in Engineering (Industrial) degree must satisfy the following requirements in addition to those required by Western Michigan University:

1. A "C" average or better must be earned in courses presented for graduation with an IE, EE, or ME prefix.

2. No more than two grades of "D" or "DC" in courses presented for graduation may be counted for graduation.

3. Complete the following program of 128 semester credit hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall. Pre-engineering requirements are in darker print.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Credits</th>
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<tbody>
<tr>
<td><strong>First Semester—15 hours</strong></td>
<td></td>
</tr>
<tr>
<td>MATH 122 Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 101 OR 102 General Chemistry</td>
<td>4</td>
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<tr>
<td>IE 102 Technical Communication</td>
<td>3</td>
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<tr>
<td>ET 142 Engineering Graphics</td>
<td>3</td>
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<tr>
<td>PEGN Physical Education</td>
<td>1</td>
</tr>
<tr>
<td><strong>Second Semester—17 hours</strong></td>
<td></td>
</tr>
<tr>
<td>MATH 123 Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 210 Mechanics and Heat</td>
<td>3</td>
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<tr>
<td>IE 206 Engineering Computation</td>
<td>2</td>
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<tr>
<td>ACTY 201 Accounting Concepts and Applications</td>
<td>3</td>
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<tr>
<td>AREA I General Education*</td>
<td>3</td>
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<tr>
<td>PEGN Physical Education</td>
<td>1</td>
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<tr>
<td><strong>Third Semester—18 hours</strong></td>
<td></td>
</tr>
<tr>
<td>MATH 272 Vector and Multivariate Calculus</td>
<td>4</td>
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<tr>
<td>PHYS 211 Electricity and Light</td>
<td>4</td>
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<tr>
<td>IE 205 Work Design</td>
<td>3</td>
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<tr>
<td>IE 261 Engineering Statistics</td>
<td>3</td>
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<tr>
<td>ME 253 Statics and Mechanics of Materials</td>
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**Fourth Semester—18 hours**

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<tr>
<th>Area</th>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PHYS 212 Introductory Modern Physics</td>
<td>4</td>
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<tr>
<td>OR</td>
<td>CHEM 120 General Chemistry II</td>
<td>4</td>
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<tr>
<td>OR</td>
<td>EE 361 Probability for Engineers</td>
<td>3</td>
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<tr>
<td>OR</td>
<td>EE 210 Circuit Analysis</td>
<td>4</td>
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<tr>
<td>OR</td>
<td>ME 250 Materials Science I</td>
<td>4</td>
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<tr>
<td>OR</td>
<td>ME 258 Dynamics</td>
<td>3</td>
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<tr>
<td>AREA IV General Education*</td>
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**Fifth Semester—17 hours**

<table>
<thead>
<tr>
<th>Area</th>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>MATH 374 Introduction to Linear Algebra and Differential Equations</td>
<td>4</td>
<td></td>
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<tr>
<td>IE 310 Engineering Economy</td>
<td>3</td>
<td></td>
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<tr>
<td>IE 316 Report Preparation</td>
<td>3</td>
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<tr>
<td>EE 211 Machines and Electronic Circuits</td>
<td>4</td>
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<tr>
<td>ECON 201 Principles of Economics</td>
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**Sixth Semester—16 hours**

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<tr>
<th>Area</th>
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<tbody>
<tr>
<td>IE 307 Computer Controlled Manufacturing Systems</td>
<td>4</td>
<td></td>
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<tr>
<td>IE 318 Statistical Quality Control</td>
<td>3</td>
<td></td>
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<tr>
<td>IE 319 Simulation Modeling and Analysis</td>
<td>3</td>
<td></td>
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<tr>
<td>ME 232 Thermodynamics I</td>
<td>3</td>
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<tr>
<td>IE Approved Elective*</td>
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**Seventh Semester—15 hours**

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<th>Area</th>
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<th>Credits</th>
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<tbody>
<tr>
<td>IE 410 Senior Seminar</td>
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<tr>
<td>IE 414 Material Handling and Facilities Design</td>
<td>4</td>
<td></td>
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<tr>
<td>IE 416 Operations Control in Industry</td>
<td>4</td>
<td></td>
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<tr>
<td>IE Approved Elective*</td>
<td>3</td>
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<tr>
<td>AREA II General Education*</td>
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**Eighth Semester—12 hours**

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<tr>
<th>Area</th>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>IE 402 Supervision of Industrial Operations</td>
<td>3</td>
<td></td>
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<tr>
<td>IE 403 Industrial Labor Relations</td>
<td>3</td>
<td></td>
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<tr>
<td>IE 415 Senior Industrial Engineering Design Project</td>
<td>3</td>
<td></td>
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<tr>
<td>IE 419 Introduction to Operations Research</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>AREA I General Education*</td>
<td>3</td>
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</table>

*At least two of these courses must be at the 300-400 level.

**Manufacturing Administration**

**Bachelor of Science Degree**

The Manufacturing Administration curriculum provides academic background in humanities, social sciences, communication, and technical subjects relating to manufacturing systems. Human relations skills used in industry when dealing with people are developed. The manufacturing administrators may direct production employees working on line operations or may direct staff personnel specifically assigned to assist the line in meeting its objectives. Employment may be in the general areas of manufacturing and service industries.

A selection of a group of courses provides the student an opportunity to concentrate in one of the several specialized areas listed below:

- IE Staff
- Manufacturing Supervision
- CAD/CAM
- Plastics
- Electronics
- Metal Working
- Small Business Management
- Technical Sales
- Metal Casting

In addition, the student can also obtain a minor in the College of Business by taking additional courses.

**Manufacturing Administration Program Requirements**

Candidates for the Bachelor of Science degree in the Industrial Engineering Program must satisfy the following requirements in addition to those required by Western Michigan University:

1. A "C" average or better must be earned in courses presented for graduation with an IE, EE, or IE prefix.

2. No more than two grades of "D" or "DC" in courses presented for graduation may be counted for graduation.

3. Complete the following program of 128 semester credit hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall, plus one spring session.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Semester—14 hours</strong></td>
<td></td>
</tr>
<tr>
<td>MATH 111 Algebra II</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 103 General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>IE 102 Technical Communication</td>
<td>3</td>
</tr>
<tr>
<td>ET 150 Introduction to Manufacturing</td>
<td>3</td>
</tr>
<tr>
<td>PEGN Physical Education</td>
<td>1</td>
</tr>
<tr>
<td><strong>Second Semester—16 hours</strong></td>
<td></td>
</tr>
<tr>
<td>MATH 200 Calculus with Applications</td>
<td>4</td>
</tr>
<tr>
<td>COM 104 Business and Professional Speech</td>
<td>3</td>
</tr>
<tr>
<td>ET 142 Engineering Graphics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 201 Principles of Economics</td>
<td>3</td>
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<tr>
<td>Free Elective</td>
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<tr>
<td><strong>Third Semester—17 hours</strong></td>
<td></td>
</tr>
<tr>
<td>MATH 260 Elementary Statistics</td>
<td>4</td>
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<tr>
<td>PHYS 110 General Physics I</td>
<td>4</td>
</tr>
<tr>
<td>CS 106 Introduction to Computers</td>
<td>3</td>
</tr>
<tr>
<td>Technical Elective*</td>
<td>3</td>
</tr>
<tr>
<td>AREA II General Education**</td>
<td>3</td>
</tr>
<tr>
<td><strong>Fourth Semester—14 hours</strong></td>
<td></td>
</tr>
<tr>
<td>PHYS 111 General Physics II</td>
<td>4</td>
</tr>
<tr>
<td>ACTY 210 Principles of Accounting</td>
<td>3</td>
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<tr>
<td>PEGN Physical Education</td>
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<tr>
<td>Technical Elective*</td>
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<tr>
<td>Free Elective</td>
<td>3</td>
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<tr>
<td><strong>Fifth Semester—16 hours</strong></td>
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<tr>
<td>IE 305 Work Analysis</td>
<td>3</td>
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<tr>
<td>IE 320 Engineering Cost Analysis</td>
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</tr>
<tr>
<td>IE 326 Operations Planning and Control</td>
<td>3</td>
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<tr>
<td>IE 322 Safety in Industry</td>
<td>3</td>
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<tr>
<td>ET 256 Properties of Materials</td>
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<tr>
<td><strong>Sixth Semester—16 hours</strong></td>
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<tr>
<td>IE 320 Quality Assurance and Control</td>
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<tr>
<td>IE 316 Report Preparation</td>
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<tr>
<td>FCL 340 Legal Environment</td>
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<td>Technical Elective*</td>
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<tr>
<td>AREA I General Education***</td>
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<tr>
<td><strong>Seventh Semester—13 hours</strong></td>
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<td>IE 422 Conference Leadership</td>
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<td>IE 406 Senior MAD Design Project</td>
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<td>3</td>
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<tr>
<td>AREA IV General Education***</td>
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</tbody>
</table>
Industrial Engineering Courses (IE)

Courses described in italics are approved for General Education. Numbers following course title indicate hours of lecture and laboratory per week during a semester (lecture hours/lab hours).

IE 102 Technical Communication (3-0)
3 hrs. Fall, Winter, Spring
Principles of objective presentation of factual material, logical organization, summarizing, ethical practices, information gathering techniques, oral communication, and listening through practical applications.

IE 205 Work Design (2-3)
3 hrs. Fall
Design of jobs and working environments in business and industry. Topics include techniques for job design, human factors engineering, work measurement, and economic analysis. A semester project requiring the design of a work station is required. Prerequisite: MATH 123.

IE 206 Engineering Computations (2-0)
2 hrs. Winter
A basic course in engineering computations including instruction in use of hand held calculators, personal computers, and the VAX network. Familiarization with the facilities in the Computer Aided Engineering Center. Prerequisite: Proficiency in BASIC programming. This prerequisite may also be met by completion of CS 106 or equivalent. Corequisite: MATH 122.

IE 261 Engineering Statistics (3-0)
3 hrs. Fall
Introduction to statistical methodology, emphasizing applications in engineering. Topics include descriptive and inferential statistics, least squares curve fitting, correlation, and analysis of variance. Prerequisite: MATH 123, a course in the use of computers. (Cross listed with MATH 261).

IE 300 Cooperative Education (Arr.)
1-3 hrs. Fall, Winter, Spring, Summer
A cooperative education program involves a full-time planned and supervised work experience in industry during the semester or the equivalent on a part-time basis. A written report of the student's activities will be required. May be elected four semesters for a maximum of twelve semester credit hours. Must be taken on a credit/no credit basis.

IE 305 Work Analysis (3-0)
3 hrs. Fall, Winter, Spring
Methods engineering and measurement of human work systems. Techniques for operation analysis, work measurement, and work sampling. Predetermined basic motion-time systems and standard data development are introduced. NOT FOR ENGINEERING CREDIT.

IE 307 Computer Controlled Manufacturing Systems (3-3)
4 hrs. Winter
Analysis and design of computer controlled manufacturing systems. Prerequisites: IE 206, EE 211 (EE 211 may be taken concurrently).

IE 310 Engineering Economy (3-0)
3 hrs. Fall, Winter, Spring
Application of principles of engineering economy for establishing cost of equipment and system feasibility. Interest, equivalence, taxes, depreciation, uncertainty and risk, incremental and sunk costs, and replacement models. Prerequisites: CS 106 or CS 306 or EE 206.

IE 316 Report Preparation (3-0)
3 hrs. Fall, Winter
Learning techniques and procedures for preparation of technical documents. Intensifying critical, analytical process of thinking, and executing writing and oral strategies for different situations. Prerequisite: IE 102, junior standing.

IE 318 Statistical Quality Control (3-0)
3 hrs. Winter
Methods of applying statistics and probability theory to control production processes. Application of computer programs to analyze quality control problems. Prerequisites: IE 206, IE 361.

IE 319 Simulation Modeling and Analysis (3-0)
3 hrs. Winter
Use of computer simulation as a modeling tool, with emphasis on discrete-event simulation. Both FORTRAN based simulation language and GPSS are used. Statistical analysis of both input data and simulation results. Prerequisites: IE 206, IE 361.

IE 320 Engineering Cost Analysis (3-0)
3 hrs. Fall
A course in engineering economics and the economic comparison of alternative technical systems. Includes interest, equivalence, depreciation, taxes, and risk. NOT FOR ENGINEERING CREDIT. Prerequisite: MATH 200.

IE 322 Safety in Industry (3-0)
3 hrs. Fall, Winter, Spring
Importance of safety in industry. Cost of accidents, fundamentals of accident prevention, elements of effective safety programs, accident investigation, and OSHA. Prerequisite: Upperclass standing.

IE 326 Operations Planning and Control (3-0)
3 hrs. Fall, Winter
Methods of controlling and coordinating production using production planning, scheduling, inventory control, and dispatching. NOT FOR ENGINEERING CREDIT. Prerequisite: MGMT 200 or MATH 260.

IE 328 Quality Assurance and Control (3-0)
3 hrs. Fall, Winter, Spring, Summer
Techniques of controlling quality in manufacturing systems. Topics include organization of quality, methods of measurement, and basic statistical tools. NOT FOR ENGINEERING CREDIT. Prerequisite: MATH 260 or MGMT 200.

IE 361 Probability for Engineers (3-0)
3 hrs. Winter
Introduction to probability emphasizing applications in engineering. Use of discrete and continuous random variables common to engineering problems. Random processes used in engineering models. Prerequisite: MATH 272. (Cross listed with MATH 361.)

IE 402 Supervision of Industrial Operations (3-0)
3 hrs. Fall, Winter, Spring
Supervisory duties and responsibilities of foremen, engineers, and technicians in industrial operations. Prerequisite: Junior standing.

IE 403 Industrial Labor Relations (3-0)
3 hrs. Fall, Summer
Relationships between government agencies, labor organizations, and management. Emphasis on development of collective bargaining procedures. Prerequisite: Senior standing.

IE 404 Plant Layout and Material Handling (3-3)
4 hrs. Winter
Comprehensive design of an industrial production system. Problems involved in and the interrelationship of plant location, product analysis, process design, equipment selection, materials handling, and plant layout. Assignments include projects designed to include the application of previous industrial engineering courses. NOT FOR ENGINEERING CREDIT.

IE 405 Senior MAD Design Project (2-3)
3 hrs. Fall, Winter
A seminar for senior industrial engineering students. Topics for discussion will be centered about the role of the industrial engineer and supervisor at place of work and obligation to society. Prerequisite: Senior standing.

IE 410 Senior Seminar (1-0)
1 hr. Fall
A seminar for senior industrial engineering students. Topics for discussion will be centered about the role of the industrial engineer and supervisor at place of work and obligation to society. Prerequisite: Senior standing.

IE 414 Material Handling and Facilities Design (3-3)
4 hrs. Fall
Methodology for planning and designing manufacturing and service related facilities, facilities location, material handling analysis and design, and warehouse design. Includes an intensive semester project to plan and design a manufacturing facility. Prerequisites: IE 205, IE 310, IE 316, IE 416 or taken concurrently.

IE 415 Senior Industrial Engineering Design Project (2-3)
3 hrs. Fall, Winter
Student project teams will be assigned system design problems with participating southwestern Michigan firms. Each team will design a solution to the problem and be responsible for writing a justification for their
IE 400 Independent Research and Development (Arr.)
3 hrs. Fall or Spring
Individual research or special project in engineering. Open only to seniors having the approval of the faculty member under whom the student will work and the approval of the department chair. Students may register more than once, not to exceed 6 hours.

IE 401 Independent Research and Development (Arr.)
3 hrs. Fall, Winter, Spring
A specialized course dealing, each time it is scheduled, with some particular aspect of industrial engineering not usually included in other course offerings. May be repeated for credit with a different topic. Prerequisite: Permission of instructor.

IE 498 Readings in Engineering (Arr.)
1-6 hrs. Fall, Winter, Spring, Summer
Independent readings in engineering. Open only to seniors having the approval of the faculty member under whom the student will work and the approval of the department chair. Students may register more than once, not to exceed 6 hours.

IE 499 Studies in Engineering (Arr.)
1-6 hrs. Fall, Winter, Spring, Summer
Independent studies in engineering. Open only to students having the approval of the faculty member under whom the student will work and the approval of the department chair. Students may register more than once, not to exceed 6 hours.

IE 500 Labor Management Relations (3-0)
3 hrs. Winter
Interplay among government agencies, labor organizations, and management. Particular emphasis is placed on collective bargaining procedures, issues, and applications through case studies. Prerequisite: IE 403 or permission of department.

IE 505 Advanced Work Analysis (3-0)
3 hrs. Fall
Synthesis of effective work methods using a predetermined basic motion-time system. Methods: Time Measurement, standard data system development, and administration. Prerequisite: IE 205, IE 305 or permission of department.

IE 507 Computer Integrated Manufacturing (3 hrs. Fall or Spring
Topics related to computer integrated manufacturing. Topics include computer process control, robotics, group technology, CNC, CAD, FMS. Hands-on experience with miniature computer controlled equipment will be included. Not open to students with credit in IE 307. Prerequisite: Course in computer programming, EE 100 or equivalent.

IE 508 Advanced Quality Control (3-0)
3 hrs. Fall
Analysis and application of new concepts in the field of quality control. Tests of significance, probability studies, and other uses of statistics as applied to quality control. Prerequisite: IE 318, IE 326, or permission of department.

IE 518 Engineering Valuation and Depreciation (3-0)
3 hrs. Winter
A study of the valuation of industrial property with emphasis on methods of estimating depreciation. Topics include concepts of value, the courts and valuation, property and other accounting records, cost indexes, estimation of service life, and methods of estimating depreciation. Prerequisite: IE 310.

IE 542 Human Factors Engineering (2-3)
3 hrs. Winter
A survey of research on the adaptation of equipment, products, and environment to human use. (Cross listed with PSY 542.)

MECHANICAL ENGINEERING

M. Jerry Kenig, Chair
Judah Ari-Gur
Christopher S. K. Cho
Jay Eastwaran
Mesulam Groper
Jerry H. Hamelink
Jerome H. Hemmye
Raymond N. House, Jr.
James B. Matthews
Iskender Sahin
Richard C. Schubert
Rameshwar P. Sharma
William J. Stiefel, Ill
Dennis J. VandenBrink
Molly W. Williams

Adjunct Faculty
Pnina Ari-Gur

The Department of Mechanical Engineering offers a program leading to the degree of Bachelor of Science in Engineering (Mechanical). The program is designed to provide engineering expertise appropriate to the diversity in mechanical engineering. It includes mathematics, general education subjects, the basic sciences, the engineering sciences, design, and an integrated computer experience. Electives may be used to deepen or broaden the program.

Mechanical engineers are found in almost every industry. Examples of areas for career opportunities include manufacturing, machine tool design, and product development; land, sea, air, and space vehicles and systems; energy conversion and energy distribution; computer hardware and computer software; environmental systems; and construction and urban development. Opportunities for mechanical engineers continue to develop with the rapid expansion of our knowledge base and population growth.

Academic Advising

Students should contact a mechanical engineering academic adviser as early as possible. Advisers are available to assist in individual program planning, to recommend electives appropriate to a student’s educational objectives, to discuss employment opportunities, and to help solve academic problems. Substitutions and transfer credit must be approved by a departmental adviser, curriculum committee, and department chair. The academic advisers are located in Room 2036, Kohran Hall, (616) 383-0545.

Scholarships and Awards

Several scholarships are available through the College of Engineering and Applied Sciences. These include, but are not limited to, scholarships through the Gilfils Associates, Lakehead-Pipeline, Durametallc Corporation, Society of Manufacturing Engineers, H. H. Harris Foundation, and the College itself. Program announcements are distributed during the application period.

The Department of Mechanical Engineering also annually presents several awards, which include:

- Dean E. Bluman Memorial Award—presented to an outstanding student of mechanical engineering who has demonstrated interest and ability in liberal studies.
- The late Dr. Bluman who, during his tenure
as Professor and Chairman of Mechanical Engineering, was an active supporter of liberal education for engineering students.

- Outstanding Mechanical Engineering Scholar Award—presented to an outstanding mechanical engineering student who is outstanding scholastically, involved in extra-curricular activities, and demonstrates leadership ability and the professionalism associated with mechanical engineering.

- Mechanical Engineering Presidential Scholar Award—presented to an outstanding mechanical engineering student who is selected using University-wide criteria which includes senior standing, superior scholastic ability, extra-curricular involvement, and professional promise.

Cooperative Education

Students may elect the cooperative plan of education. In this plan, the student alternates a semester of study on campus with a semester of compensated industrial experience. Students may work in any area in which mechanical engineers may be found.

Additional Information

General information regarding advising, scholarships, and special programs of interest to students in this department may be found under the beginning of the Engineering and Applied Sciences section of this catalog. Enrollment will not be honored in any course when other students are requesting that course if the student does not attend the first class meeting (lecture or lab) unless prior arrangements have been made with the instructor. Students not attending courses for whatever reasons are responsible for processing drop slips with the Registration Office if fees are to be refunded.

Mechanical Engineering

Bachelor of Science in Engineering (Mechanical) Degree

Admission

1. To be admitted to this Engineering curriculum, a student must complete all Pre-engineering requirements with grades of "C" or better. These requirements may be found in the beginning of the College of Engineering and Applied Sciences section. The Pre-engineering core courses for this curriculum are in darker print in the schedule below.

2. Students seeking admission to this curriculum must submit an application following procedures established by the College of Engineering and Applied Sciences. Upper level transfer students may complete an application prior to their first semester of enrollment. Only students in good academic standing as defined by the University will be admitted to this curriculum.

Mechanical Engineering Degree Requirements

Candidates for the Bachelor of Science in Engineering (Mechanical) degree must satisfy the following requirements in addition to those required by Western Michigan University:

1. A "C" average or better must be earned in courses presented for graduation with an EE, IE, or ME prefix.

2. No more than two grades of "D" or "DC" in courses presented for graduation may be counted for graduation.

3. Complete the following program of 128 semester credit hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall. Pre-engineering requirements are in darker print.

First Semester—15 hours

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>MATH 122</td>
<td>Calculus I</td>
<td>4</td>
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<tr>
<td>ET 142</td>
<td>Engineering Graphics</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 101 OR 102</td>
<td>General Chemistry I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 211</td>
<td>Electricity and Light</td>
<td>4</td>
</tr>
<tr>
<td>ME 232</td>
<td>Thermodynamics I</td>
<td>3</td>
</tr>
<tr>
<td>ME 256</td>
<td>Statics</td>
<td>3</td>
</tr>
<tr>
<td>ME 220</td>
<td>Manufacturing Productivity</td>
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Second Semester—16 hours

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<tr>
<td>MATH 123</td>
<td>Calculus II</td>
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<tr>
<td>CHEM 101 OR 102</td>
<td>General Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 212</td>
<td>Introduction to Modern Physics</td>
<td>OR</td>
</tr>
<tr>
<td>PHYS 342</td>
<td>Electronics</td>
<td>OR</td>
</tr>
<tr>
<td>CHEM 120</td>
<td>General Chemistry II</td>
<td>OR</td>
</tr>
<tr>
<td>PHYS 352</td>
<td>Optics</td>
<td>4</td>
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<tr>
<td>ME 250</td>
<td>Material Science I</td>
<td>3</td>
</tr>
<tr>
<td>ME 257</td>
<td>Mechanics of Materials</td>
<td>3</td>
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<tr>
<td>ME 258</td>
<td>Dynamics</td>
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Third Semester—18 hours

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<tr>
<td>MATH 272</td>
<td>Vector/Multivariate Calculus</td>
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<tr>
<td>PHYS 211</td>
<td>Electricity and Light</td>
<td>4</td>
</tr>
<tr>
<td>ME 232</td>
<td>Thermodynamics I</td>
<td>3</td>
</tr>
<tr>
<td>ME 256</td>
<td>Statics</td>
<td>3</td>
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<tr>
<td>ME 220</td>
<td>Manufacturing Productivity</td>
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Fourth Semester—17 hours

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<tr>
<td>MATH 374</td>
<td>Introduction to Linear Algebra and Diff. Equations</td>
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<tr>
<td>PHYS 212</td>
<td>Introduction to Modern Physics</td>
<td>OR</td>
</tr>
<tr>
<td>PHYS 342</td>
<td>Electronics</td>
<td>OR</td>
</tr>
<tr>
<td>CHEM 120</td>
<td>General Chemistry II</td>
<td>OR</td>
</tr>
<tr>
<td>PHYS 352</td>
<td>Optics</td>
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<tr>
<td>ME 250</td>
<td>Material Science I</td>
<td>3</td>
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<tr>
<td>ME 257</td>
<td>Mechanics of Materials</td>
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<td>Dynamics</td>
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Fifth Semester—16 hours

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<tbody>
<tr>
<td>ME 356</td>
<td>Fluid Mechanics</td>
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</tr>
<tr>
<td>ME 362</td>
<td>Theory of Engineering</td>
<td>3</td>
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<tr>
<td>ME 342</td>
<td>Thermodynamics II</td>
<td>3</td>
</tr>
<tr>
<td>EE 210</td>
<td>Circuit Analysis I</td>
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<td>AREA II</td>
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Sixth Semester—16 hours

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<tr>
<td>ME 335</td>
<td>Mechanical Engineering Laboratory</td>
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<tr>
<td>ME 350</td>
<td>Material Science II</td>
<td>3</td>
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<tr>
<td>ME 358</td>
<td>Mechanism Analysis</td>
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<tr>
<td>ME 365</td>
<td>Machine Design I</td>
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<tr>
<td>EE 211</td>
<td>Machine and Electronic Circuits</td>
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Seventh Semester—15 hours

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<tr>
<td>ME 431</td>
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<tr>
<td>ME 436</td>
<td>Energy Systems Laboratory</td>
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<tr>
<td>ME 437</td>
<td>Mechanical Systems Lab</td>
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<tr>
<td>ME 543</td>
<td>Machine Design II</td>
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<td>ME 543</td>
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Eighth Semester—15 hours

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<tbody>
<tr>
<td>ME 360</td>
<td>Control Systems</td>
<td>3</td>
</tr>
<tr>
<td>ME 436</td>
<td>Energy Systems Lab</td>
<td>OR</td>
</tr>
<tr>
<td>ME 437</td>
<td>Mechanical Systems Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>ME 460</td>
<td>Mechanical Engineering Project</td>
<td>3</td>
</tr>
<tr>
<td>IE 310</td>
<td>Engineering Economy</td>
<td>3</td>
</tr>
<tr>
<td>AREA IV</td>
<td>General Education</td>
<td>3</td>
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</tbody>
</table>

* At least two of these courses must be at the 300-400 level.
* ** IE 102 or BIS 142 or ENGL 105.
** Design elective options include ME 359, ME 433, ME 451, or ME 553.

Mechanical Engineering Courses (ME)

Numbers following course title indicate hours of lecture and laboratory per week during a semester (lecture hours-lab hours).

ME 220 Manufacturing Productivity (3-3) 4 hrs. Fall, Winter, Spring

Design, fabrication, and analysis of productive tools. Computer applications to cost estimation, manufacturing, and the fundamentals of robotics. Prerequisites: CS 106, ET 142.

ME 232 Thermodynamics I (3-0) 3 hrs. Fall, Winter, Spring

Fundamental laws of classical thermodynamics including ideal and non-ideal processes. Applications are studied in relationship to the traditional thermodynamic cycles and to alternate energy systems such as solar and wind energy. (Credit may not be earned in both ME 232 and ET 381). Prerequisites: MATH 123, PHYS 210.

ME 250 Material Science I (2-3) 3 hrs. Fall, Winter

First course in the science of engineering materials. Relationships between microscopic structure and the mechanical properties of metals, polymers, and ceramics are developed. Emphasis is on mechanical properties and effects of alloying and heat treatment on metals. Prerequisites: CHEM 101 or 102, MATH 122.

ME 253 Statics and Mechanics of Materials (4-0) 4 hrs. Fall, Winter, Summer

Forces and moments acting upon structural bodies under static loads. Concepts of vectors, free-body diagrams, shear and moment diagrams, centroids, moments of inertia and friction. Compression, tension, shear, torsion, and bending in structural members, including stress distribution, deflection, and buckling. Prerequisites: MATH 123, CS 106.

ME 256 Statics (3-0) 3 hrs. Fall, Winter, Spring, Summer

Forces and moments acting upon structural bodies under static loads. Concepts of vectors, free-body diagrams, shear and moment diagrams, centroids, moments of inertia and friction. Prerequisites: MATH 123, CS 106.

ME 257 Mechanics of Materials (3-0) 3 hrs. Fall, Winter, Spring, Summer

Compression, tension, shear, torsion, and bending in structural members, including stress distribution, deflection, buckling, and fatigue on engineering materials. Design and selection of simple machine members and a knowledge of design codes and standards are applied. Prerequisite: ME 256.

ME 258 Dynamics (3-0) 3 hrs. Fall, Winter, Spring

Forces and moments acting upon structural bodies under static loads. Concepts of vectors, free-body diagrams, shear and moment diagrams, centroids, moments of inertia and friction. Prerequisites: MATH 123, CS 106.

ME 259 Kinematics and Dynamics of Materials (3-0) 3 hrs. Fall, Winter, Spring, Summer

Kinematics and kinetics of particles, rigid bodies in translation, rotation, and plane motion. Includes impulse momentum and work-energy methods. Introduction to vibrations. Prerequisites: ME 256, PHYS 210.

ME 261 Surveying (1-3) 2 hrs. Spring

Operation of the transit, theodolite, level, steel tape, and ancillary equipment with emphasis on construction surveying. NOT FOR ENGINEERING CREDIT. Prerequisite: MATH 200 or MATH 101.
ME 270 Material Science (3-0)
4 hrs. Fall, Winter, Summer
An introduction to the science of engineering materials. The relationships between metallurgical structure and the mechanical properties of metals, polymers, and ceramics are developed and used in the selection of materials for various design requirements. Prerequisites: CHEM 101 or CHEM 102, MATH 122.

ME 335 Mechanical Engineering Laboratory (2-3)
3 hrs. Fall, Winter, Spring

ME 339 Solar Energy Systems (3-0)
3 hrs. Fall
Fundamental theory of solar energy for non-engineers which includes heat loads, insulation, system sizing, and design. Prepared computer programs are used by the student in solar design analysis. NOT FOR ENGINEERING CREDIT.

ME 350 Material Science II (2-3)
3 hrs. Fall, Winter, Spring
Second course in the science of engineering materials. Provides a basic understanding of the properties of non-metallic materials, including: polymers, ceramics and composite materials, and related mechanical properties to structure and fabrication process. Includes treatment of environmental effects on all materials and treatment of non-destructive testing. Prerequisite: ME 250.

ME 356 Fluid Mechanics (3-0)
3 hrs. Fall, Winter, Spring
Analysis of fluid systems and problems. Incompressible and compressible fluids, turbulent and laminar flows, subsonic and supersonic flows are covered. Pipe systems, flow orifices, and open channels. (Credit may not be earned in both ME 356 and ME 391.) Prerequisites: ME 258, MATH 374

ME 358 Mechanism Analysis (3-0)
3 hrs. Fall, Winter
Analysis of displacement, velocity, and acceleration in mechanisms by analytical and graphical methods. Introduction to mechanism synthesis with computer applications. Prerequisite: ME 258.

ME 359 Dynamics of Machinery (3-0)
3 hrs. Winter
Analysis of static, dynamic, and combined forces in the design of machines. Balancing of machines including multicylinder engines. Gyroscopic forces. Computer applications. Prerequisite: ME 358.

ME 360 Control Systems (3-0)
3 hrs. Fall, Winter, Spring
Theory and analysis of linear closed-loop control systems containing electronic, hydraulic, and mechanical components. Differential equations. Laplace transforms. Nyquist and Bode diagrams are covered. Prerequisites: ME 258, MATH 374, EE 211.

ME 362 Theory of Engineering Experimentation (3-0)
3 hrs. Fall, Winter, Spring
Principles of experimental design using a statistical approach. Statistical analysis of experimental data with computer applications. Prerequisites: MATH 123, CS 106.

ME 365 Machine Design I (2-3)
3 hrs. Fall, Winter, Spring
The application of engineering principles to the fundamental design of machine mechanisms and basic systems. Prerequisites: ME 220, ME 250, ME 257, ME 358. (ME 358 may be taken concurrently.)

ME 375 Experimental Stress Analysis (2-3)
3 hrs. Fall, Winter
Principles and methods of non-destructive testing including internal and surface industrial methods of strain-gauge techniques, planning of test procedures, interpretation of test results, and technical report preparation. NOT FOR ENGINEERING CREDIT. Prerequisites: ET 281, ET 286.

ME 431 Heat Transfer (3-0)
3 hrs. Fall, Winter, Summer
Steady state and transient conduction, radiation functions, radiation networks, natural and forced convection, design of heat exchangers, and computer applications. Prerequisites: ME 356, ME 432.

ME 432 Thermodynamics II (3-0)
3 hrs. Fall, Winter, Summer
Advanced topics including gas-vapor mixtures, combustion, and compressible flow.

ME 433 Environmental Systems Design in Buildings (2-3)
3 hrs. Fall, Winter
Theory of the conditioning of air, applications to the design of systems to control temperature, humidity, distribution, and ventilation. Computer simulation of buildings and systems. Prerequisites: ME 431, ME 432.

ME 436 Energy Systems Laboratory (1-3)
2 hrs. Fall, Winter
Experimental and theory verification in thermodynamics, fluids, and heat transfer including planning, testing, and computer analysis of data with report preparation. ME 436 and ME 437 are to be taken as prerequisite and corequisite to ME 460 in either combination. The course taken as prerequisite to ME 460 includes preparation of approved ME 460 project proposal. Prerequisites: ME 335, ME 431.

ME 437 Mechanical Systems Laboratory (1-3)
2 hrs. Fall, Winter, Spring
Experimental and theory verification in solid mechanics and system dynamics including planning, testing, and computer analysis of data with report preparation. ME 436 and ME 437 are to be taken as prerequisite and corequisite to ME 460 in either combination. The course taken as prerequisite to ME 460 includes preparation of approved ME 460 project proposal. Prerequisites: ME 335, ME 365.

ME 440 Computer Applications in Engineering (3-0)
3 hrs. Fall
Application of computer methods in the solution of engineering problems. Methods covered include finite difference, finite element, and polynomial curve fitting. Prerequisite: Engineering student with senior class standing and knowledge of FORTRAN computer programming or consent of department.

ME 451 Design of Solar Systems (3-0)
3 hrs. Fall, Winter
Analysis of alternate energy options. Design of complete solar system including collector, storage, and controls. Economics and long-term performance of solar systems using computer-aided design programs. Prerequisites: ME 335.

ME 453 Machine Design II (2-3)
3 hrs. Fall, Winter, Spring
The application of mechanical engineering concepts to the mechanical synthesis process. Computer-aided design, computer modeling, and optimization applied to the synthesis of a system. Prerequisite: ME 362, ME 365.

ME 454 Air Pollution Control Systems (3-0)
3 hrs. Winter—Odd Years
The nature of air pollution and the methods of monitoring and controlling emissions, sampling and analysis techniques and devices are studied. Prerequisite: PAPR 361 or equivalent.

ME 460 Mechanical Engineering Project (1-6)
3 hrs. Fall, Winter, Spring
To provide an engineering experience emphasizing an open-ended project design concept primarily based on either energy or system structure and motion. Prerequisites: ME 453, ME 436, ME 437 (concurrent enrollment in either ME 436 or ME 437 will be allowed), admission to the Mechanical Engineering program.

ME 490 Independent Research and Development (1-4 hrs.)
1-4 hrs. Fall, Winter, Spring
Individual research or special project. Available only by special arrangement with an instructor and approved by the department chair. Prerequisite: Consent of department.

ME 495 Topics in Mechanical Engineering: Variable Topics (1-4 hrs.)
1-4 hrs. Fall, Winter, Summer
A specialized course dealing with some particular area of mechanical engineering not included in other course offerings. May be repeated for credit with a different topic up to six credits. Prerequisite: Consent of department.

ME 498 Independent Readings (1-6 hrs.)
1-6 hrs. Fall, Winter, Spring
An independent readings assignment, the description and purpose of which will be set forth on a form available at the department office. Prerequisite: Consent of department.

ME 499 Independent Studies (1-6 hrs.)
1-6 hrs. Fall, Winter, Spring
An independent studies assignment available only by special arrangement with an instructor and approved by the department chair. Prerequisite: Consent of department.

ME 531 Energy Management (3-0)
3 hrs. Winter
Theory and application of industrial energy audits. Energy conservation and waste heat recovery. Prerequisite: ME 332 or consent of department.

ME 553 Advanced Product Engineering (3-0)
3 hrs. Winter
An engineering design project from concept to adoption. Static and dynamic analysis. Mechanical systems design and layout. Prerequisites: ME 360, ME 453.

ME 558 Mechanical Vibrations (3-0)
3 hrs. Winter
A study of the oscillatory motion of physical systems with emphasis on the effects of vibrations on the performance and safety of mechanical systems. Prerequisites: ME 258, MATH 374.

ME 559 Machine Dynamics (3 hrs.)
3 hrs.
Static and dynamic force analysis of mechanisms such as linkages, cams, and shafts; dynamics of reciprocating engines, balancing, and spatial mechanisms. Prerequisite: ME 358.

ME 560 Engineering Analysis (3-0)
3 hrs. Fall
Application of vector analysis and differential equations to the solution of complex engineering problems. Prerequisite: ME 360 or equivalent.
ME 561 Finite Element Method
3 hrs.
Weighted residual methods, finite element techniques in one-, two- and three-dimensional problems of heat transfer, fluid flow, structures and elasticity, time dependent problems, higher order elements, and non-linear problems. Prerequisite: MATH 506 or equivalent.

ME 562 Application of Numerical Methods in Engineering
3 hrs.
Finite difference methods for initial value and boundary value problems, finite difference applications to differential equations of heat transfer, fluid flow, and solid mechanics. Prerequisite: MATH 506 or equivalent.

ME 571 Gas Dynamics
3 hrs.
Basic equations of compressible flow, isentropic relationships, and normal and oblique shock. Prandtl-Meyer expansion, Fanno line, and Rayleigh flow. Applications to nozzles, diffusers, and supersonic wind tunnels. Laminar and turbulent flows, method of characteristics. Prerequisite: ME 431 and ME 432.

ME 572 Advanced Thermodynamics
3 hrs.
Topics including the conditions of equilibrium, process and thermodynamic engines, the extremum principle, Maxwell relations, stability of thermodynamic systems, phase transitions, chemical thermodynamics, irreversible thermodynamics, and an introduction to the statistical thermodynamics. Prerequisite: ME 431 and ME 432.

ME 573 Engineering Materials (3-0)
3 hrs. Spring—Odd Years
Material selection for resistance to both load and environment. Design parameters for material selection and various metal systems, corrosion, service failures, and mechanical behavior of engineering alloys at high and low temperatures. Prerequisite: ET 257.

MILITARY SCIENCE

LTC Americus M. Giff, Chair
CPT Daniel J. Swacina
CPT Paul E. Hackett, Jr.
CPT Charles W. Williams
CPT Max J. Reike
SGM Joseph J. Guiffroye
MSG Lawrence E. Fitzgerald
SFC Charles C. Botts III
SSG Ruth E. Taylor

The Department of Military Science offers courses intended to develop leadership and managerial skills and to broaden students’ knowledge of the role of the military in society. The department offers a four-year and a two-year Military Science program, which lead to an officer’s commission in the U.S. Army. The four-year military science program is divided into a basic course (first two years) and an advanced course (last two years). Students become officers in the Army Reserve, National Guard, or Regular Army upon successful completion of the program. ROTC scholarships are available to students, and a student need not be enrolled in the military science program to compete for the ROTC scholarship. Scholarships are awarded competitively based on ability, not on financial need.

The chair of the department and all instructors are officers of the United States Army assigned to the University by permission of the University. They administer the military science program and conduct all classes offered by the department. The government provides uniforms and textbooks for all advanced course students as well as additional financial assistance for students in the last two years of the program. Students should refer to the miscellaneous information section of this bulletin for additional details concerning the ROTC program. The leadership and career opportunities it offers, and the admission requirements.

Four Year Program

The four-year military science program is divided into a basic course (first two years) and an advanced course (last two years). Students who participate in the basic course are under no obligation to the active Army or the reserves.

Basic Course

The basic course is designed to give students a general knowledge of the role of national defense and also to provide knowledge of leadership skills needed by military officers. Students completing the basic course have an opportunity to be considered for the advanced course program and obtain a commission in the active Army Reserve Components. ROTC students take at least one military science course each semester. First-year students must take MLSC 140 in the fall and MLSC 150 in the winter semester. Sophomore students take MLSC 240 during the fall and MLSC 250 during the winter.

Exceptions to the above requirements must be approved by the chair of the department. Students who participate as cadets are expected to be physically qualified, of good moral character, and sign an oath of loyalty to the United States. Students who have had three years of junior ROTC (High School ROTC) or more than six months of active military service may, with the approval of the chair of the department, have certain portions of the basic course waived. Students transferring from other institutions who have started either Army or Air Force ROTC will have their records reviewed to determine proper placement credit. Foreign students must contact the chair of the department prior to enrolling in military science courses.

Advanced Course

Students successfully completing the basic course may be enrolled in the advanced course with the permission of the chair of the department. Students may not be more than 27 years of age, and they must be U.S. citizens or permanent residents of the United States. Students accepted for the advanced course receive a non-taxable subsistence allowance of $100 per month. The major emphasis of the advanced course is the development of individual leadership and stated military skills. Students admitted to the advanced course pursue a commission as a second lieutenant in the Active Army, Army National Guard, or Army Reserves. During the junior year, students complete MLSC 340 and 350. Between the junior and senior years, students attend a six-week camp which will qualify for academic credit (MLSC 390). During the senior year, students complete MLSC 440 and 450. Course work is also required of students in the areas of history, behavioral sciences, written communications, and national security in order to complete the Military Science minor. These courses will be taken in the general education distribution program areas. The Department of Military Science Enrollment Officer should be consulted on the specific courses which satisfy these requirements. Exceptions must be approved by the chair of the department.

Two Year Program

For those students who are veterans, transferring into the University, and currently enrolled students who have not taken military science classes, a two-year program is available. Students enter this program by applying for attendance at a six-week basic summer camp at Fort Knox, Kentucky. Attendance and successful completion of basic summer camp is substituted for the basic science courses. Veterans can have the basic camp requirement and basic course waived by the department chair. Therefore, the student has only to complete the advanced course requirements while he or she is finishing the overall degree requirement in order to be eligible for a commission. Students in the two-year program are eligible for scholarships, financial assistance ($100 per month), and free textbooks for military science classes.

At the basic summer camp, the student is trained, fed, and housed at the expense of the government. The student also receives travel pay plus a salary of approximately $675. Contact the military science department for details.

Military Science Minors

A department minor slip is required.

Four Year Program—23 hours

Freshman Year
MLSC 140 and MLSC 150 .................. 4 hours
Sophomore Year
MLSC 240 and MLSC 250 .................. 5 hours
Junior Year
MLSC 340 and MLSC 350 .................. 6 hours
Military Science Courses (MLSC)

Courses described in italics are approved for General Education. Students should contact the Paper and Printing Educational objectives, discuss employment opportunities, and to help solve academic problems. Substitutions and transfer credit must be approved by a departmental adviser, curriculum committee, and department chair. The academic adviser for Paper Science and Paper Engineering is Dr. David Peterson, located in Room 3031 McCracken Hall. Appointments may be made by calling (616) 383-1802. The academic adviser for Printing is Mr. James Ulmer, located in Welborn Hall. Appointments may be made by calling (616) 383-6057.

Work Experience

Industrial experience in the programs is encouraged through employment by paper, printing or related companies for at least one of the three summers, as well as through employment in the outstanding pilot plants of the department. An extensive recycled fiber pilot plant is also available. The pilot plants and laboratory facilities are among the best in the world.

Additional Information

General information regarding advising, scholarships, and special programs of interest to students in this department may be found in the beginning of the College of Engineering and Applied Sciences' section of the catalog.

A minor in paper science may be earned by completing the following 19 semester hours of departmental courses: PAPR 100, PAPR 101, PAPR 203, PAPR 204, PAPR 340 and PAPR 342.
Paper Science
Bachelor of Science Degree

Requirements:
Candidates for the Bachelor of Science degree must satisfy the following requirements in addition to University requirements stated elsewhere in this Bulletin:
1. Students must earn a "C" or better grade in MATH 203, 204, 251, and 306.
2. No more than two grades of "D" or "DC" in courses presented for graduation may be counted for graduation.
3. Complete the following program of 136 semester credit hours. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall.

First Semester—16 hours
MATH 122 Calculus I 4
CHEM 101 General Chemistry I OR CHEM 102 General Chemistry I 4
PAPR 100 Introduction to Pulp and Paper Manufacturing 3
CS 106 BASIC for Engineers 1
AREA I General Education* 3
PEGN Physical Education 1

Second Semester—16 hours
MATH 123 Calculus II 4
CHEM 120 General Chemistry II 4
PAPR 101 Lab Problems in Pulp and Paper Manufacturing 4
IE 102 Technical Communication 3
ECON 201 Principles of Economics 3
PEGN Physical Education 1

Third Semester—18 hours
IE 261 Engineering Statistics 3
PHYS 210 Electricity and Light 4
PAPR 203 Pulp Manufacture 4
CHEM 222 Quantitative Analysis 4
AREA I General Education* 3

Fourth Semester—18 hours
PHYS 211 Electricity and Light 4
PAPR 204 Paper Manufacturing 4
CHEM 361 Organic Chemistry II 4
PAPR 307 Process Engineering II 4
MATH 123 Calculus II 4

Fifth Semester—16 hours
PAPR 305 Mechanics and Optics of Fiber Systems 3
CHEM 360 Organic Chemistry I 4
MATH 272 Vector and Multivariate Calculus 4
AREA I General Education* 3

Sixth Semester—16 hours
PAPR 306 Process Engineering I 4
CHEM 365 Introduction to Organic Chemistry 4
PAPR 333 Chemistry of Wood and Pulp 3
CHEM 360 Organic Chemistry I 4
PAPR 440 Current Topics in Paper and Pulp Manufacturing 1

Seventh Semester—17 hours
MATH 374 Introduction to Linear Algebra and Differential Equations 4
PAPR 310 Science/Engineering Experience 1
PAPR 340 Converting Processes 3
PAPR 470 Senior Thesis I 2
CHEM 430 Physical Chemistry I 3
AREA IV General Education* 4

Eighth Semester—18 hours
PAPR 360 Printing Processes 2
PAPR 450 Polymer and Surface Chemistry 3
PAPR 471 Senior Thesis II 3
CHEM 431 Physical Chemistry II 3
CHEM 436 Physical Chemistry Lab 2
Technical Elective** 5
* At least two of these courses must be at the 300-400 level.
** Technical Professional Electives—5 hours selected from Paper Science, Chemistry, or Engineering curriculum. All electives need approval of the Department.

Paper Engineering
Bachelor of Science in Engineering (Paper) Degree

Admission:
1. To be admitted to this Engineering curriculum, a student must complete all Pre-engineering requirements with grades of "C" or better. These requirements may be found in the beginning of the College of Engineering and Applied Sciences section. The Pre-engineering course requirements for this curriculum are in darker print in the schedule below.
2. Students seeking admission to this curriculum must submit an application following procedures established by the College of Engineering and Applied Sciences. Upper level transfer students may complete an application prior to their first semester of enrollment. Only students in good academic standing as defined by the University will be admitted to this curriculum.

Paper Engineering Program Requirements:
Candidates for the Bachelor of Science in Engineering degree must satisfy the following requirements in addition to those required by Western Michigan University:
1. Students must earn a "C" or better grade in MATH 203, 204, 251, and 306.
2. No more than two grades of "D" or "DC" in courses presented for graduation may be counted for graduation.
3. Complete the following program of 136 semester credit hours, which includes the courses in one of the following elective sequences: Pulp and Paper Processes or Environmental Processes. One sequence must be elected and taken in its entirety. The schedule below is an example of one leading to graduation in eight semesters, beginning in fall. Pre-engineering requirements are in darker print.

First Semester—16 hours
MATH 122 Calculus I 4
CHEM 101 or 102 General Chemistry I 4
PAPR 100 Introduction to Pulp and Paper Manufacturing 3
CS 106 BASIC for Engineers 1
AREA I General Education* 3

Second Semester—16 hours
CHEM 361 Organic Chemistry II 4
PAPR 101 Lab Problems in Pulp and Paper Manufacturing 4
CHEM 430 Physical Chemistry I 4
PAPR 440 Current Topics in Paper and Pulp Manufacturing 4
A

Third Semester—18 hours
CHEM 365 Introduction to Organic Chemistry 4
PEGN Physical Education 1

Fourth Semester—18 hours
CHEM 431 Physical Chemistry II 3
CHEM 436 Physical Chemistry Lab 2
Technical Elective** 5

OR

Environmental Processes—18 hours
MATH 272 Vector and Multivariate Calculus 4
PHYS 211 Electricity and Light 4
PAPR 204 Paper Manufacturing 4
PAPR 350 Water Quality and Microbiology 3
PAPR 440 Current Topics in Paper and Pulp Manufacturing 1
PEGN Physical Education 1

Fifth Semester—18 hours
PAPR 305 Mechanics and Optics of Fiber Systems 3
CHEM 430 Physical Chemistry I 4
PAPR 333 Chemistry of Wood and Pulp 3
PAPR 440 Current Topics in Paper and Pulp Manufacturing 1
MATH 272 Vector and Multivariate Calculus 4

Sixth Semester—18 hours
PAPR 306 Process Engineering I 4
CHEM 365 Introduction to Organic Chemistry 4
PAPR 342 Coating Processes 3
PAPR 352 Fiber Resource Conservation and Recycling 3
PAPR 371 Introduction to Independent Research 1
PAPR 440 Current Topics in Paper and Pulp Manufacturing 1

Seventh Semester—17 hours
MATH 374 Introduction to Linear Algebra and Differential Equations 4
PAPR 310 Science/Engineering Experience 1
PAPR 340 Converting Processes 3
PAPR 472 Senior Engineering Problem I 2

Eighth Semester—18 hours
PAPR 360 Printing Processes 2
PAPR 450 Polymer and Surface Chemistry 3
PAPR 471 Senior Thesis II 3
CHEM 431 Physical Chemistry II 3
CHEM 436 Physical Chemistry Lab 2
Technical Elective** 5

*At least two of these courses must be at the 300-400 level.
* Technical Professional Electives—5 hours selected from Paper Science, Chemistry, or Engineering. All electives need approval of the Department.
Paper and Printing Science and Engineering Courses (PAPR)

Courses described in italics are approved for General Education. Numbers following course title indicate hours of lecture and laboratory per week during a semester (lecture hours-lab hours).

PAPR 100 Introduction to Pulp and Paper Manufacture (2-3) 3 hrs. Fall
A lecture-laboratory consideration of the fundamentals of paper manufacturing processes and equipment. Some time will also be spent on coating, printing and other uses of paper. The student should acquire a basic understanding of the nature and scope of the paper industry. Prerequisite: High school chemistry, CHEM 101 or CHEM 102 concurrent.

PAPR 101 Laboratory Problems in Pulp and Paper Manufacture (A.M.) 1 hr. Winter
A continuation of the laboratory studies of PAPR 100. The student should acquire an understanding of the basic tests and test procedures used in the pulp and paper industry and their significance. Prerequisite: PAPR 100.

PAPR 102 Introduction to Pulp and Paper Manufacture (2-0) 3 hrs. Fall
A lecture consideration of the fundamentals of paper manufacturing processes and equipment. Some time will also be spent on coating, printing and other uses of paper. The student should acquire a basic understanding of the nature and scope of the paper industry. (Credit may not be earned in PAPR 102 by paper science and engineering department majors.) Prerequisites: High school chemistry, CHEM 101 or CHEM 102 concurrent.

Fifth Semester—15 hours
PAPR 357 Color Separation Photography 3
PAPR 362 Estimating 3
MGT 300 Fundamentals of Management 3
IE 326 Operations Planning and Control 3
IE 328 Quality Assurance and Control 3

Sixth Semester—15 hours
PAPR 354 Paper Industry Processes 3
PAPR 462 Computer Estimating 2
IE 402 Supervision of Industrial Operations 3
AREA II General Education** 3
AREA IV General Education** 3

Seventh Semester—17 hours
PAPR 358 Flexographic Prepresswork 3
PAPR 466 Printing Production Management 3
IE 403 Industrial Labor Relations 3
General Education Electives*** 8

Eighth Semester—14 hours
PAPR 359 Gravure Presswork 3
PAPR 454 Advanced Lithographic Technology 3
IE 322 Safety in Industry 3
Approved Elective** 2
General Education Elective** 3

*Where judged appropriate by the department, an approved replacement course for PAPR 150 will be used.
** At least two of these courses must be at the 300-400 level.
*** Electives to be selected with the approval of the Printing curriculum adviser.

Paper and Printing Science and Engineering Courses (PAPR)
PAPR 150 Introduction to Graphic Arts (2-3) 3 hrs. Fall, Winter, Spring
An introductory course describing the printing industry. Work is undertaken in copy preparation, composition, photocopy, presswork, and bindery. A comparison of all printing methods will be included. Lithography, letterpress, and screen printing will be stressed. Economic and planning implications of the composition area will also be explored. Prerequisites: PAPR 151, BIS 102.

PAPR 253 Imaging (2-4) 3 hrs. Winter
Emphasis will be placed on determining correct page impositions. Register requirements, step and repeat procedures, color stripping, proofing and color reproduction skills will be covered. Lithographic platemaking and processes will be emphasized. Prerequisite: PAPR 157.

PAPR 257 Halftone Photography (2-3) 3 hrs. Winter
Emphasis is placed on halftone reproduction and related photo techniques. Postenlargement, dot sizes, mechanical dropout and densitometry will be included. Exposure calculation devices will be utilized. Darkroom research projects are incorporated into lab activities. Prerequisite: PAPR 157.

PAPR 258 Introduction to Flexography (3-0) 3 hrs. Winter
A study of the flexographic printing process focusing on the process, application, technology, and hardware. Prerequisite: PAPR 150.

PAPR 259 Introduction to Gravure Printing (3-0) 3 hrs. Fall
A study of gravure printing focusing on the process, application, technology, and hardware. Prerequisites: PAPR 150.

PAPR 261 Industrial Environmental Engineering (3-0) 3 hrs. Winter
The effects, regulations, and control processes of materials handling and process flow to the design and operation of the converting plant. Laboratory time will be allocated to converting plant visits and evaluation techniques. Prerequisite: PAPR 204.

PAPR 342 Coating Processes (3-3) 4 hrs. Winter
A lecture-lab course dealing with the fundamentals of pigmented and functional coating of paper and board. Coating rheology, evaluation of coated paper, and the performance of paper in the graphic arts will also be covered. Prerequisite: PAPR 305.

PAPR 350 Water Quality and Microbiology (2-3) 3 hrs. Fall
A study of the physical, chemical, and biological characteristics of water. Topics stressed include hydrology, treatment of water, water quality, governmental regulations, evaluation, and the microbiology of water. Prerequisite: CHEM 101 or CHEM 102.

PAPR 351 Water Quality and Microbiology (2-0) 2 hrs. Fall
A discussion of the physical, chemical, and biological characteristics of water. Topics stressed include hydrology, treatment of water, water quality, governmental regulations, evaluation, and the microbiology of water. (This is a non-laboratory course offered for adult education. Credit may not be earned in PAPR 351 by paper science or paper engineering majors.)

PAPR 352 Fiber Resource Conservation and Recycling (2-2) 3 hrs. Fall
Consideration of the recovery of waste paper and other fiber sources for use in the manufacture of paper and paperboard. Topics include waste fiber collection, contamination removal, in-plant reuse, effect on the processes and the products, and the economics involved.

PAPR 353 Wastewater Treatment Systems (3-3) 4 hrs. Winter
A study of the fundamental principles, design considerations, and use of the unit processes and operations employed in waste water treatment. Physical, physicochemical, and biological treatments are considered. Prerequisite: PAPR 350.

PAPR 354 Paper Industry Processes (2-3) 3 hrs. Winter
Offered primarily for students in graphic arts and printing management/marketing programs in order to provide a basic understanding of the major aspects of the science and technology of pulp, paper making, coating, and evaluation of materials, especially as they relate to printing. Prerequisites: CHEM 103, and junior standing.
PAPR 357 Color Separation Photography 
3 hrs. Fall
An analysis of various production color separation techniques, color correction, under color removal, and color proofing system. Color theory, masking systems, direct and indirect separations, and electronic scanner techniques will be investigated. Prerequisite: PAPR 257.

PAPR 358 Flexographic Presswork (2-3) 
3 hrs. Fall
A lecture/lab course which will emphasize rubber and photopolymer plate manufacture, mounting and proofing, water and solvent inks, substrates, and flexographic press operation. Prerequisite: PAPR 258.

PAPR 359 Gravure Presswork (2-3) 
3 hrs. Winter
This lecture/lab course will emphasize traditional cylinder manufacturing, proofing and gravure press operation. Process components, register controls, ink variables, doctor blades, and electrostatic will be stressed. Prerequisite: PAPR 259.

PAPR 360 Printing Processes (1-3) 
2 hrs. Winter
A course designed to provide Paper Science and Engineering students with a working knowledge of the various printing processes and their relation to the performance factors of paper. Prerequisite: PAS or PAM majors only.

PAPR 362 Estimating (3-0) 
3 hrs. Fall
Study of methods used in estimating the price of printed materials before manufacture and in the final pricing of that printed material after manufacture. Prerequisite: Junior standing.

PAPR 371 Introduction to Independent Research (1-0) 
1 hr. Fall, Winter
Methods of approaching and planning independent research will be discussed. Familiarity with problems which may be encountered will be gained by attendance at the senior seminars. At the end of the course, the student will have selected a senior thesis or problem topic and an adviser. Prerequisite: Junior standing.

PAPR 430 Polymer and Surface Chemistry (3-0) 
3 hrs. Winter
Molecular, bulk, and solution properties of high molecular weight compounds and their characterization. Structure and properties of colloids and other surfaces are related to absorption, wetting, detergency, and adhesion behavior. Prerequisite: CHEM 361 or CHEM 365.

PAPR 440 Current Topics in Pulp and Paper (1-5) 
1 hr. Fall, Winter
This course will be handled on a seminar basis using guest speakers, University staff, and students. Its purpose is to add depth and breadth to the background of students. Concurrent registration in PAPR 440 with PAPR 470, PAPR 471, PAPR 472, or PAPR 473 will not be allowed. Prerequisite: Junior standing.

PAPR 450 Solid Waste Treatment (2-3) 
3 hrs. Fall-Odd Years
The practice, technology, and economics of the treatment of solid wastes generated by municipal and industrial sources are studied. Discussion will include treatment, disposal, in-process utilization, and conversion to useful by-products for solid and semi-solid wastes. Prerequisite: Junior standing.

PAPR 451 Air Pollution Control (2-3) 
3 hrs. Fall - even years
The origins, effects, measurement and control of air pollution are examined. Pollution abatement methods are studied and applied to private, municipal and industrial sources. Prerequisites: PAPR 261 or equivalent.

PAPR 454 Advanced Lithographic Technology (2-3) 
3 hrs. Winter
Provides the student with practical problems in press setup. Emphasizes plate imaging, register controls, inks, substrates, and litho press systems. Folding applications are also included. Prerequisite: PAPR 250, CHEM 103.

PAPR 460 Pulp and Paper Process Design (3-3) 
4 hrs. Winter
The design and operational factors of the unit processes and operations used in the pulp and paper industry and its subsystems stressing operating efficiencies from the engineering viewpoint are considered. Includes material and energy balances, power distribution, evaluation of equipment performance, and environmental concern. Prerequisites: PAPR 203, PAPR 204, PAPR 307.

PAPR 462 Computer Estimating (2-0) 
2 hrs. Winter
A study of methods used in estimating the price of printed materials before manufacture and in the final pricing of that printed material. Computerized estimating systems and techniques will be used in a lab setting. Prerequisite: PAPR 362.

PAPR 464 Modern Printing Practices (2-0) 
2 hrs. Winter
Study, development, application of printing management/marketing production practices. Technical short courses offered by production and service industries may be utilized. May be elected in two hour blocks to a maximum of six hours. Prerequisite: Junior standing.

PAPR 466 Printing Production Management (3-0) 
3 hrs. Fall
Managerial procedures used in printing industries to forecast, plan, schedule, and record production to control production costs. Hourly costs of printing machines will be developed by students. Prerequisite: Junior standing.

PAPR 470 Senior Thesis I (0-4 Min.) 
2 hrs. Fall, Winter
This course is intended to increase the student’s ability to solve a research or technical problem. The student will analyze a problem and use this analysis to design an experimental investigation. The student will commence experimental work and give written summaries of literature search and experimental program. Each student will be assigned an adviser for the problem. Weekly participation at student-staff seminars and participation at PAPR 440, Current Topics, is required. Prerequisites: PAPR 371, paper science major.

PAPR 471 Senior Thesis II (0-6 Min.) 
3 hrs. Fall, Winter
A continuation of PAPR 470, including completion of laboratory work and preparation of a final formal report. An oral presentation will be given. Weekly participation at student-staff seminars and participation at PAPR 440, Current Topics, is required. Prerequisite: PAPR 470.

PAPR 472 Senior Engineering Problem I (0-4 Min.) 
2 hrs. Fall, Winter
This course is intended to increase the ability of an engineering student to analyze and solve a design problem. An individual adviser will be assigned. The student will analyze a problem, design an experimental investigation as needed, and present a completed program in both written and oral form. Weekly participation at student-staff seminars and participation at PAPR 440, Current Topics, are required. Prerequisites: PAPR 371, paper engineering major.

PAPR 473 Senior Engineering Problem II (0-6 Min.) 
3 hrs. Fall, Winter
A continuation of PAPR 472, including completion of laboratory or design work and preparation of a final report. A formal oral presentation will be given. Weekly participation at student-staff seminars and participation at PAPR 440, Current Topics, are required. Prerequisite: PAPR 472.

PAPR 481 Instrumentation and Process Control (3-0) 
3 hrs. Fall
An introduction to automatic control covering the areas of control methods, theory, loop analysis, and industrial control equipment including sensors, transmitters, controllers, and control valves. Prerequisites: CHEM 101, CHEM 102 or CHEM 103, MATH 123, PHYS 211.

PAPR 482 Application of Control Systems (3-0) 
3 hrs. Winter
The use of instrument systems and digital computers to control pulping and paper-making processes. Deals with the design of combination control systems, digital computer components, and computer control strategies in the paper industry. Prerequisite: PAPR 481.

PAPR 499 Independent Studies 1-6 hrs. Fall, Winter, Spring, Summer
Offers paper science and engineering majors with good scholastic records a program of independent study in an area arranged in consultation with the instructor. One to three hours credit per semester, cumulative to six hours.
VOCATIONAL EDUCATION

Jack T. Humbert, Coordinator

Bachelor of Science Degree

The vocational education teaching curriculum (VET) prepares students to qualify as vocational education teachers in Michigan Area Skill Centers and Secondary Institutions in selected subject areas of vocational education under the provisions of the Michigan State Plan for Vocational Education. Areas of vocational education that may be selected by a student are business education, distributive education, home economics, vocational technical education, and health occupations.

Industrial Education Teaching Curriculum (IET) differs slightly in professional education course requirements as noted in the Industrial Education Teaching Curriculum requirements located earlier in the Department of Consumer Resources and Technology section.

Vocational Advising

An adviser is available to assist in individual program planning, recommend electives appropriate to the career objective of a vocational teacher, discuss employment opportunities, and help find teaching positions. Substitutions and transfer credit must be approved by departmental vocational advisers. Vocational advisers by area are:

Majors

Distributive Education—Jack T. Humbert
Home Economics—Linda L. Dinnison
Vocational Technical Areas (Drafting, Graphic Arts, Metalworking, Power/Auto, and Woodworking)—John Lindbeck

Minors

Distributive Education—Jack T. Humbert
Occupational Foods—Linda L. Dinnison
Vocational Technical Areas (Drafting, Graphic Arts, Metalworking, Power/Auto, and Woodworking)—John Lindbeck

Vocational Certification in Business

Information about vocational certification to teach business or business education courses may be obtained by contacting a College of Business adviser at 383-3982.

Vocational Educational Teaching Curriculum Requirements

Candidates for the Bachelor of Science degree and Vocational and/or Secondary Provisional certification must complete the following program requirements as well as University requirements stated elsewhere in this bulletin.

A. Minimum hours required for this curriculum—124 to 128 hours

B. General Education requirement—40 hours

C. Major Sequence—30 to 36 hours

Choose one of the following three major sequences:

1. Distributive Education—33 hours

   CRT 130 Food Distribution Industry ....... 3
   CRT 135 Introduction to Petroleum Industry ....... 3
   ECON 201 Principles of Economics (Micro) ....... 3
   ACTY 210 Principles of Accounting ....... 3
   MKTG 270 Professional Selling ....... 3

2. Home Economics Education—36 hours

   CRT 209 Consumer Education ....... 3
   CRT 214 Human Growth and Development ....... 3
   CRT 260 Nutrition ....... 3
   CRT 415 Effective Parenting ....... 3
   VE 542 Occupational Education ....... 2
   CRT Electives (advisor planned) ....... 22

3. Vocational Technical—30 hours

   Technical course sequence is planned in consultation with an advisor in one of the following areas: drafting, graphic arts, metalworking, power/auto, woodworking. (4,000 work hours required; may necessitate internship or work experience.)

D. TEACHABLE MINOR—20 hours

E. PROFESSIONAL VOCATIONAL EDUCATION—12 hours

   VE 342 Course Planning and Construction ....... 3
   VE 344 Teaching Practical Arts and Vocational Education ....... 3
   VE 512 Principles of Vocational Education ....... 3
   VE 543 Coordination Techniques in Cooperative Education ....... 3

F. PROFESSIONAL TEACHER EDUCATION—20 hours

   CRT 214 Human Growth and Development ....... 3
   ED 301 Teaching and Learning (Secondary) ....... 3
   ED 320 The Teaching of Reading (Secondary) ....... 3
   ED 410 Seminar in Education ....... 2
   ED 475 Directed Teaching (Secondary) ....... 9

G. ELECTIVES—Based on MAJOR SEQUENCE requirements

H. PHYSICAL EDUCATION—2 hours

Vocational Minors

DISTRIBUTIVE EDUCATION—24 hours

(4,000 work hours required, may necessitate an internship or work experience.)

CRT 130 Food Distribution Industry ....... 3
CRT 135 Introduction to Petroleum Industry ....... 3
MKTG 370 Marketing ....... 3
MKTG 374 Advertising ....... 3
VE 342 Course Planning and Construction ....... 3
VE 344 Teaching Practical Arts and Vocational Education ....... 3
VE 512 Principles of Vocational Education ....... 3
VE 543 Coordination Techniques in Cooperative Education ....... 3

FOOD OCCUPATIONS—24 hours

See Food Occupations Minor adviser in the Department of Consumer Resources and Technology in the College of Engineering and Applied Sciences for course requirements and work hours required.

VOCATIONAL TECHNICAL—20 hours

See the appropriate adviser for planning courses in the areas of drafting, graphic arts, metalworking, power/auto/mechanics, and woodworking.

 Majors in non-vocational teacher preparation programs may earn vocational certification by completing one of the foregoing vocational minor sequences in consultation with the appropriate adviser.

Vocational Education Courses (VE)

Numbers following course title indicate hours of lecture and laboratory per week during a semester (lecture hours: laboratory hours).

VE 342 Course Planning and Construction (3-0)

3 hrs. Fall, Winter

Principles of analyzing, selecting, and arranging instructional materials for instruction purposes. Lesson plans, unit plans, and complete courses of study are included.

VE 344 Teaching Practical Arts and Vocational Education (3-0)

3 hrs. Fall, Winter

Covers all aspects of teaching unique to practical subject laboratory instruction. Included are the teacher’s role, laboratory instruction material, laboratory teaching methods, evaluation techniques, and laboratory administration and management.

VE 512 Principles of Vocational Education (3-0)

3 hrs. Fall, Summer

The place and function of the practical arts and vocational education in the modern school and the fundamental principles upon which this work is based. For teachers of business, distributive education, home economics, industrial subjects, office subjects, and for administrators. For upperclass and graduate students.

VE 513 Technical Education Methods (3-0)

3 hrs.


VE 514 Workshop in Vocational-Technical Education

1-3 hrs.

Designed to assist vocational education personnel meet vocational education program standards of quality mandated by the vocational technical education service. Workshop topics will vary to meet vocational education personnel needs. Students may enroll for more than one topic, but in each topic only once, to a maximum of three hours credit. Prerequisite: Vocational certification or consent.

VE 542 Occupational Education (2-0)

2 hrs. Summer

Planning for wage earning programs at the secondary and adult levels.

VE 543 Coordination Techniques in Cooperative Education (3-0)

3 hrs. Winter

This is a study of duties and responsibilities of the teacher-coordinator. The organization and establishment of training programs, supervision of trainees on the job, development of individual training programs, establishing working relationships between school, business, and home, and participation in activities in the community, especially adapted to prospective coordinators.
The College of Fine Arts offers a variety of curricula and subjects in the principal interest areas of the visual and performing arts. Three undergraduate degrees in art are offered: Bachelor of Science and Bachelor of Arts majoring in Art; and a Bachelor of Fine Arts in one of the following areas of emphasis: sculpture, ceramics, textiles, graphic design, printmaking, photography, jewelry and metalsmithing, painting, and watercolor. Each student may elect an art major with certification to teach art at the elementary and secondary levels.

The Department of Dance offers three undergraduate degrees: Bachelor of Fine Arts in Dance, Bachelor of Science in Dance; and Bachelor of Arts in Dance. The Department of Dance participates with the School of Music and Department of Theatre in offering the music theatre performer program. Three undergraduate degree programs in music are available: Bachelor of Music with majors in music performance, composition, jazz studies, music education, music history, and music therapy; Bachelor of Science with a major in music and a minor in elementary education; and Bachelor of Arts with a major in music and a minor in one of the departments in the College of Arts and Sciences. Teacher certification is earned in the music education and elementary education programs. The School of Music participates with other University departments in offering a music theatre performer degree.

Music Theatre programs lead to the Bachelor of Arts and Bachelor of Science degrees, both of which provide the option to earn certification to teach theatre at the secondary level. The department also participates with other University departments in offering a music theatre performer program, and a theatre-as-an-elective option.

Students are encouraged to inquire about curricular combinations not listed specifically in the catalog.

In the belief that arts understanding, involvement, and appreciation are an important part of liberal education, the College of Fine Arts offers many opportunities for the non-arts major to participate in applied, theoretical, and appreciational curricular and co-curricular activities, such as general art and art history courses, dance, musical ensembles, and theatre productions.

The following list of designated courses may be used to fulfill the 70 hour requirement for the Bachelor of Arts degree:

**Art**
- 103 Theory of Art
- 120 Introduction to Art
- 220 History of Art
- 221 History of Art
- 520 Independent Study in Art History
- 521 Topics in Art History
- 581 History of Ancient Art
- 583 History of Medieval Art
- 585 History of Renaissance Art
- 586 History of Baroque Art
- 588 History of 19th Century Art
- 589 History of 20th Century Art 1900-1945
- 590 History of 20th Century Art 1945 to Present
- 591 History of Prints
- 593 History of American Art
- 597 History of Modern Architecture

**Dance**
- 140 Dance History I
- 240 Dance History II

**Music**
- 160 Basic Music
- 161 Basic Music
- 260 Basic Music
- 261 Basic Music: 20th Century Techniques
- 270 Music History and Literature
- 271 Music History and Literature
- 360 Style Analysis
- 572 Baroque Music (1600-1750)
- 573 Classical Music (1750-1800)
- 574 Romantic Music (1800-1910)
- 577 Symphonic Literature
- 578 Chamber Music Literature
- 579 Operatic Literature
- 581 Choral Music Literature
- 583 Jazz History and Literature

**Theatre**
- 100 Introduction to Theatre
- 175 Script Analysis
- 370 Theatre History I
- 470 Development of Theatre Art

**Interdisciplinary Program**

**Music Theatre Performer**

Bachelor of Fine Arts Degree

81 credit hours

**Required Courses in Music Theatre—17 hrs.**
- THEA 272 Music Theatre History (3)
- THEA 372 Music Theatre Script Analysis and Critique (Prereq: Adviser consent) (3)

**Required Courses in Music—20 hrs.**
- MUS 115 Voice Technique I (2)
- MUS 116 Voice Technique II (2)
- MUS 120 Keyboard Fundamentals (1)
- MUS 121 Keyboard Fundamentals (Prereq: MUS 120) (1)
- MUS 160 Basic Music (Prereq: MUS 159) (3)
- MUS 162 Aural Comprehension (Prereq: MUS 159) (1)
- MUS 163 Aural Comprehension (Prereq: MUS 162, "C" or better) (1)
- MUS 199 Applied Voice (Prereq: Audition - 4 semesters 2 hrs. ea.) (8)
- MUS 220 Keyboard Musicianship (Prereq: MUS 121, "C" or better) (1)

**Required Courses in Theatre—24 hrs.**
- THEA 120 Theatre Production (3)
- THEA 125 Stagecraft I (Prereq: THEA 120) (3)
- THEA 140 Elements of Stage Acting (3)
- THEA 210 Improvisation (Prereq: Sophomore standing) (3)
- THEA 230 Stage Make-up (3)
- THEA 246 Characterization (Prereq: THEA 210) (3)
- THEA 341 Special Techniques of Physical Characterization (Prereq: THEA 246) (3)
- THEA 355 Directing I (Prereq: THEA 120, 140, Junior standing) (3)

**Electives—10 hrs.**

Seven hours from courses in the Department of Dance, the School of Music and the Department of Theatre, with the consent of the Music Theatre Performer curriculum adviser.

**Additional requirements**

A student must complete all the General Education Distribution Program requirements as outlined in this bulletin. Within these specifications, it is required that the student take...
Admission to the program is by prepared audition before a faculty team from Dance, Music, and Theatre. Additional information is available by contacting the curriculum adviser.

At the end of the sophomore year, each student must pass a performance jury in order to continue in the program; unanimous approval by each performance area is required.

All music theatre majors must audition for at least one staff-directed musical comedy, opera, or operetta each year.

**ART**

Melvin N. Strawn, Chair
Jerry Abramson
T.D. Argyropoulos
John M. Carney
Joseph V. DeLuca
Kathryn Field
Gordon J. Grinwis
Edward Harkness
Richard J. Keaveny
Donald E. King
John Link
Paul S. Mergen
John M.methaney
Helm Mouton
Bruce Naftel
Mary Eleanor Neu
Barbara Renshrope
Curtis A. Rhodes
Louis B. M. Rizzolo
Paul A. Robbert

The Department of Art offers many programs with various purposes and objectives. These are described under the heading of each program.

The department is accredited by the National Association of Schools of Art and Design and subscribes to the recommendations of this organization.

The various programs are designed to promote the education of good artists and artists-teachers and to increase artistic awareness among students in other areas.

Extracurricular activities include many exhibitions, lectures by visiting artists, a student-operated gallery, and individual studios for advanced BFA candidates. There are approximately 350 undergraduate and 25 graduate art majors active during the academic year. Approximately 80 art degrees are awarded annually.

**Programs**

The Department of Art offers programs leading to the following three degrees: Bachelor of Fine Arts with a emphasis in one of the areas of the department, Bachelor of Arts or Bachelor of Science with a major in art, Bachelor of Science with a major in art teaching. All three programs are within the art curriculum, which is composed of the General Education requirements of the University and the art major requirements of the B.A., B.S., or B.F.A. degrees.

The Department of Art also offers courses for students in other areas including non-art major courses in Drawing, Acrylic Painting, Printmaking, Sculpture, Ceramics, Jewelry, Watercolor, and Textile Art. Two programs satisfying the minor requirements of other curricula are also offered.

For specific information see the description of each program.

**Transfer Credit**

Art credits earned at a college accredited by the National Association of Schools of Art and Design, or a regionally recognized accrediting agency, in which a grade of "C" or better is earned, will transfer in most cases. Many beginning level art courses will transfer with direct WMU course equivalents. Some beginning and most intermediate level courses will receive general "art credit".

If you receive general art credit for any course you feel would fulfill a required art course, or for any course needed to fulfill a prerequisite for a course you wish to take, you must present a portfolio for consideration. Based on the results of this portfolio review, the course in question will either receive a direct course equivalent number or remain general art credit. General art credits can be used to fulfill the art elective category or be used as electives you may need to complete the minimum number of hours needed for graduation (122). If you do not wish to show a portfolio for any courses in which you have received general "art credit", you do not have to do so. These credits will automatically be used as electives wherever needed.

For portfolio guidelines please write to: Screening Committee, Department of Art, Western Michigan University, Kalamazoo, MI 49008, or call (616) 383-6022.

**Advising**

All art majors and minors are required to see an art adviser as soon as they are on campus and at least once each Fall and Winter semester thereafter. To make an appointment please call (616) 383-6028.

**Miscellaneous**

Grading
Art majors and minors receiving a grade below a "C" in a required course must repeat the course.

Exhibition Requirement
Each Bachelor of Fine Arts major must present a graduating exhibition as stated in Art 490-497 in the B.F.A. degree requirements. The B.F.A. candidate is to arrange such an exhibition in consultation with their major adviser. The Department of Art may retain one work of art from each student for the departmental collection. B.F.A. candidates must submit to the department a minimum of two sets of 18 slides of their art work before receiving a grade for their graduation presentation.

**Programs**

**Bachelor of Fine Arts Degree**

85 credit hours

This degree is designed for qualified students who intend to become professional artists or pursue graduate study in art. Art majors must make specific application to a departmental committee for admission to B.F.A. candidacy in a specific area of emphasis after completing 30 hours in art; one semester residency in the department, and at or above the 300 level in the area they are applying to. Applications will be considered each November and March.

Areas of emphasis: ceramics, graphic design, jewelry and metalsmithing, painting/ watercolor, photography, printmaking.
surgery, and textile design. Art teaching students must complete the requirements of one of the studio areas of emphasis in addition to the certification requirements of the College of Education and the art education sequence in the Art Department. ART 252, 352, 452, and 552.

The requirements of the art curriculum of the College of Fine Arts have to be satisfied. Eighty-five hours in art satisfy both the major and the minor requirements of this curriculum and are distributed as follows:

- 9 hours in the basic program (101, 102, 103)
- 6 hours in Fine Arts (231, 240)
- 15 hours in Art History, including 220 and 221
- 6 hours in Advanced Drawing (210, 310)
- 2 hours in Art Seminar (425)
- 21 hours in the studio area of emphasis
- 25 hours of other elective and required art courses determined in consultation with a faculty adviser within the studio area of emphasis.
- 1 hour in ART 490, 491, 492, 493, 494, 495, 496, or 497. Approval of the presentation of slides is necessary for the granting of the B.F.A. degree.

Art Major

Bachelor of Arts or Bachelor of Science
64 credit hours

This program is designed for the liberal arts-oriented students who want to major in the visual arts. It provides maximum flexibility in terms of electives in art and non-art courses. Professionally oriented art students may start in this program and apply for admission to the B.F.A. program when eligible.

Areas of studio emphasis for this program include ceramics, graphic design, jewelry and metalsmithing, painting/watercolor, photography, printmaking, sculpture, and textile design.

The requirements of the art curriculum of the College of Fine Arts have to be satisfied. Sixty-four hours in art satisfy both the major and the minor requirements of this curriculum and are distributed as follows:

- 9 hours in the basic program (101, 102, 103)
- 6 hours in Fine Arts (231, 240)
- 18 hours in Art History, including 220 and 221
- 6 hours in Advanced Drawing (210, 310)
- 12 hours in one area of emphasis
- 13 hours in Art Electives, to include one course from the Crafts division (ceramics, jewelry and metalsmithing, and textile design) and one course from the Print Media division (graphic design, photography and printmaking) and one course from the Fine Arts division (painting/watercolor and sculpture). Courses taken within the student’s area of emphasis will satisfy the requirement that one of the electives be taken within that division, but they do not change the requirement that the Art electives total 13 hours.

Art Teaching Major

Bachelor of Science
61 credit hours

This program is intended to develop artist-teachers certified to teach art at the elementary and secondary levels and prepared to continue their studies at a graduate school.

Areas of concentration for this program include ceramics, graphic design, jewelry, and/or metalsmithing, painting/watercolor, photography, printmaking, sculpture and textile design.

The requirements of the secondary curriculum of the College of Education must be satisfied. Sixty-one credit hours in art satisfy the major and minor requirements of this curriculum and are distributed as follows:

- 9 hours in the basic program (101, 102, 103)
- 6 hours in Fine Arts (231, 240)
- 3 hours in Advanced Drawing (210)
- 9 hours in Art History (220, 221, elective)
- 12 hours in Art Education (252, 352, 452, 552)
- 12 hours in one area of concentration
- 10 hours in elective art courses, determined in consultation with the art adviser.

Art teaching courses (252, 352, 452, 552) must be taken in sequence and may not be taken concurrently. Therefore, Art Teaching majors must enroll in Art 252 in the fall semester of the sophomore year and continue taking one art education course, in sequence, in each subsequent semester. This is necessary in order to complete the directed teaching in the senior year and complete the degree in a four-year span.

One semester of directed teaching in art, preferably in both elementary and secondary situations, is required.

Art Minor

24 credit hours

This program is designed to expose the student to the field of art and satisfy the minor requirements of the liberal arts, arts and sciences, or education curricula. Art minors must register with the art adviser to pre-plan a complete program before completing any art courses. A minor slip is required.

- 9 hours in the basic program (101, 102, 103)
- 3 hours in Fine Arts (231 or 240)
- 12 hours in art electives, including ART 252 and 352 for education majors and minors.

Art History Minor

18 credit hours

This program is designed for liberal arts students interested in art history and satisfies the minor requirements of the liberal arts and arts and sciences curricula. A minor slip is required. The 18 credit hours are distributed as follows:

- 6 hours of Art History 220 and 221
- 12 hours of electives chosen from the remaining Art History courses in the department, in consultation with the Art adviser.

Art Courses for Non-Art Majors or Minors

Elementary education majors are advised to take ART 130, 140, or 150, except for those students in the integrated creative arts minor, who are required to take ART 200.

Any course with no prerequisites may be taken by non-art students. Those seeking a broadly inclusive studio experience in art are advised to take ART 130 and/or 140. Further recommended courses in specific media for non-art majors include Drawing, Acrylic Painting, Printmaking, Sculpture, Ceramics, Jewelry, Water color, and Textile Art. The Art Survey 120, ART 130, 140, and Art History 220 and 221 are open with no prerequisites to non-art majors and can satisfy the humanities requirements of General Education.

Basic Program

Courses required of all majors and minors in art as prerequisites to other advanced courses.

Credit Hours

101 Foundation Drawing .......................... 3
102 Foundation 2D Design ........................ 3
103 Theory of Art .................................. 3

Art Courses (ART)

(Course descriptions in italics are approved for General Education purposes.)

ART 101 Foundation Drawing
3 hrs.

The visual elements and principles of organization in relationship to perceiving both flat and illusionary space.

ART 102 Foundation 2D Design
3 hrs.

The study of the elements of the visual language and principles of visual organization in black and white color.

ART 103 Theory of Art
3 hrs.

A lecture course introducing the philosophy of art with understanding of the aesthetic values that are reflected from key movements of art in painting, sculpture and architecture, in comparison to contemporary art. Prerequisite: Art majors and minors only.

ART 120 Introduction to Art
3 hrs.

A topical introduction to the visual arts: painting, architecture, sculpture and the crafts. Discussions and slide presentations on such themes as the meaning of modern art, art as cultural and sociological expression, as symbol, as play, and as form. This course will enable the non-art student to develop an art vocabulary and gain insights into man’s quest for creative expressions.

ART 130 Studio Experience—(3-D)
3 hrs.

A course designed for the non-art student as an enriching experience in three-dimensional media; to include clay, wood, metal and other sculptural material. This course may not be elected by majors or minors in art or art education. It is designed primarily for the general degree of education student who wishes to have some experience in art.

ART 140 Studio Experience—(2-D)
3 hrs.

A course designed for the non-art student as an enriching experience in two-dimensional media; to include painting, drawing and other graphic media. May not be elected by majors or minors in art or art education.

ART 150 Art Education Workshop
3 hrs.

A studio course structured to provide the classroom teacher with the opportunity to explore, experiment and develop concepts related to art, creativity, and perception. Such concepts are explored and developed through the use of a variety of art materials and techniques. Prerequisite: For the Elementary Education Minor only. May not be taken by Integrated/Graphic Arts minors, nor Art majors or minors.
ART 200 The Creative Process through Art 4 hrs.
Individual involvement in the creative process related to human growth and development by means of participation with many art media. Prerequisite: The Nature of Creativity Ed. 230. For the Integrated Creative Arts Minor only. This course waives the ART 150 requirement for the Elementary Education majors.

ART 201 Non Art Major: Drawing 3 hrs.
This course is a non-professional enrichment experience in basic drawing. The course objectives are 1) to learn basic drawing techniques and their relationships to various media such as graphite, charcoal, and conte crayon. 2) to learn proper usage of papers and drawing tools, and 3) to develop personal expression through drawing. Not applicable to art majors or minors.

ART 202 Non-Art Major: Acrylic Painting 3 hrs.
This course is a non-professional enrichment experience in basic acrylic painting. The course objectives are 1) to learn the fundamental techniques of application for acrylic paint, and 2) to develop a personal expressive use of the medium. Not applicable to art majors or minors.

ART 203 Non Art Major: Printmaking 3 hrs.
This course is a non-professional enrichment experience in basic Printmaking. The course objective is to learn the fundamental techniques of etching, lithography, and block printing. Studio time will be provided for students to work on a project in each of these media. A class fee will be charged to cover the costs of materials and supplies. Not applicable to art majors or minors.

ART 205 Non Art Major: Sculpture 3 hrs.
This course is a non-professional enrichment experience in Basic Sculpture. The course objectives are 1) to learn basic techniques of clay modeling and plaster casting, and 2) to develop personal expression in these media. A class fee will be charged for materials and supplies. Not applicable to art majors or minors.

ART 206 Non Art Major: Ceramics 3 hrs.
This course is a non-professional enrichment experience in basic Ceramics. The course objectives are 1) to learn the fundamentals of Ceramic construction, including coil building, and limits of clay as a material. A class fee will be charged for clay and glaze supplies. Not applicable to art majors or minors.

ART 207 Non Art Major: Jewelry 3 hrs.
This course is a non-professional enrichment experience in basic Jewelry. The course objectives are 1) to learn the proper use of metal-making tools and equipment, 2) to learn the basic techniques of making hand-wrought jewelry, and 3) to develop an awareness of the technical and creative range of metal as a medium for body decoration. A class fee will be charged for materials and supplies. Not applicable to art majors or minors.

ART 208 Non Art Major: Watercolor 3 hrs.
This course is a non-professional enrichment experience in basic Watercolor. The course objectives are 1) to learn the proper use of watercolor brushes and tools, 2) to learn basic techniques for manipulating watercolor, and 3) to understand presentation models for finished watercolor paintings. A class fee will be charged for materials and information handouts. Not applicable to art majors or minors.

ART 209 Non Art Major: Textiles Arts 3 hrs.
This course is a non-professional enrichment experience in basic Textiles. The course objectives are 1) to learn fundamental on and off loom textile construction techniques, and 2) to explore other related techniques such as macrame, hooking, quilting, felting, and dyeing. A class fee will be charged for materials and supplies. Not applicable to art majors or minors.

ART 210 Life Drawing 3 hrs.
The study of the essential aspects of life drawing (such as gesture, contour, proportions, anatomy, structure, and articulation) and their synthesis into a coherent drawing attitude. Prerequisite: ART 101, ART 102, ART 103 and ART 240, or ART 240 concurrently.

ART 220 History of Art 3 hrs.
An historical survey of art from prehistoric ages to the Renaissance.

ART 221 History of Art 3 hrs.
An historical survey of art from the Renaissance through the contemporary period.

ART 230 Ceramics 3 hrs.
A course devoted to a survey of pottery process, including handbuilding, technical information and a limited experience with the potter’s wheel. Prerequisite: ART 101, ART 102, ART 103 and ART 231, or ART 231 concurrently.

ART 231 Sculpture 3 hrs.
A fundamental course in sculpture exploring the theories and concepts of three-dimensional art forms in space. Mechanical, structural and compositional principles will be studied. An overview of historical sculpture forms will be presented. Prerequisites: ART 101, ART 102, and ART 103.

ART 234 Textile Design 3 hrs.
An introductory survey of textiles to include weaving, spinning, stitching, hooking, macrame, silk screen printing, tie dye and batik. Prerequisite: ART 101, ART 102, ART 103 and ART 231, or ART 231 concurrently.

ART 238 Jewelry and Metalsmithing 3 hrs.
A survey of jewelry projects with instruction in design and metal craft. Copper, brass, and sterling are the principal materials. Basic stone setting and casting procedures are usually included. Students generally fashion several jewelry pieces in this class. Prerequisite: ART 101, ART 102, ART 103, and ART 231 or ART 231 concurrently.

ART 240 Painting I 3 hrs.
A fundamental course in painting to assist the student in realizing visual observations, compositional sensitivities, and personal expressive means at the core of the creative process. Seeing color, mixing color, and making specific color decisions are the vehicles for studying the expressive potentials of the medium—to include basic color painting procedures. Prerequisite: ART 101, ART 102, ART 103 and ART 240, or ART 240 concurrently.

ART 241 Intaglio and Relief 3 hrs.
A basic, confidence building introduction to Lithography through Aluminum Plate techniques. Fundamental discussion of Stone Lithography and aesthetic possibilities of the medium. Prerequisite: ART 101, ART 102, ART 103 and ART 240, or ART 240 concurrently.

ART 244 Hand Papermaking 3 hrs.
An introduction to the basic techniques of hand papermaking as an art form. Prerequisites: ART 101, ART 102, and ART 103.

ART 245 Graphic Design 3 hrs.
An introduction to problem-solving for visual communication through typographic images. The fundamentals of calligraphy, typography, and typographic design are investigated in experimental and practical projects. Incorporates research in the communicative potential of color and structure. Prerequisite: ART 101, ART 102 and ART 240, or ART 240 concurrently.

ART 246 Screenprint 3 hrs.
Introduction to screenprint fundamentals, techniques and procedures, exploring at length the expressive potentials of the medium—to include basic color printing procedures. Prerequisite: ART 101, ART 102, ART 103 and ART 240, or ART 240 concurrently.

ART 248 Photography 3 hrs.
Introductory course covering the function of the camera, exposure meter, lenses, b/w films, processing and printing. Emphasis is placed upon perceptive imagery and development of a technical proficiency. Prerequisite: ART 101, ART 102, ART 103 and ART 240, or ART 240 concurrently.

ART 252 Art Education Workshop (Majors) 3 hrs.
A studio course involving projects, media and materials, handled on an aesthetic level but appropriate for the creative and maturational ability of the K-12 art student. Prerequisite: ART 101, ART 102, ART 103 and ART 231, or ART 231 and ART 240 concurrently.

ART 255 Inter-Related Arts Process: Art, Dance, and Music 3 hrs.
Art, dance, and music will be dealt with as the expressive means at the core of the creative and educative process. Students will be exposed to the craftsmanship of each art form, the experiences of synthesizing art forms so that each form contributes to the aesthetic value of the final product.

ART 310 Intermediate Drawing 3 hrs.
Drawing as the study of form and as a conclusive aesthetic statement. Model available during approximately 1/3 of the class meetings. Prerequisite: ART 210.

ART 330 Ceramics 3 hrs.
Continuation of ART 230 with opportunity for concentration in the medium. Some experiment in glazing. Prerequisite: ART 230.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART 331</td>
<td>Sculpture</td>
<td>3 hrs.</td>
<td></td>
<td>Development of individual sculptural direction: all media. Advanced welding, molding and casting techniques are among the media explored. Prerequisite: ART 231 or consent of department.</td>
</tr>
<tr>
<td>ART 334</td>
<td>Textiles</td>
<td>3 hrs.</td>
<td></td>
<td>Advanced work in textile design allowing for specialization with a material or technique surveyed in ART 234. Prerequisite: ART 234.</td>
</tr>
<tr>
<td>ART 336</td>
<td>Jewelry and Metalsmitting</td>
<td>3 hrs.</td>
<td></td>
<td>Intermediate level metalsmitting work. Continued skill development in jewelry design, stone setting, and solder fabrication. Basic lapidary work usually included. Prerequisite: ART 238.</td>
</tr>
<tr>
<td>ART 340</td>
<td>Painting II</td>
<td>3 hrs.</td>
<td>Continuation of ART 240.</td>
<td></td>
</tr>
<tr>
<td>ART 341</td>
<td>Intaglio and Relief</td>
<td>3 hrs.</td>
<td></td>
<td>An intermediate course continuing the investigation of basic and advanced intaglio and Relief techniques with the introduction of color printing. The artist-student should begin to discover and adapt media and/or techniques (or synthesis of media and/or techniques) appropriate to individual aesthetic intentions. Prerequisite: ART 241.</td>
</tr>
<tr>
<td>ART 342</td>
<td>Watercolor</td>
<td>3 hrs.</td>
<td></td>
<td>Advanced problems in watercolor techniques to include composition. Prerequisite: ART 242.</td>
</tr>
<tr>
<td>ART 343</td>
<td>Lithography</td>
<td>3 hrs.</td>
<td></td>
<td>An intermediate investigation of Lithography based on basic skills with the introduction of color printing and other advanced techniques. The artist-student should begin to discover methods and techniques adaptable and appropriate to his aesthetic intent. Prerequisite: ART 243.</td>
</tr>
<tr>
<td>ART 344</td>
<td>Hand Papermaking</td>
<td>3 hrs.</td>
<td></td>
<td>The techniques of producing paper to be used as support for various media. Prerequisite ART 244.</td>
</tr>
<tr>
<td>ART 345</td>
<td>Graphic Design</td>
<td>3 hrs.</td>
<td></td>
<td>The study and practice of graphic design for two-dimensional media. Emphasis is placed on the conceptual development of geometric, figurative, and decorative imagery for posters, covers, promotions, magazine and newspaper advertising. Includes thematic development, graphic planning, comprehensive and finished art production. Prerequisite: ART 245.</td>
</tr>
<tr>
<td>ART 346</td>
<td>Screenprint II</td>
<td>3 hrs.</td>
<td></td>
<td>An intermediate course continuing the investigation of basic and advanced screenprint stencil techniques with the introduction of photo-stencil methods. The artist/students should begin to discover and apply method of technique appropriate to their aesthetic intent. Prerequisite: ART 246.</td>
</tr>
<tr>
<td>ART 347</td>
<td>Photography</td>
<td>3 hrs.</td>
<td></td>
<td>Introduction to the view camera, color processing/printing, and various studio lighting techniques involved in product photography. Emphasis is placed upon exploring the potential of color photography and the development of individual imagery. Prerequisite: ART 248 and ownership of a 35mm slr or 2 1/4 X 2 1/4 camera.</td>
</tr>
<tr>
<td>ART 352</td>
<td>Preparation for Art Teaching</td>
<td>3 hrs.</td>
<td></td>
<td>A teaching laboratory course designed to familiarize the elementary art teacher with teaching philosophies, methods and creative teaching procedures using varied media, and materials. Emphasis is placed upon qualitative art programming in the elementary school. Prerequisite: ART 252.</td>
</tr>
<tr>
<td>ART 425</td>
<td>BFA Seminar in Art</td>
<td>2 hrs.</td>
<td></td>
<td>The seminar investigates and evaluates contemporary topics and trends in art. Students will be exposed to how artists express their ideas through current and ongoing visiting artist programs, exhibitions and workshops. Students will be encouraged to select and develop their own research topic. Graded credit/no credit only. Prerequisite: BFA candidacy.</td>
</tr>
<tr>
<td>ART 445</td>
<td>Graphic Design</td>
<td>3 hrs.</td>
<td></td>
<td>The fundamentals and procedures of graphic design for sequential, three-dimensional and serial forms. Problems in design continuity and coordination are explored through editorial, corporate identity, campaign, product, and packaging design. Incorporates investigation of graphic design processes and papers. Prerequisite: ART 345.</td>
</tr>
<tr>
<td>ART 452</td>
<td>Preparation for Art Teaching</td>
<td>3 hrs.</td>
<td></td>
<td>A teaching laboratory course specifically designed to familiarize the middle and high school art teacher with philosophies, methods and creative teaching procedures using varied media and materials. Emphasis is placed upon qualitative art programming in the secondary school. Prerequisite: ART 352 and art major status.</td>
</tr>
<tr>
<td>ART 490</td>
<td>Graduation Presentation—Painting/</td>
<td>1 hr.</td>
<td>Preparation and presentation of graduating exhibition in painting/watercolor, portfolio, slides and oral examination or written thesis, with the assistance of the student’s major adviser. Evaluation by a departmental reviewing committee. Prerequisite: Senior standing and BFA candidacy.</td>
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<td></td>
<td>Watercolor</td>
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<tr>
<td>ART 491</td>
<td>Graduation Presentation—Sculture</td>
<td>1 hr.</td>
<td>Preparation and presentation of graduating exhibition in sculpture, portfolio, slides and oral examination or written thesis, with the assistance of the student’s major adviser. Evaluation by a departmental reviewing committee. Prerequisite: Senior standing and BFA candidacy.</td>
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<tr>
<td>ART 492</td>
<td>Graduation Presentation—Graphic</td>
<td>1 hr.</td>
<td>Preparation and presentation of graduating exhibition in graphic design, portfolio, slides and oral examination or written thesis, with the assistance of the student’s major adviser. Evaluation by a departmental reviewing committee. Prerequisite: Senior standing and BFA candidacy.</td>
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<tr>
<td></td>
<td>Design</td>
<td></td>
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<tr>
<td>ART 493</td>
<td>Graduation Presentation—Photography</td>
<td>1 hr.</td>
<td>Preparation and presentation of graduating exhibition in photography, portfolio, slides and oral examination or written thesis, with the assistance of the student’s major adviser. Evaluation by a departmental reviewing committee. Prerequisite: Senior standing and BFA candidacy.</td>
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<tr>
<td>ART 494</td>
<td>Graduation Presentation—Printmaking</td>
<td>1 hr.</td>
<td>Preparation and presentation of graduating exhibition in printmaking, portfolio, slides and oral examination or written thesis, with the assistance of the student’s major adviser. Evaluation by a departmental reviewing committee. Prerequisite: Senior standing and BFA candidacy.</td>
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<tr>
<td>ART 495</td>
<td>Graduation Presentation—Jewelry</td>
<td>1 hr.</td>
<td>Preparation and presentation of graduating exhibition in jewelry and metalsmitting, portfolio, slides and oral examination or written thesis, with the assistance of the student’s major adviser. Evaluation by a departmental reviewing committee. Prerequisite: Senior standing and BFA candidacy.</td>
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<tr>
<td>ART 496</td>
<td>Graduation Presentation—Ceramics</td>
<td>1 hr.</td>
<td>Preparation and presentation of graduating exhibition in ceramics, portfolio, slides and oral examination or written thesis, with the assistance of the student’s major adviser. Evaluation by a departmental reviewing committee. Prerequisite: Senior standing and BFA candidacy.</td>
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<tr>
<td>ART 497</td>
<td>Graduation Presentation—Textiles</td>
<td>1 hr.</td>
<td>Preparation and presentation of graduating exhibition in textiles, portfolio, slides and oral examination or written thesis, with the assistance of the student’s major adviser. Evaluation by a departmental reviewing committee. Prerequisite: Senior standing and BFA candidacy.</td>
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<tr>
<td>ART 500</td>
<td>Independent Studies</td>
<td>1-6 hrs.</td>
<td></td>
<td>An opportunity for qualified undergraduates to elect an area of special interest and pursue it in depth. Prerequisite: Permission of department. Repeatable for credit.</td>
</tr>
<tr>
<td>ART 510</td>
<td>Drawing Workshop</td>
<td>1-6 hrs.</td>
<td>Continuation of ART 310.</td>
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<tr>
<td>ART 520</td>
<td>Independent Study in Art History</td>
<td>2-3 hrs.</td>
<td>Problems in art history from ancient times to the present selected by the individual student in consultation with the instructor. Prerequisites: ART 220, ART 221, and an ART 500-level course in the area of interest. permission of department. Repeatable for credit.</td>
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<tr>
<td>ART 521</td>
<td>Topics in Art History: Variable</td>
<td>3 hrs.</td>
<td></td>
<td>Investigation of changing topics in art history in class or seminar sessions by advanced students. Course title varies from term to term. Prerequisites: ART 220, ART 221 for majors. None for other students. Repeatable for credit under a different title.</td>
</tr>
<tr>
<td>ART 530</td>
<td>Ceramics Workshop</td>
<td>1-6 hrs.</td>
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<td>Advanced work in ceramics on an independent basis. Prerequisite: ART 330. Repeatable for credit.</td>
</tr>
<tr>
<td>ART 531</td>
<td>Sculpture Workshop</td>
<td>1-6 hrs.</td>
<td>Continuation of ART 331.</td>
<td>The advanced student explores the expressive possibilities of his or her own individual sculptural direction.</td>
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</tbody>
</table>
with bronze and aluminum casting related techniques. Prerequisite: ART 331. Repeatable for credit.

**ART 534 Textiles Workshop** 1-6 hrs.
Continuation of ART 334 with advanced work in textiles design. Prerequisite: ART 334. Repeatable for credit.

**ART 535 Multi-Media Workshop** 1-6 hrs.
Various forms of art that deviate from conventional media, such as light, kinetic, and performance art. The student is expected to have a solid background in one of the traditional art forms, such as ceramics, painting, sculpture, printmaking, drawing, graphic design, metals, or textiles. Permission of instructor is required. Repeatable for credit.

**ART 538 Jewelry and Metalsmithing Workshop** 1-6 hrs.
Advanced work in jewelry design and metalsmithing. Students collaborate with the instructor to plan a suitable and particular direction for study. Prerequisite: ART 338. Repeatable for credit.

**ART 540 Painting Workshop** 1-6 hrs.
Continuation of ART 340. Prerequisites: ART 340. Repeatable for credit.

**ART 541 Printmaking Workshop** 1-6 hrs.
An advanced workshop for experienced graphic students; all printmaking media available; emphasis on development of personal concepts and refinement of methods appropriate to individual needs through research. Prerequisite: Any ART 300 level printmaking course. Repeatable for credit.

**ART 542 Watercolor Workshop** 1-6 hrs.
Continuation of advanced watercolor techniques with emphasis on experimentation. Prerequisite: ART 342. Repeatable for credit.

**ART 544 Hand Papermaking** 1-6 hrs.
A continuation of ART 244 and ART 344. Prerequisite: ART 344.

**ART 545 Graphic Design** 3 hrs.
Continuation of ART 445. Prerequisite: ART 445. Repeatable for credit.

**ART 548 Photography** 1-6 hrs.
Professional development through research in advanced projects. Prerequisite: ART 348. Repeatable for credit.

**ART 552 Preparation for Art Teaching** 3 hrs.
A course dealing with the current problems in issues on the social scene which affect teaching and learning in the visual arts at all levels of the public school; the creative person, product, process, and press (environment); phenomena of perceptual learning; the actual construction of an operant art curriculum for the elementary, middle, and high school programs. Prerequisites: ART 452 and art major status.

**ART 553 Independent Studies in Art Education** 1-6 hrs.
An arranged elective course in which the student investigates and researches a problem, a project, or trends in art education. (Not to be taken in place of required art education courses.) Prerequisites: ART 252, ART 352, ART 452, ART 552 and permission of the art education chairman. This course is open to graduate and non-degree level students.

**ART 560 Arts Education for the Elementary Teacher** 3 hrs.
A studio course for the elementary classroom teacher to provide experiences in qualitative elementary art and integrated arts programming in the elementary public school. Repeatable for credit.

**ART 581 History of Ancient Art** 3 hrs.
Selected topics from the art and architecture of ancient Egypt, the ancient Near East, the Aegean proto-Greek, Classical and Hellenistic Greece, Etruria, and Rome to the Early Christian period.

**ART 583 History of Medieval Art** 3 hrs.
Discussion of art and architecture from the decline of the Roman Empire through the Gothic Period (3rd-13th Centuries).

**ART 585 History of Renaissance Art** 3 hrs.
The development of art through the early Renaissance to the Late Renaissance and Mannerism. Some of the major artists discussed are: Giotto, Donatello, Da Vinci, Michelangelo, Titian, Van Eyck, Brueghel and Durer.

**ART 586 History of Baroque Art** 3 hrs.
Art of the late 16th, 17th, and early 18th centuries. Major artists and architects discussed are: Caravaggio, the Carracci, Rembrandt, Rubens, Poussin, Velasquez, Bernini, Borromini, and Neumann.

**ART 588 History of 19th Century Art** 3 hrs.
Major developments, such as Neo-Classicism, Romanticism, Realism, Impressionism, and Post-Impressionism are discussed. Key figures whose works lie at the roots of modern art are considered in relationship to their times.

**ART 589 History of 20th Century Art 1900-1945** 3 hrs.
Emphasis is placed upon the roots of contemporary trends and the contributions of individuals to new modes of presentation. Major developments including Fauvism, Cubism, Expressionism, and Surrealism are discussed.

**ART 590 History of 20th Century Art 1945 to Present** 3 hrs.
Major trends in art since World War II are discussed. Included are Abstract Expressionism, Pop and Op Art, the New Realists, and Conceptual Art.

**ART 591 History of Prints** 3 hrs.
Major developments in printmaking, including origins of woodcut and engraving. Renaissance and Baroque master etchers and engravers (Durer, Rembrandt), Lithography in the 19th century (Delacroix, Daumier, Toulouse-Lautrec). 20th century printmaking.

**ART 593 History of American Art** 3 hrs.
Art in the United States from the Colonial Period to the present. Topics discussed are: Colonial portraiture and Copley; the evolution of 19th and 20th century painting, sculpture with emphasis on the work of Stuart, Cole, Bingham, Homer, Eakins, Ryder, Saint-Gaudens, Zorach, Marin, Pollock, and recent developments.

**ART 597 History of Modern Architecture** 3 hrs.
Major developments in architecture since c. 1750 with emphasis on late 19th and 20th century developments in domestic and commercial architecture and city planning in the West and in Asia. Special consideration given the works and influences of Wright, LeCorbusier, and Mies van der Rohe.
The Department of Dance seeks to fulfill its responsibility to further the development of the art in Michigan through creating and publicly producing dance which reflects the highest aesthetic standards; sponsoring events which enrich the dance life of the community; and responsibility to further the development of which have artistic and educational value. The department faculty is committed to the ongoing renewal of teaching resources and skills while contributing to the field through the practice of the art and service to professional organizations. For the general student, the department provides the opportunity to experience the joy of participation and the value of viewing dance as an art form. Of utmost importance, through teaching and co-curricular activities, the faculty endeavors to produce versatile graduates who delight in the practice of dance, who can integrate theory and practice with discerning sensibilities, who have a firm foundation upon which to carve their own careers, who have the conviction to hold firm in their aesthetic goals as they navigate the skills necessary for survival in an ever-changing field.

Programs

The Department of Dance offers three programs in dance: Bachelor of Fine Arts in Dance, Bachelor of Science or Bachelor of Arts in Dance, and a Dance Minor. The Bachelor of Fine Arts degree program emphasizes the aesthetic, choreographic and performance training of the student. Graduates of this pre-professional program will have a foundation in dance skills and knowledge required for employment at a professional level. The Bachelor of Science or Bachelor of Arts degree program offers the student the opportunity to explore the diversity of the dance profession and requires the election of a minor or second major outside the dance area. The University allows the student the option to elect either the BA or BS degree, dependent upon both the depth and breadth of liberal education coursework (refer to Degrees and Curricula at the beginning of this bulletin). Graduates of this program will be equipped to contribute to the growth of the art of dance. The Dance Minor is designed for students who wish to continue their dance exposures as an avocation or as an enhancement of their major studies. For additional information, please refer to specific Program Requirements.

Courses for General Students in Partial Fulfillment of the University Physical Education Requirement

Introductory dance courses are offered for general students. One of the following dance courses may be used for one of the hours in the physical education requirement for graduation: DANC 101, 102, 103, 106, 111, 112 and 181. A $10 fee is required for each student enrolled in DANC 101 and 111 in order to provide a musical accompaniment. A $2 fee is required for each student enrolled in DANC 102.

Admission

Admission to Western Michigan University is granted only by the Admissions Office for undergraduate students. Application forms may be obtained by writing to the Admissions Office. Enrollment in the Bachelor of Fine Arts degree program is contingent upon admission to the University and approval of the Department of Dance. Department approval is obtained through technique audition classes in ballet, jazz, and modern. No audition is required for enrollment in the Bachelor of Science or Bachelor of Arts degree program or the Dance Minor. However, students enrolling in these programs may elect to audition for advanced placement in ballet, jazz, and/or modern. Audition schedules and detailed information are available from the Department of Dance upon request. The Department welcomes the opportunity to confer with prospective students, parents and counselors regarding educational goals and plans.

Transfer Credit

Dance credit from other institutions transfers as a direct equivalent to a WMU course, as an unspecified dance credit, or as credit by department recommendation only. Transfer students should schedule an appointment with the dance academic adviser immediately after admission to the University to evaluate dance credits taken at other institutions.

Advising

Dorothy U. Dalton Center, Room 3117; (616) 383-8019

Upon admission to the University, each major and minor student should complete a Declaration Form with the dance academic adviser. It is the responsibility of the student to make an appointment with the adviser each semester in order to prepare for the next semester’s registration. Each student should meet with the adviser during his/her junior year to secure a Graduation Audit Statement before registration for the final semester. The dance academic adviser is also available to counsel students on selection of appropriate majors/minors, selection of General Education courses, and other University requirements. Matters which are beyond his/her qualifications will be referred to offices on- and off-campus qualified to assist.

Graduation requirements must be completed as stipulated in the Bulletin in effect at the time the student is admitted. Requirements cannot be added during the student’s enrollment, but the student may take advantage of course and curriculum alterations if these changes enhance the student’s education. Each student is responsible for knowing the requirements of the degree and for taking the steps necessary for completion of these requirements. All dance students are urged to take advantage of advising services in the Department of Dance for assistance in making educational choices and for interpretation of requirements stated in the Bulletin.

Miscellaneous

Focus of Major Studio Courses

Ballet courses are taught according to the Russian method and piano accompaniment is provided. Modern courses are taught according to the principles of the Normative technique associated with Erick Hawkins. These are not regularly accompanied by a musician in order to allow for kinetic, rhythmic and ensemble training consistent with the Normative approach. Jazz courses utilize technique principles of both ballet and modern through a stylistic blend of lyrical and percussive movement. Recorded accompaniment is used in jazz courses.

Major Studio Course Progression

It is expected that the dance major/minor will spend at least two semesters in each level of technique. This is consistent with level advancement in professional schools. A passing grade in a technique class does not imply automatic progression to the next level.

Scholarships

Scholarships, awards and assistantships are available for new and current students. Awarded are selected by the faculty on the basis of outstanding achievement in the field and overall academic excellence. Applicants for New Dance Major Scholarships must audition and interview with the faculty. For specific information, contact the Department of Dance.

Annual Meeting

A department meeting is held during the second week of each fall semester to prepare the student for the academic year. At this meeting, students will receive a calendar of events and information regarding Department policies and procedures. Attendance is mandatory for all dance majors and minors.

Additional Study Options

Students are encouraged to study with dance professionals whenever possible and to afford themselves the opportunity for study with artists-in-residence on Western’s campus. Limited scholarships may be available for this purpose. Information will be posted and announced in appropriate classes.

Performance and Choreographic Opportunities

Students have a variety of opportunities to perform in department concerts, studio evenings, graduating presentations, special class-related performances, University musicals and operas, and department ensembles (540 University Dancers, 550 Repertory Dance Company and 570 University Ballet Theatre). Students must be enrolled in at least one Studio technique course in order to perform in department concerts. The Department is also committed to publicly presenting the dances of students who demonstrate choreographic proficiency. In addition, special opportunities in performance and choreography are available on- and off-campus and are posted as they occur.

Program Requirements

Bachelor of Fine Arts in Dance

80 hours

Initial acceptance in the BFA is contingent upon admission to the University and approval of the Department of Dance through a technique audition. Audition schedules and detailed information are available from the Department of Dance upon request.

Continuation in the BFA program will be determined by the dance faculty during the
second semester of the student's enrollment. In order to continue in the BFA, the student must have completed and/or be currently enrolled in at least one Studio course in ballet, jazz, and modern; have at least B-level skills in technique and performance, and have demonstrated professional commitment in dance coursework and dance-related activities. Any student discontinued from the program may reapply for the BFA after a minimum of one additional semester at WMU. By the end of the student's junior year, the BFA student must create and perform a solo dance in a public showing which exhibits his/her choreographic, technical, and performance skills. At this time, the student must also submit an essay addressing his/her strengths and weaknesses in choreography, technique and performance. In order to matriculate, the dance and essay must be acceptable to the dance faculty. A grade of "C" or better is mandatory in all required dance courses and MUS 185 and 285.

Required Courses in Technique and Performance—31 total hours
31 hours from dance major studio courses and performance courses, including at least two courses from each area: Ballet Studios (110, 210, 310); Jazz Studios (120, 220, 320); Modern Studios (130, 230, 330). At least six hours must be elected from Performance (540, 550, 560, 570). The student must complete at least one semester of two of the following courses: DANC 310, 320, 330.

Required Courses in Choreography—10 total hours
DANC 140 Dance History I (Prereq: consent of adviser) 3
DANC 181 Dance Improvisation 2
DANC 280 Choreography II (Prereq: 180, 181) 3
DANC 380 Choreography III (Prereq: 280) 2
DANC 480 Graduating Presentation (Prereq: 380) 3

Required Courses in Theory—21 total hours
DANC 140 Dance History I 3
DANC 240 Dance History II (Prereq: 140) 3
DANC 295 Kinesiology for the Dancer 3
DANC 340 Special Studies in Dance History (Prereq: 240) 2
DANC 385 Introduction to Dance Notation (Prereq: 110, 130, and MUS 185) 3
DANC 588 Dance Production 2
DANC 589 Dance Management 2
MUS 185 Music Fundamentals for Dancers 3
MUS 285 Musical Style and Form for Dancers (Prereq: MUS 185) 3

Related Studies—18 total hours
The Department of Dance believes that the professionally oriented student must augment his/her education via study in the related arts and sciences which complement specific career goals. The student will consult with the dance academic adviser in selecting 18 hours from the courses listed below, some of which may also meet General Education requirements:
ANTH 230 Cultural Anthropology 3
ANTH 370 Culture and Communication 3
ART 140 Studio Experience (2-D) 3
ART 220 History of Art 3
ART 221 History of Art 3
BMED 112 Introduction to Biomedical Sciences 3
BMED 211 Human Anatomy (Prereq: BMED 112) 4
ENGL 105 Thought and Writing: Variable topics 4
ENGL 110 Literary Interpretation 4
ENGL 150 Literature and Other Arts 4
ENGL 305 Practical Writing 4
FREN 100 Basic French 4
FREN 101 Basic French (Prereq: 101) 4
GHUM 102 Direct Encounter with the Arts 4
HIST 315 Popular Art and Architecture in America 3
JGMT 210 Small Business Management 3
MUS 352 Non-Western Music 4
MUS 450 Music Appreciation: The Symphony 3
PHIL 200 Introduction to Philosophy 4
PHIL 312 Philosophy of Art 4
REL 311 Myth and Ritual 4
THEA 100 Introduction to Theatre 3

Bachelor of Science or Bachelor of Arts in Dance
42 hours
During the second year of enrollment in the program, the student will be evaluated by the dance faculty regarding his/her progress in the program. The student is required to schedule an appointment with the dance academic adviser to receive the faculty feedback and discuss future curricular planning. A grade of "C" or better is mandatory in all required courses.

Required Courses in Technique and Performance—18 total hours
Eighteen hours from dance major studio courses and performance courses, including at least one course from each area: Ballet Studios (110, 210, 310); Jazz Studios (120, 220, 320); Modern Studios (130, 230, 330); Performance (540, 550, 560, 570). The student must complete at least one semester of one of the following courses: DANC 310, 320, 330.

Required Courses in Choreography—7 total hours
DANC 180 Choreography I (Prereq: consent of adviser) 2
DANC 181 Dance Improvisation 1
DANC 280 Choreography II (Prereq: 180, 181) 2
DANC 380 Choreography III (Prereq: 280) 2

Required Courses in Theory—17 total hours
DANC 140 Dance History I 3
DANC 240 Dance History II (Prereq: 140) 3
DANC 295 Kinesiology for the Dancer 3
DANC 385 Introduction to Dance Notation (Prereq: 110, 130, and MUS 185) 3
DANC 388 Dance Production 2
MUS 185 Music Fundamentals for Dancers 3
MUS 285 Musical Style and Form for Dancers (Prereq: MUS 185) 3

Dance Minor
24 hours
Required Courses in Technique—12 total hours
Twelve hours from dance major studio courses including at least one course in each of the three forms: Ballet Studios (110, 210, 310); Jazz Studios (120, 220, 320); Modern Studios (130, 230, 330).

Required Courses in Choreography/ Theory—6 total hours
DANC 140 Dance History I 3
DANC 180 Choreography I (Prereq: consent of adviser) 2

Electives—6 total hours
Six hours to be elected from the following courses, in consultation with the dance academic adviser:
DANC 240 Dance History II (Prereq: 140) 3
DANC 280 Choreography II (Prereq: 180, 181) 2
DANC 290 Teaching of Dance in the Elementary School 3
DANC 295 Kinesiology for the Dancer 3
DANC 340 Special Studies in Dance History (Prereq: 240) 2
DANC 380 Choreography III (Prereq: 280) 2
DANC 385 Introduction to Dance Notation (Prereq: 110, 130 and MUS 185) 2
DANC 390 Teaching of Dance in the Secondary School (Prereq: 106, 230) 3
DANC 540 University Dancers (Prereq: by audition) 2
DANC 550 Western Michigan Repertory Dance Company (Prereq: by audition) 2
DANC 560 Performance (Prereq: Adviser consent) 2
DANC 570 University Ballet Theatre (Prereq: by audition) 2
DANC 588 Dance Production 2
DANC 589 Dance Management 2
MUS 185 Music Fundamentals for Dancers 3
MUS 285 Musical Style and Form for Dancers (Prereq: MUS 185) 3

Dance Courses (DANC)
DANC 101 Beginning Ballet I ($10) 1 hr.
An introduction to ballet technique for the beginning general student.
DANC 102 Beginning Jazz I ($2) 1 hr.
An introduction to jazz technique for the beginning general student.
DANC 103 Beginning Modern I 1 hr.
An introduction to modern technique for the beginning general student.
DANC 104 Beginning Tap I 1 hr.
An introduction to tap technique for the beginning general student.
DANC 106 Recreational Dance 1 hr.
Investigation of folk, square and social forms of dance, with a concentration on overlapping dance skills.
DANC 110 Ballet Studio I 2 hrs.
An introduction to the art of ballet, designed for dance majors and minors, primarily concerned with the development of technique. The emphasis is placed on alignment, basic vocabulary and classical movement combinations. Students will continue in Studio I until advanced to Studio II by the instructor. Repeatable for credit. Prerequisite: Adviser consent.
Continued development of ballet technique beyond the introductory level for the general student. Transfer of weight and coordination of total body movements are emphasized. Prerequisite: DACN 101.

DANC 112 Beginning Jazz II 1 hr.
Continued development of jazz technique beyond the introductory level for the general student. Lyric interpretation of isolated movements with emphasis on dynamics, style and performance is stressed. Prerequisite: DACN 102.

DANC 114 Beginning Tap II 1 hr.
Continued development of tap technique beyond the introductory level, primarily concerned with development of technique. The emphasis is placed on alignment, movement isolation, rhythmic awareness, basic vocabulary and both percussive and free-flow combinations. Students will continue in Studio I until advanced to Studio II by the instructor. Repeatable for credit. Prerequisite: Adviser consent.

DANC 120 Jazz Studio I 2 hrs.
An introduction to the art of jazz dance, designed for dance majors and minors, primarily concerned with development of technique. The emphasis is placed on alignment, basic vocabulary and isolation of movements. Students will continue in Studio I until advanced to Studio II by the instructor. Repeatable for credit. Prerequisite: DACN 104.

DANC 130 Modern Studio I 2 hrs.
An introduction to the art of modern dance, designed for dance majors and minors, primarily concerned with development of technique. The emphasis is placed on alignment, basic vocabulary and integrated movement combinations. Students will continue in Studio I until advanced to Studio II by the instructor. Repeatable for credit. Prerequisite: Adviser consent.

DANC 140 Dance History I 3 hrs.
A survey of the purposes, functions, and manifestations of dance from primitive cultures through the 19th century. Distinctions are made between ritual, ceremony, and entertainment in the study of primitive, pre-Christian, medieval, Renaissance, and Romantic periods. Relationships are made between dance and general cultural developments of each period.

DANC 180 Choreography I 2 hrs.
A practical experience in dealing with the basic elements of dance composition. DACN 181 Dance Improvisation must be taken concurrently with, or in advance of, this course. Prerequisite: Adviser consent.

DANC 181 Dance Improvisation 1 hr.
The extemporaneous exploration of movement through the neuro-muscular logic. Dance majors must take Choreography I concurrently with this course.

DANC 210 Ballet Studio II 2 hrs.
A development of ballet technique at the intermediate level. Emphasis is on increased strength and flexibility, jumps, turns and an introduction for women to pointe technique. Students will continue in Studio II until advanced to Studio III by the instructor. Repeatable for credit. Prerequisite: Placement audition or approval of Studio I instructor.

DANC 220 Jazz Studio II 2 hrs.
A development of jazz technique at the intermediate level. Emphasis is on integration of isolated movements, sequential combinations involving multiple turns, and skills in performance and quick study. Students will continue in Studio II until advanced to Studio III by the instructor. Repeatable for credit. Prerequisite: Placement audition or approval of Studio I instructor.

DANC 230 Modern Studio II 2 hrs.
A development of modern technique at the intermediate level. Emphasis is on normative theory, performance and ensemble awareness. Students will continue in Studio II until advanced to Studio III by the instructor. Repeatable for credit. Prerequisite: Placement audition or approval of Studio I instructor.

DANC 240 Dance History II 3 hrs.
A survey of the purposes, functions, and manifestations of dance from the beginning of the 20th century to the present. Relationships are made between dance and general cultural developments of the times. Prerequisite: DACN 140.

DANC 280 Choreography II 2 hrs.
Further exploration of the compositional elements as used in group choreography. Prerequisite: DACN 180 and DACN 181.

DANC 290 Teaching of Dance in the Elementary School 3 hrs.
This course covers the principles, materials, and techniques of teaching creative movement and dance activities to elementary school children as they relate to the urban environment. Relationships are made between dance and general cultural developments of each period.

DANC 295 Kinesiology for the Dancer 3 hrs.
This course is designed for the dance student who does not have a major or minor in Physical Education. It is concerned with analysis of movement from an anatomical and mechanical point of view, with special attention given to the problems of dance technique.

DANC 310 Ballet Studio III 2 hrs.
Ballet technique for the advanced/pre-professional student in the classical idiom. Emphasis is placed on skillful reproduction of complex movement skills. Prerequisites: DACN 101 and DACN 104.

DANC 320 Jazz Studio III 2 hrs.
Jazz technique at the advanced/pre-professional level with work on quick-study and theatrical skill. Combinations will address a variety of jazz styles and develop the student's own dynamic style. Repeatable for credit. Prerequisite: Placement audition or approval of Studio II instructor.

DANC 330 Modern Studio III 2 hrs.
Technique for the advanced/pre-professional student in the modern idiom. Emphasis is placed on the ability to quickly analyze and skillfully reproduce complex movement combinations within the technique. All undergraduate members of Western Michigan Repertory Dance Company (WMRDC) must take this course as a required technique class. Repeatable for credit. Prerequisite: Placement audition, approval of Studio II instructor, or member of WMRDC.

DANC 340 Special Studies in Dance 2 hrs.
A concentrated examination of available literature on selected topics within the student's major area. Group discussions and individual presentations will be an outgrowth of this study. Prerequisite: DACN 240.

DANC 380 Choreography III 2 hrs.
Choreographic and musical theatre choreography in the student's area of concentration. Prerequisite: DACN 280.

DANC 385 Introduction to Dance Notation 2 hrs.
A study of Labanotation—a practical system of recording human movement for purposes of analysis and reading. The course includes reading (interpretation), theory and practice. Prerequisites: DACN 110, DACN 130, and MUS 185.

DANC 390 Teaching Dance in the Secondary School 3 hrs.
An investigation into procedures for presentation of information related to the dance forms most commonly taught at the secondary school level. Prerequisites: DACN 106, DACN 230.

DANC 400 Practicum 1-4 hrs.
An individual approach to a practical field experience in dance. Through reading and practice the student will have an opportunity to explore a topic or problem of interest in the dance areas. Prerequisite: Adviser consent.

DANC 480 Graduating Presentation 3 hrs.
The preparation and presentation of an advanced choreographic project accompanied by a portfolio and an oral examination. Prerequisite: DACN 380.

DANC 495 Performance Workshop 2 hrs.
Students will perform a variety of roles and styles from a broad spectrum of music theatre repertoire. Scenes will be performed before a public or invited audience. Performers will be directed and evaluated by a faculty team from Dance, Music and Theatre. Prerequisite: MUS 395.

DANC 525 Special Studies in Dance 1-6 hrs.
A study of dance styles not included within program. Examples of possible topics include: Afro-American dance, Ballet repertory, Pre-classic dance forms and Dance for the Exceptional Student. May be offered with a visiting instructor or artist-in-residence. Repeatable for credit up to 6 hours. Prerequisite: Adviser consent.

DANC 540 University Dancers (UD) 1 hr.
Open to all University students by application. Audition for this group will include performance in various dance styles. Studio Evenings and Annual Concert of Dance experiences will take place through further choreographic and rehearsal auditions. May be repeated for credit. Prerequisite: By audition.
DANC 550 Western Michigan Repertory Dance Company (WMRDC) 2 hrs.
WMRDC is a major performing ensemble which provides master classes, lecture-demonstrations and concerts in various dance styles on and off campus. Members must show proficiency in the areas of performance, improvisation, teaching, public speaking and composition. Members must attend DANC 330. Repeatable for credit. Prerequisite: Audition or consent of Company Director.

DANC 560 Performance Variable
An experience in student or faculty choreographed dance works, in projects not encompassed in specific dance courses. Application with approval of dance faculty committee must be filed with the dance adviser one month prior to performance. Registration occurs after performance has been completed. Prerequisite: Adviser consent.

DANC 570 University Ballet Theatre (UBT) 2 hrs.
UBT is a major performing ensemble of the Department of Dance. Ballet dancers will have experience rehearsing and performing in a professional company environment. Members and apprentices must attend DANC 310. Repeatable for credit. Prerequisite: Audition or consent of Ballet Director.

DANC 588 Dance Production 2 hrs.
The study of the production aspects of dance including sound, lighting, costing, make-up, and stage management. Practical applications will include first-hand experience in creating tape collages with special effects, designing lighting, costumes and make-up.

DANC 589 Dance Management 2 hrs.
Course covers front of house management and publicity, budget, programming, organization of elements involved in company management, and grantsmanship. Practical application of these principles will be evaluated where ever possible.

DANC 598 Readings in Dance 1-4 hrs.
Advanced students with good academic standing may elect to independently pursue a program of readings in areas of special interest. Prerequisite: Approved application required.

DANC 599 Non-Reading Independent Study in Dance 1-4 hrs.
Advanced students with good academic standing may elect to independently pursue the study of some area of dance through the creative process. Topics are chosen and arrangements are made to suit the needs of each particular student. Prerequisite: Approved application required.

**MUSIC**

Donald Bullock, Director
William Appel
Curtis Curtis-Smith
Liza Derry
Anthony Elliott
Jack J. Frey
Manlynn Y. Haei
Robert Humiston
Milvern K. Ivey
Stephen Jones
Trent P. Kynaston
Kathryn Loew
James McCarthy
Leonard V. Meretta
Judy Moonert
Richard O'Hearn
Charles E. Osborne
Johnny Pherigo
David Pocock
Marion Pratnicki
Phyllis Rappeport
Robert J. Ricci
Mary Scovel
Lee Seibert
David A. Sheldon
Matthew Steel
Richard Suddenport
Robert L. Whaley
Brian Wilson
Steve M. Wolfinbarger
Bradley Wong
Joseph T. Work
Joyce Zastrow
Stephen Zegree
Ramon Zupko

In America today the responsibility to carry on a vital tradition of the musical profession falls increasingly upon the university. The music faculty of Western Michigan University seeks to fulfill this responsibility through creative, performance, composition, scholarship, and community service. Above all, we strive in our teaching to produce students who share the excitement of music as a living art, who possess the wisdom to appreciate and the courage to defend the highest artistic ideals, who will bring the finest in music to their fellow men with skill and dedication.

The School of Music is a member of the National Association of Schools of Music. The requirements for entrance and for graduation are in accordance with the published regulations of NASM and the National Council for Accreditation of Teacher Education. The School's program in music therapy is certified by the National Association of Music Therapists.

**Admission**

Admission to Western Michigan University is granted only by the Admissions Office for undergraduate students. Application forms may be obtained by writing to the Admissions Office. Enrollment in a music curriculum is contingent upon admission to the University and approval of the School of Music. School approval is obtained through the music audition program. The student may proceed by making application to the University at which time notification will be sent about the audition program in the School of Music, or a request may be made for an opportunity to audition prior to making application to the University by obtaining an Audition Request Form from the School of Music. The student is urged to commence application procedures early in the year, or in the final year at a community college.

Approval to become a music major is based upon the student's background in music, as demonstrated on the major instrument or voice, the student's musical aptitude, and upon academic abilities reflected in grade point average and various scholastic test scores as they are available. Efforts are made to evaluate the student on the basis of musical potential and not upon desire to enter a specific professional area of music. All students commence a major in music with common "core" requirements and are, therefore, considered for entry into the major with this common basis in mind.

Students who are considering becoming a music major should have a good background in applied music (instrumental or vocal study or performance). Preparation in piano, as a secondary instrument, is also helpful to the student, but not a requisite. Prior to entry into Basic Music 160, which is required to all music majors in their first year of study, the student must demonstrate knowledge of fundamentals. A fundamentals examination will be administered at the time the student is initially advised about classes.

The School of Music has been gratified with its audition and testing program. The program has helped many students make a more intelligent choice regarding their educational career. Many have been helped toward avoiding entering a field in which they do not have the necessary foundation or talent to be successful, while others have been encouraged to pursue an education in music in order to fully

**Therapist**

Upon completion of a six-month internship, the Bachelor of Music with a major in music education carries certification to teach music in the public schools, grades K-12; the Bachelor of Science with a major in music and a minor in elementary education carries certification to teach in the elementary classroom and/or to teach as a music specialist in the classroom, grades K-8.

A music minor program is offered through the School of Music for students who have a background in music and who wish to extend their formal education in that field of study. One program of study leading to a music minor is offered for the student who is not seeking teaching certification (24 hours). Those students seeking a music minor must secure a minor slip from the adviser in the School of Music or be official. Official declaration of the music minor must be made prior to registration for the final eight hours of music course work which will apply to that minor. The student who does not read music will be required to complete MUS 159—Music Fundamentals before commencing work leading to the music minor.

**Programs**

The School of Music offers courses of study that lead to the Bachelor of Music, the Bachelor of Science, and the Bachelor of Arts degrees. The Bachelor of Music degree is highly professional, offering the student an opportunity to elect a major in performance, composition, jazz studies, music education, music history, music theory, and music therapy. The Bachelor of Arts and Bachelor of Science degrees afford the student the opportunity to major in music and minor in some non-music area of study. All requirements for these degrees in music may be completed within the 122-124 semester credit-hour minimum that is required for a degree at Western.

Three majors carry certification upon completion of degree requirements: the Bachelor of Music with a major in music therapy carries certification as a Registered Music Therapist upon completion of a six-month internship, the Bachelor of Music with a major in music education carries certification to teach music in the public schools, grades K-12; the Bachelor of Science with a major in music and a minor in elementary education carries certification to teach in the elementary classroom and/or to teach as a music specialist in the classroom, grades K-8.

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Transfer Credit
Music credit from another institution is normally acceptable providing course substance is equivalent to a similar course required in the student’s curriculum at Western and the student has earned a grade of “C” or better in that course. No credit hours exceeding the number granted for parallel work at Western will be accepted for transfer from another institution. In order to earn a Bachelor of Music degree from Western Michigan University, a student may not transfer more than thirty-seven (37) semester credit hours in music courses taken at a non-four-year institution toward music curriculum requirements. If the “Performance Electives” requirement has not been completed at the time of the transfer, at least two of the remaining hours must be completed in major ensembles. Advisers will assist transfer students in finding ways of using credit hours, not applicable to music curriculum requirements, toward General Education electives or free electives.

All music credit to be transferred is tentative and is conditioned upon the successful completion of one semester’s work at Western. Three areas—applied music, music theory, and piano proficiency for non-pianists—are, by nature, skills courses which require competency at one level before the student is ready for the next level of course in a sequence. This competency can only be determined by demonstration and/or examination, which precludes the automatic transfer of credit in these areas. Presumably, the transfer student will have completed many of the core requirements (see below) before enrolling at Western. In that case, the student must elect a major area of concentration within the music curriculum prior to enrollment. Admission to the major will be automatic but certain requirements must be met in order to remain in that major. In order to maintain good standing as a major in music performance, composition, jazz studies, music history, or music theory, the student must earn a minimum grade point average of 3.25 in the first two courses that apply to the major area of concentration. The student who elects music education or music therapy as a major must maintain a grade point average of 3.0 in all courses in the major area of concentration in order to be recommended for directed teaching (music education) or music therapy internship. The transfer student who elects music history, composition, jazz studies, theory, music performance vocal, music education vocal, or elementary education music as a major must take a Piano Placement Examination before admission to those majors in order to project the feasibility of completion of piano proficiency requirements in these curricula.

For further information regarding the transfer of music credits, contact the Music Adviser in the School of Music.

Advising
Adviser: Dr. Toni-Marie Montgomery
Appointments: 2146 Dalton Center (616.383-0913)

The School of Music provides counseling for all music students through a full-time student advising service. The Music Student Advising Office provides one-stop advising for all students in a music curriculum. Advice on general education and major/minor requirements can be provided by consulting with a single music student adviser. Only when a student pursues a minor outside of the School of Music is an appointment required with another adviser.

The office of the music student adviser is primarily maintained for the purpose of providing academic counseling. Personal guidance is often provided by the adviser, and matters which are beyond his/her qualifications will be referred to persons and offices on- and off-campus which are capable and qualified to assist.

Graduation requirements must be completed as stipulated in the Undergraduate Catalog, which is in effect at the time the student is admitted. Requirements may not be added in the midst of the student’s enrollment, but the student may take advantage of course and curriculum alterations that may occur while work on the degree is in progress if these changes enhance the student’s education. Each student is responsible for knowing the requirements that must be completed for the degree and for taking the steps necessary for completion of requirements. At graduation, all music students are urged to take advantage of the advising services in the School of Music for assistance in making educational choices and for interpretation of requirements as they are stated in the Undergraduate Catalog.

Miscellaneous
Special (non-academic) requirements for graduation fall in the area of recital performance and recital attendance. Since these are non-academic areas, completion of these requirements is not reflected on the student’s transcript and therefore, requires graduation clearance from the music adviser.

The requirement for recital attendance: All music majors are required to attend music concerts at least once per semester. Without exception, only one absence per semester will be excused. Absences beyond “one” will be recorded in the student’s file. Absences must be made up by attending other School of Music concerts and recitals in which the student is not a participant. Absences in the student’s record that have not been made up will prevent graduation. Music majors are required to enroll in MUS 101 Music Convocation as specified in the curriculum.

The requirement(s) for recital performance are as follows:
1. Bachelor of Music candidates with a major in music performance must present a Senior Recital which is approved by and acceptable to the faculty of the respective performance area.
2. Bachelor of Music candidates with a major in areas other than music performance must present at least one successful solo performance on a student recital (scheduled public recitals, convocations, or area recitals) prior to graduation. Individual students may be required to give additional performances on student requests. The discretion of their private teachers. Prerequisite to performance on any student recital shall be a recommendation by the student’s applied teacher. Prerequisite to the presentation of Junior and/or Senior Recitals is an approved hearing of that recital by the student’s area faculty. Recitals should be scheduled in the Concerts Office in the School of Music as far in advance as possible.

Competency Examinations are available to students who qualify for advanced placement or a waiver of requirements in music courses even if no formal education at the college level may have been completed. Common areas of competency are applied major secondary instruments, and music theory. Regular examinations are scheduled in these areas to allow qualified students to demonstrate competency.

In the event that a student demonstrates competency in an area of study that is required in the curriculum, the student may elect two alternatives for fulfilling degree requirements: (1) request a waiver of the requirement and elect an equivalent number of hours in music courses of the student’s choice or (2) receive credit for the course(s) in which competency is demonstrated by paying an examination fee according to the schedule approved by the Board of Trustees.

Scholarships and Grants in Music are awarded by the School of Music. Awards are made on the basis of musical talent and/or scholastic achievement. New students are eligible for consideration for these stipends at the time of their audition for admission to the music curriculum. Currently enrolled students apply and audition for awards and renewal of awards during the Winter Semester. For a listing of music grants and scholarships and application forms, contact the adviser in the School of Music. Early application for awards is advised.

Music majors may also be eligible for any number of general University scholarships as described in the Student Financial Aid and Scholarships section of the Undergraduate Catalog.

Programs
When a student is admitted to the music curriculum, a major area of concentration is usually not declared. Before any student may declare a major area of concentration the student must complete requirements in the music “core”, which are courses required commonly of all music majors, regardless of professional or vocational interests in the field. Core requirements will normally be taken in the first two years. For students who are interested in an in-depth introduction to the two professions for which this university offers certification courses, an opportunity will be provided for them to register for Field Experience courses in music education and music therapy.
Core Requirements—Bachelor of Music Degree

Music Convocation 101 (7 semesters) 0
Music History and Literature 270, 271 1
Electives (see Electives below) 10
Major Area of Concentration 13-41
Free Electives to make a minimum of 122 semester credit hours.

Music Clearance (verification of completion of recital performance and attendance requirements).

Note: *Music therapy majors are required to complete only 6 hours of Applied Music 200 (including successful completion of a Sophomore Hearing), 8 hours of Music History 270-271, and 4 hours of Performance Electives.

Electives

Performance electives may be selected from the following list of courses:
1. All students are required to elect four semesters of a major ensemble. The major ensembles are:
2. The remaining four semester hours of performance electives may be selected from the following:
   - MUS 209, 260, 266, 461, 515, 556, 560, 566, 567

Music History/Literature electives may be selected from the following list of courses:
- MUS 375, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583

Applied Music Option: Six hours of applied music may be used in the junior and senior years to support the student’s professional major, providing the student has passed a “Sophomore Hearing” and has the joint approval of his or her performance area and major area. Students are encouraged to invent independent study projects which may fulfill elective requirements in the above categories. The student must secure approval of a faculty member to supervise the project and of the music adviser for application of the project toward curricular requirements.

Evaluating a Major Area of Study—Bachelor of Music Degree

Music majors will elect a major area of concentration in their fourth semester of study. All areas of concentration are open to the music major and the student may freely elect the area of his or her choice by completing a form provided by the music adviser. The student will automatically be accepted in the area of choice if he/she qualifies under the following guidelines:
1. Providing the student has a minimum grade point average of 3.25 in “Core” music courses—required in the first two years.
2. Providing the student has a minimum grade point average of 3.25 in “Core” courses which are in the same area as the elected major (i.e., performance music majors must have at least a 3.25 average in music history and literature courses required in the first two years; music history majors must have at least a 3.25 average in music history and literature courses—required in the first two years; music theory—3.25 in theory courses; composition—3.25 in composition courses).
3. Since no courses “in the area of the elected major” are required in the first two years in music education and music therapy, a student may freely elect either of these curricula, but must earn a minimum grade point average of 3.0 in course work in the area of the major in order to be recommended for an internship (music therapy) or for a directed teaching assignment (music education).

If the student does not automatically qualify according to the guidelines outlined above, the application will be submitted to the faculty committee in the area of the major for approval. In the event that approval is denied and the student does not qualify for any other major area of concentration, the music adviser will outline the course work in music which may be applied toward the Bachelor of Arts or Bachelor of Science degrees with a major in music.

Music Education: Instrumental Major

Grants certification to teach music at any grade level (K-12)

Music Methods 240, 340 .4
Music Theory Conducting and Literature 331 .2
Instrumental Classes (elect from 129-139) .6
Education and Professional Development 250, 301 .7
Directed Teaching Block 410, 450, 470 .14

Before the student will be recommended for directed teaching, he/she must have completed courses in the major with a minimum grade point average of 3.0. The application for a directed teaching assignment must be made in the Office of Professional Field Experiences prior to one full semester before the assignment is to begin.

Winds/percussion students must complete two semesters of MUS 109 (Marching Band) in fulfilling basic education requirements.

Note: State Law requires that students who graduate with a degree which carries elementary or secondary teaching certification must take a Teaching of Reading course. ED 312 Teaching of Reading (Elementary) satisfies this requirement for elementary certification. ED 322 Teaching of Reading (Secondary) satisfies this requirement for secondary certification.

Music Therapy Major

Core (minus Music History/Literature elective)

Courses in Music Therapy 281, 289, 290, 380, 383, 472, 473, 479, 480, 481, 543 .22
* Keyboard Musicianship 220, 221, 320, 322 .4
Fundamentals of Music 126 .1
Vocal Class 122 .2
Instruments of the Band and Orchestra 279 (or Percussion Class 130 plus one additional instrument class) .1

Requirements: 5
Psychology 194 and 250 .6
Special Education 530 .3

* All music therapy majors who have passed a piano competency exam may be exempted from any Keyboard Musicianship requirements except MUS 322.

The student must achieve a 3.0 grade point average in the therapy major in order to be recommended for MUS 481. In completing the General Education requirements the therapy...
major must complete at least one course in
dance which qualifies as a physical education
“activity” course.

### Music Performance: Instrumental Major

In order to be permitted to major in music
performance the student must achieve a
minimum grade point average of 3.25 in MUS
200 or be admitted by audition.

<table>
<thead>
<tr>
<th>Hrs.</th>
<th>Applied Music (in addition to Core Requirements) 200</th>
<th>Applied Music (in addition to Core Requirements) 300</th>
<th>Performance Electives (in addition to Core Requirements; see Electives above)</th>
<th>Chamber Music 218</th>
<th>Composition 262</th>
<th>Advanced History/Literature (in addition to Core Requirements)</th>
<th>Counterpoint 560</th>
<th>Music Electives</th>
<th>Senior Recital (required for Music Clearance)</th>
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<tbody>
<tr>
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<td>2</td>
<td>10</td>
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### Composition

The composition student must have previous
composition experience before being admitted
to a composition major. This experience may be
acquired by transferring approved credit in
composition from another institution or by
successful completion of Composition 262-263.
All Bachelor of Music: Composition candidates
are required to present a Senior Recital
consisting of thirty minutes of original
compositions which are an outgrowth of the
candidate’s coursework and which have been
approved by the composition faculty.

All Bachelor of Music: Composition candidates
must pass a piano proficiency examination as
outlined below.

### Music History

<table>
<thead>
<tr>
<th>Hrs.</th>
<th>GER 200-201</th>
<th>Introduction to Musicology 570-571</th>
<th>Musicology and Research 575-576</th>
<th>Music History/Literature Electives (see Electives above)</th>
<th>Counterpoint 560-561</th>
<th>Professional Electives (choose from)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>6</td>
<td>4</td>
<td>4</td>
<td>10</td>
<td>4</td>
<td>Composition 262, Seminar in Music Theory 466, Orchestra 567/568, Improvisation 518, Music Before 1800 582</td>
</tr>
</tbody>
</table>

All Bachelor of Music: Music history candidates
must pass a piano proficiency examination as
outlined below.

### Theory/Composition

1. Ability to harmonize at sight.
2. Play harmonized ascending and
descending major and minor scales—all keys.
3. Ability to demonstrate in context the
following:
   - All diatonic triads and seventh chords,
   - Including all inversions.
   - Chromatic chords including the following: secondary dominants,
borrowed chords, augmented sixth
   - Chords, augmented dominant seventh
   - Chords, the Neapolitan sixth chord,
diminished seventh chords, and half-
diminished seventh chords.

### Music Performance: Vocal Major

In order to be permitted to major in music
performance the student must achieve a
minimum grade point average of 3.25 in MUS
200 or be admitted by audition.

<table>
<thead>
<tr>
<th>Hrs.</th>
<th>Applied Music (in addition to Core Requirements) 200</th>
<th>Applied Music (in addition to Core Requirements) 300</th>
<th>Performance Electives (in addition to Core Requirements; see Electives above)</th>
<th>Opera Workshop</th>
<th>Keyboard Musicianship 220, 221, 320, 321</th>
<th>Vocal Pedagogy 590</th>
<th>Diction (Choose from 230, 231, 232)</th>
<th>Music electives</th>
<th>Senior Recital (required for Music Clearance)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
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</table>

### Jazz Studies

<table>
<thead>
<tr>
<th>Hrs.</th>
<th>Applied Music (in addition to Core Requirements) 200</th>
<th>Jazz Ensembles 119, 210, 212, 218</th>
<th>Jazz Composition 264</th>
</tr>
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<tr>
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</table>

### Keyboard Requirements for Composition, Theory, and Music History Majors

All composition, theory, and music history
majors must demonstrate keyboard
competency as a graduation requirement or for
admission to candidacy for a graduate degree.
Competency examinations will be from the
keyboard area and from the area of the
student’s major.

### Theory

1. Two compositions of contrasting style at the
level of Bach Two-Part Inventions or Bartok
Mikrokosmos, Vol. III or IV. One composition
must be selected from the Baroque or
Classical repertoire; the other from the
Romantic or Contemporary period.
2. Score-reading. Emphasis shall be placed on
reading from string quartet scores.
3. Sight-reading of piano music which is easier
than the level of literature which the student
is performing.

### Bachelor of Science Degree or Bachelor of Arts

Degree Music Curriculum

<table>
<thead>
<tr>
<th>Hrs.</th>
<th>General Education Electives</th>
<th>Physical Education (Marching Band 109 substitutes)</th>
<th>A major in music: Music Convocation 101 (6 semesters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
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</tbody>
</table>
The award of the Bachelor of Arts or the Bachelor of Science degree is dependent upon coursework taken in foreign language and extra credits earned in General Education, language and literature, science, and social science. See adviser for specific details.

For the student who is enrolled in the General Curriculum of the College of Arts and Sciences, there will be an option to complete requirements for a Bachelor of Arts degree or a Bachelor of Science degree. To be awarded a Bachelor of Arts degree, the student, in completing requirements as outlined above, must have completed at least 70 hours in General Education, language and literature, science, and social science, including at least eight hours in one foreign language. If two or more years of high school preparation in one foreign language are presented for entrance, the requirements for foreign language may be waived. The student completing requirements as outlined above, including a minimum of 40 hours in General Education, language and literature, science, and social science, is eligible for the Bachelor of Science degree.

Music Theatre Performer
See “Interdisciplinary Program” in College of Fine Arts.

Bachelor of Science Degree

Elementary Education—Music
See description under the College of Education section of this Undergraduate Catalog.

Music Minor
Requirements for students who will not receive a teaching certificate (24 hours):

**Music Minor**


Music Courses (MUS)
(Courses described in italics are approved for General Education.)

**Ensembles**

MUS 105 Campus Choir
DIRECTOR: J. FREY
1 hr.
A choral ensemble which emphasizes the recreational aspects of ensemble singing. A minimal schedule of informal performances is maintained on campus and in the community. Membership is open to all students without audition. Credit/No Credit only.

MUS 107 Treble Choir
DIRECTOR: J. FREY
1 hr.
An ensemble of female vocalists which develops general musicianship and provides training in choral singing. Performances are presented on campus and in the community. Membership by audition.

MUS 108 Collegiate Singers
DIRECTOR: J. FREY
1 hr.
A choral ensemble which develops general musicianship and provides training in choral singing. Performances are presented on campus and in the community. Membership by audition.

MUS 109 Marching Band
DIRECTOR: R. SUDDENDORF
1 hr.
The University Marching Band is the major performing ensemble for Fall football activities. Positions are open to all students who play wind or percussion instruments. Music Education: Instrumental majors who play a wind or percussion instrument are required to take this course during two Fall semesters. (Credit in Marching Band may be substituted for P.E. credit) Membership is by audition.

MUS 110 Symphonic Band
DIRECTOR: R. SUDDENDORF
1 hr.
The University Symphonic Band is dedicated to the performance of outstanding literature, including original works for band, compositions for wind ensemble and orchestral transcriptions. An emphasis is placed on understanding the pieces performed from an aesthetic and stylistic basis as well as from a technical point of view. This ensemble maintains an active performance schedule on campus and in the community, as well as throughout Michigan and the surrounding states. Membership by audition.

MUS 111 University Orchestra
DIRECTOR: A. ELLIOTT
1 hr.
The orchestra is open to all students who have had a reasonable amount of orchestra experience. Many fine compositions are studied and played during the year, and the orchestra joins with other campus organizations in joint programs. Instruments are available for the use of students. Membership is by audition.

MUS *112 University Chorale
DIRECTOR: M. IVEY
1 hr.
An advanced choral ensemble which maintains a very active performance schedule on campus and in the community as well as throughout Michigan and surrounding states. Membership by audition.

MUS 113 Concert Band
DIRECTOR: R. SUDDENDORF
1 hr.
The University Concert Band is an all-campus organization dedicated to the performance of fine literature, including original works for band as well as outstanding orchestral transcriptions. The aesthetic aspect of the music is stressed and special emphasis is placed on musical style. This ensemble presents concerts on campus and in the surrounding community. Membership is by audition.

MUS 114 Wind Ensemble
DIRECTOR: R. SUDDENDORF
1 hr.
An organization which performs a wide range of literature for the modern wind ensemble. This group performs both on and off campus. Membership by audition.

MUS 118 Gold Company II
1 hr.
A vocal jazz and show entertainment ensemble which gives students the opportunity to develop their vocal skills while performing challenging contemporary choral literature. A small instrumental combo accompanies the ensemble, and choreography and specialty acts are included. The ensemble maintains an active performance schedule on campus and throughout the surrounding west Michigan area. Membership is open to all students by audition.

MUS 119 Gold Company
DIRECTOR: S. ZEGREE
1 hr.
A select ensemble which specializes in Jazz Show Vocal Entertainment. Specialty acts and choreography are included. A small instrumental ensemble accompanies the group. A very active performance schedule is maintained on campus, in the community, in Michigan and out-of-state. Membership is open to all University students by audition.

MUS 210 Jazz Lab Band
DIRECTOR: T. KINNASTON
1 hr.
The Jazz Lab Band affords students the opportunity to develop performance skills in contemporary and traditional big band jazz. Student compositions and arrangements are encouraged and are a regular part of Lab Band Concerts. The Ensemble performs regularly on campus and in the surrounding community. Membership is by audition.

MUS 211 Studio Accompanying
COACH: P. RAPPORTE
1 hr.
A laboratory experience in accompanying solo music. Students will be assigned three to four hours of varied studio accompanying per week. This course may be repeated for credit not to exceed a total of two semester hours.

Music Theatre Performer
See “Interdisciplinary Program” in College of Fine Arts.

Bachelor of Science Degree

Elementary Education—Music
See description under the College of Education section of this Undergraduate Catalog.

Music Minor
Requirements for students who will not receive a teaching certificate (24 hours):

**Music Minor**

**MUSIC 211**
MUS 212 Jazz Orchestra
(Director: T. Kynaston)
1 hr.
The University Jazz Orchestra is a select ensemble which affords students the opportunity to perform outstanding literature in contemporary and traditional big band jazz. Special consideration is given to the rehearsal and performance of student compositions and arrangements. The ensemble performs regularly on and off campus. Membership is by audition.

MUS 218 Instrumental Chamber Music
1 hr.
Special ensembles formed to perform standard instrumental chamber music works. Ensembles may include a variety of combinations, i.e., string quartets, woodwind quintets, brass quintets, percussion ensembles, piano trios, etc. Credit will be granted only if a sufficient rehearsal/performance schedule warrants.

MUS 317 Opera Workshop
(Director: W. Appel)
1 hr.
A production experience in the acting, singing, accompanying, and producing of musical theatre. The class is offered each semester and culminates in the performance of an opera or operatic scenes. Open to advanced singers, pianists, and persons interested in production techniques. Admission is by personal interview with the instructor.

MUS 512 New Music Ensemble
(Director: R. Zupko)
1 hr.
A performing organization which is committed to the performance of music and mixed-media works in the avant garde style. The ensemble is open to vocalists and instrumentalists on an audition basis.

MUS 514 Instrumental Chamber Music
1 hr.
Special ensembles formed to perform standard instrumental chamber music works. Ensembles may include a variety of combinations, i.e., string quartets, woodwind quintets, brass quintets, percussion ensembles, piano trios, etc. Credit will be granted only if a sufficient rehearsal/performance schedule warrants.

MUS 516 Music Theatre Practicum
1 hr.
A production experience in music theatre. Each semester culminates in an opera or musical comedy production. Open to singers, actors, accompanists, instrumentalists, and persons interested in production techniques. Admission by audition or permission of the instructor. May be repeated for credit.

MUS 517 Collegium Musicum
(Director: M. Steel)
1 hr.
Performance of early Western music. Open to all students of the University. Additional transcription, arranging, editing and conducting of early music is required of Music History majors. Graduate students may count no more than two hours of this course for graduation. Membership by audition.

MUS 519 Vocal Chamber Ensemble
1 hr.
Small vocal ensemble(s) which emphasize research and limited performance of specialized repertoire of one or various periods of music. Admission by permission of instructor.

Applied Music
Private lessons (applied music) in organ, piano, voice, and all orchestral and band instruments are offered to all University students to the extent that instructor time and practice facilities are available. Priority in applied music study is given first to music majors, second to music minors, and third to students wishing to take the study on an elective basis. All students who take private lessons must always register for applied music by reporting to the Music Office to be placed on the reserve list, after which the course must be requested by the students through the undergraduate department on final registration procedures. Only students enrolled in other classes at Western are eligible to receive applied music instruction. Generally, an audition or interview is necessary in order to be registered for study.

Students are required to make arrangements for a lesson time with the private teacher in the first days of classes each term. Every student should have a lesson during the first week of the term. Except for MUS 099, final examinations are required of all students in applied music. Examinations will be heard and graded by a panel of instructors. Students who register for one hour of credit per semester must receive one 25-minute lesson per week; two credit hours, one 40-minute lesson; four credit hours, one 60 minute lesson. The more credit a student receives in applied music, the more is expected in practice time and materials.

A $6 fee is required for those enrolled in applied music at the 200, 300, 500, and 600 level in order to bring guest artists/performers to campus for additional musical instruction and enrichment.

MUS 099 Applied Music
0 credit ($75 fee)
Private lessons for any student who wishes to register. No tuition is paid, but a special fee is charged. No audition or final examination is required. Beginning students will be accepted. Instructors will be School of Music professors or qualified students.

MUS 100 Applied Music
1-2 hrs.
This level of applied music indicates private music study at a fundamental level. Credit earned may be applied to a Bachelor of Music degree by special arrangement through the School of Music.

MUS 199 Applied Music-Music Theatre (voice)
1-4 hrs.
This level of Applied Music indicates “lower division” standing for music theatre students who have been approved for this level. Prerequisite: MUS 116.

MUS 200 Applied Music
1-4 hrs ($6)
This level of applied music indicates “lower division” standing for music students who have been approved for this level through auditions or jury examinations. Prerequisite: MUS 201 Sophomore Hearing

MUS 201 Sophomore Hearing
1 hr.
An examination in applied music. Must be passed to qualify for upper-level applied study.

MUS 300 Applied Music
1-4 hrs ($6)
This level of applied music indicates: “upper division” standing in applied music and is used to designate junior and senior-level applied music. A maximum of four credits per semester may be earned at this level.

MUS 301 Senior Hearing
1 hr.
An examination in upper-level applied music. All Wind-Percussion majors must pass this examination to be cleared for graduation.

MUS 501 Master Class
2 hrs.
The study of literature, performance practices, and techniques for a specific instrumental or vocal medium. Individual performance assignments will be made appropriate to each student’s level of accomplishment. Class meetings may vary from small groups of students with common performance levels to meetings of the entire class for the purpose of dealing with materials and techniques common to all performers. The class may be repeated for credit. Music majors only.

Music Classes
MUS 101 Music Convocation
No Credit ($45 fee)
A series of special musical events required of music majors. Programs include lectures and recitals by faculty, selected students, and guest artists. A $30 fee is assessed to all music majors in order to provide funds for travel and instruments used by students throughout the music program.

MUS 102 Piano Class I
2 hrs. ($5 fee)
This is a beginning course for the development of piano playing skills for non-music majors/minors. The course will cover fundamentals of music reading, keyboard techniques, sight-reading, and harmonization.

MUS 103 Piano Class II
2 hrs. ($5 fee)
A continuation of MUS 102 Piano Class I. Because course goals do not align with other keyboard classes in the School of Music, the student will not be prepared to progress into other piano classes offered for music majors/minors. Prerequisite: MUS 102 or instructor consent.

MUS 115 Voice Technique I
2 hrs.
The students who have been approved for this course by audition will explore and develop the voice as a healthy instrument for musical theatre performance. Vocal technique will be emphasized with some singing and coaching of easy lyric songs and arias from musical comedy and opera. Application of healthy vocal technique to dialogue will be included. Prerequisite: Audition only.

MUS 116 Voice Technique II
2 hrs.
A continuation of MUS 115, Voice Technique I. Prerequisite: MUS 115.

MUS 120 Keyboard Fundamentals
1 hr.
The course covers basic fundamentals of piano technique, sight-reading, transposition and simple harmonization of melodies using primary harmonies. The course must be taken concurrent with or following MUS 160. Prerequisite: MUS 159 or music reading ability.

MUS 121 Keyboard Fundamentals
1 hr.
A continuation of MUS 120. The course of study includes major scales and arpeggios using standard fingering, six o'clock and eights, second to music majors. Special attention is given to small independent parts or melody with block chord accompaniment, transposition of a single melody line, and harmonization of melodies using secondary and secondary dominant harmonies. Prerequisite: MUS 120, or instructor consent.
MUS 122 Voice Class 1 hr.
A study of the fundamental processes of breath control and tone production, providing some individual instruction in preparing and singing standard song literature. The course is designed to benefit students interested in solo and choral singing.
MUS 123 Voice Class 1 hr.
A continuation of MUS 122. Repertoire will include early English songs and 17th and 18th century Italian songs as well as other standard literature, with a minimum of five songs to be memorized during the semester. Prerequisite: MUS 122.
MUS 124 Guitar Class I 2 hrs.
This class will enable the student with no previous experience to use the guitar as an accompanying instrument. The course will provide basic instruction in the fundamentals of music reading as well as the fundamentals of guitar. The student will be required to own or have access to a Folk or Classical type guitar.
MUS 125 Guitar Class II 2 hrs.
This class is intended for the student who has completed Guitar Class I or the student with some guitar ability who wishes to further develop his/her skills. The course will enable the student to use the guitar as a solo or melody-playing instrument. Instruction will be provided on tablature and transposition as it applies to the guitar and on various techniques as used in both the Classical and Folk idioms for melody or single-note playing. The student will be required to own or have access to a Folk or Classical type guitar. Prerequisite: Completion of MUS 124 or instructor consent.
MUS 126 Fundamentals of Guitar 1 hr.
The class is for the music major or minor who has an ability to read music and a basic knowledge of harmony but who cannot already play the guitar. The class will focus on the use of guitar in the music education and music therapy professions and will cover the different styles of beginning guitar playing, including an overview of basic chords, barre chords and the various strumming and picking patterns. The student must own or have access to Folk or Classical type guitar. Prerequisite: MUS 160.
MUS 129 String Class 2 hrs.
A thorough examination of all string instrument performance, pedagogy, materials, methods and maintenance. For wind and percussion majors in Public School Music.
MUS 130 Percussion Class 1 hr.
Fundamentals of percussion instrument pedagogy and performance. The student is required to perform on the snare drum in an acceptable manner and to demonstrate a working knowledge of percussion instruments, including methods and materials, care and maintenance, and the function of the percussion section in a band or orchestra. For music majors only.
MUS 131 Flute Class 1 hr.
Fundamentals of flute pedagogy and performance. For music majors only.
MUS 132 Oboe Class 1 hr.
Fundamentals of oboe pedagogy, performance and reed-making. For music majors only.
MUS 133 Clarinet Class 1 hr.
Fundamentals of clarinet pedagogy and performance. For music majors only.
MUS 134 Bassoon Class 1 hr.
Fundamentals of bassoon pedagogy, performance, reed-making, and instrument maintenance. For music majors only.
MUS 135 Saxophone Class 1 hr.
Fundamentals of saxophone pedagogy and performance. For music majors only.
MUS 136 Trumpet Class 1 hr.
Fundamentals of trumpet pedagogy and performance. For music majors only.
MUS 137 French Horn Class 1 hr.
Fundamentals of French horn pedagogy and performance. For music majors only.
MUS 138 Trombone Class 1 hr.
Fundamentals of trombone pedagogy and performance. For music majors only.
MUS 139 Tuba Class 1 hr.
Fundamentals of tuba pedagogy and performance. For music majors only.
MUS 140 Music for the Classroom Teacher 3 hrs. ($10 fee)
Designed for elementary education students without regard to previous musical training. Students are prepared to use music functionally and developmentally in the elementary classroom through singing, through playing the piano and instruments, and through responding to music rhythmically. Creative aspects and values of music are emphasized, and materials are studied in relation to their future uses in the classroom.
MUS 141 Music in Special Education 3 hrs. ($10 fee)
Designed for teachers of exceptional children. Study of methods and materials for singing, rhythmic, and creative activities in classes for mentally and physically handicapped. The student learns functional use of piano and instrumental forms. Values of musical activities for all exceptionalities are emphasized. For Special Education majors only. Substitutes for MUS 140.
MUS 150 Music Appreciation: Live Music 4 hrs.
An introduction to music and music literature in conjunction with attendance at music concerts and recitals on campus. Classroom discussion and readings will guide the student through a variety of listening experiences that will stimulate perception and enjoyment of music on a visual as well as aural level. This approach will also insure a wide sampling of musical styles and media while encouraging the student to become more aware of his/her musical surroundings. A schedule of the musical events required for the semester will be issued during the first week of the semester.
MUS 151 Music Appreciation: Jazz/Pop 4 hrs.
A study of the development of jazz and its importance as an American art form. The course includes a survey of the beginnings of jazz as a blending of the musical cultures of Africa and Europe. The development of jazz from the late 19th century to the present will be traced. Current trends in jazz and rock, as well as electronic influences in contemporary pop music will be emphasized. Studies will include sociological and cultural trends and their influence on the evolution of the various styles and forms of jazz and pop. Implications for the future will be considered.
MUS 159 Fundamentals of Music 2 hrs.
A study of fundamentals, including notation, scales, intervals, basic chord construction, and the rhythmic aspect of music. This course is open to all students as an introductory study in music theory.
MUS 160 Basic Music 3 hrs.
A study of traditional harmony through part-writing and analysis including the inversions of diatonic triads and dominant seventh chords. Prerequisite: Acceptance as a music major or minor and the passing of a qualification examination in music fundamentals.
MUS 161 Basic Music 3 hrs.
A continuation of MUS 160. Includes the study of secondary dominants, augmented sixth chords, borrowed chords, and modulation to foreign keys. Prerequisite: MUS 160 with the grade of "C" or better.
MUS 162 Aural Comprehension 1 hr.
Training in the basic skills of music reading and ear training. Prerequisite: Acceptance into MUS 160.
MUS 163 Aural Comprehension 1 hr.
A continuation of MUS 162. Prerequisite: MUS 162 with a grade of "C" or better.
MUS 185 Music Fundamentals for Dancers 1 hr.
After the basic concepts of staffs, clefs, pitch names, scales and meters have been learned, this course will emphasize rhythmic skills for score-reading. Concurrent with the development of these skills would be instruction in the basics of traditional musical forms: phrase, evidence, section, binary and ternary, and minuet forms. Prerequisite: Dance majors only.
MUS 190 Accompanying 1 hr.
Supervised experience in accompanying vocal and instrumental music, both solo and ensemble.
MUS 215 Conducting 1 hr.
A course in the fundamentals of conducting, including beat patterns, various gestures for attack, release, phrasing, etc., use of the left hand, and score-reading. The student will be afforded a variety of experiences, i.e., conducting exercises for videotaping, conducting practice laboratories, etc. Prerequisite: MUS 160, MUS 162.
MUS 220 Keyboard Musicianship 1 hr.
A course primarily designed for those who need to develop more advanced practical skills at the piano. Emphasis is on further development of piano technique, sight-reading and harmonization skills. Prerequisite: MUS 121 with a grade of "C" or better, or instructor consent.
MUS 221 Keyboard Musicianship 1 hr.
A continuation of MUS 220. Prerequisite: MUS 220, or instructor consent.
MUS 230 Italian and Latin Diction 1 hr.
A phonetic approach to the pronunciation of these languages designed for singers and choral directors. The performance of the
language utilizes the vocal literature of major composers in the respective fields of vocal literature.

MUS 231 French Diction
1 hr.
A phonetic approach to the pronunciation of French designed for singers. The performance of the language utilizes the French chanson.

MUS 232 German Diction
1 hr.
A phonetic approach to the pronunciation of German designed for singers. The performance of the language utilizes the vocal literature of major composers of German lieder.

MUS 240 General Music Methods
2 hrs.
A study and survey of sequential musical concepts of traditional music by means of the composition and performance of several original works in specific forms, employing a variety of vocal and instrumental combinations. Required for Music Education: Vocal and Elementary Education majors. Emphasis will be on the playing of folk and popular music. The coursework will include the use of guitar symbols, playing by ear, some functional keyboard harmony and figured bass, as well as sight-reading and general technique. The course will also be open to piano majors wishing to increase their functional skills on the piano. Prerequisite: "C" or better in MUS 232 or instructor consent. Note: Required for Music Education: Vocal and Applied Voice majors.

MUS 242 Elementary Music Practicum
3 hrs.
This course is designed to meet the needs of the elementary music teacher in the areas of theory and practice. Special emphasis is given to keyboard facility in accompaniments in the elementary classroom, harmonizations of melodies, the playing of rhythms, modulations, and a continuation of ear-training. Prerequisite: MUS 221 or consent of department.

MUS 259 Aural Comprehension
1 hr.
Continuation of MUS 163. Prerequisite: MUS 163 with a grade of "C" or better.

MUS 260 Basic Music
3 hrs.
A continuation of MUS 161 designed to reinforce the melodic, harmonic and rhythmic concepts of traditional music by means of the composition and performance of several original works in specific forms, employing a variety of vocal and instrumental combinations. Prerequisite: MUS 161 with a grade of "C" or better.

MUS 261 Basic Music: 20th Century Techniques
2 hrs.
The study of the music of the Twentieth Century, particularly those melodic, harmonic, and rhythmic characteristics which define the music of that period. Important aspects of twentieth century music history will be discussed. Prerequisite: MUS 161 with a grade of "C" or better.

MUS 262 Composition
2 hrs.
Beginning work in composition, with emphasis on the development of short works utilizing small instrumental combinations. Attention is given to melodic, rhythmic and harmonic devices. Prerequisite: MUS 161, or permission of instructor.

MUS 263 Composition
2 hrs.
A continuation of MUS 262. Prerequisite: MUS 262.

MUS 264 Jazz Composition
2 hrs.
The fundamental aspects of composition in the jazz idiom, including harmonic progression, melodic design and rhythmic formulation. Intensive study will be made of well-known standard tunes as well as classic jazz compositions. All periods will be studied so that the student will have a well-grounded familiarity with basic compositional idioms, including the blues, standard AABA song forms, modal forms and more complicated sectional forms. All compositions created in class will be performed by class members or by the appropriate ensemble outside of class. Prerequisite: MUS 260 or concurrently.

MUS 270 Music History and Literature
4 hrs.
A brief study of non-Western music cultures, and a survey of Western music from earliest times to the 18th Century.

MUS 271 Music History and Literature
4 hrs.
A survey of Western music from 1700 to 1900.

MUS 279 Instruments of the Band and Orchestra
2 hrs.
Students survey the string, woodwind, brass and percussion instruments commonly used in the band and orchestra. The major aim of the course is to make the student aware of the unique sound which characterizes each instrument and how that sound is produced. In developing perception and discrimination in this regard, the student investigates such things as the acoustical properties of the instruments, the correct formation of the embouchure for the brasses and woodwinds, the techniques of bowing string instruments, and the physical attributes required to perform successfully on certain instruments. All will learn the proper techniques for playing various percussion instruments commonly used in the classroom and will be given the opportunity to explore one or more of the brasses and woodwinds. Prerequisite: Instructor consent.

MUS 281 Introduction to Music Therapy
1 hr.
An orientation to the discipline of music therapy via classroom lectures, video tape presentations, and clinical observations. This course should be taken following or concurrent with PSY 194.

MUS 285 Musical Style and Form for Dancers
3 hrs.
The course surveys composers and musical style from the Renaissance through the Twentieth Century. There will be an emphasis on the chief stylistic characteristics of the major composers of each period and how the particular compositions in relation to their suitability for choreographic treatment. Score-reading is an important aspect of the course. Prerequisite: MUS 185.

MUS 289 Music Therapy Activities for Children
2 hrs.
This class will examine labels and categorizations involved in children's populations, offer instruction in social-recreational instruments, allow for a more indepth study of appropriate music materials and activities, and allow for experience in designing and implementing music therapy treatment procedures for individuals and groups. Class time will be primarily used for instruction with some selected help times to allow for more individualized instruction. Exams will be of a written, playing, and/or presentational format. Prerequisite: MUS 126 and MUS 281, both may be taken concurrently.

MUS 290 Music Therapy Activities for Adults
2 hrs.
This class will examine labels and categorizations involved in adult populations, offer instruction in social-recreational instruments (e.g., guitar, ukulele, etc.), allow for a more indepth study of appropriate music materials and activities, and allow for experience in designing and implementing music therapy treatment procedures for individualized instruction. Exams will be of a written, playing and/or presentational format. Prerequisite: MUS 126 and MUS 281, both may be taken concurrently.

MUS 320 Advanced Keyboard Musicianship
1 hr.
Course emphasis is on the development of accompanying and harmonization skills and an introduction to four-part, open-score reading. Prerequisite: MUS 221 with a grade of "C" or better, or instructor consent.

MUS 322 Keyboard Skills for Vocalists
1 hr.
A course designed to concentrate on piano skills necessary for vocal majors. The course will include accompanying techniques, sightreading, transposition and open-score reading, as well as general piano techniques and some functional piano skills. Prerequisite: "C" or better in MUS 320 or instructor consent. Note: Required for Music Education: Vocal and Applied Voice majors.

MUS 322 Keyboard Harmonization Skills
1 hr.
A course devoted to developing harmonization/improvisation skills necessary for music therapy and elementary education majors. Emphasis will be on the playing of folk and popular music. The coursework will include the use of guitar symbols, playing by ear, some functional keyboard harmony and figured bass, as well as sight-reading and general technique. The course will also be open to piano majors wishing to increase their functional skills on the piano. Prerequisite: "C" or better in MUS 322 or instructor consent. Note: Required for Jazz Studies, Elementary Music, and Music Therapy majors.

MUS 330 Choral Conducting and Literature
2 hrs.
The fundamentals of choral conducting are presented, including patterns and rehearsal techniques. The study and selection of literature appropriate to various levels of junior and senior high school choirs is included. Each student will be sent into the local schools during the part of the course in order to work with younger students. Prerequisite: MUS 215, with a grade of "C" or better.

MUS 331 Instrumental Conducting and Literature
2 hrs.
Beginning homogenous and heterogeneous methods will be used with students acting as conductor-teachers and playing secondary instruments. Literature appropriate to various levels of junior and senior high school bands and orchestras will be used as materials for conducting with students performing on major instruments. Each student will have the opportunity to rehearse with the Symphonic Band at least once, and will be sent into local schools during part of the course to work with younger students. Prerequisite: MUS 215, with a grade of "C" or better.

MUS 334 Jazz and Popular Solo Voice
1 hr.
The course will focus on the study of performance of songs in the popular and jazz idioms. Musical phrasing, emotional...
<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<th>Description</th>
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<tbody>
<tr>
<td>MUS 362</td>
<td>Seminar in Music Composition</td>
<td>2 hrs.</td>
<td>Original work in composition accompanied by study and analysis of advanced 20th century compositions and creative concepts. May be repeated for credit. Prerequisite: MUS 263.</td>
</tr>
<tr>
<td>MUS 364</td>
<td>Seminar in Electronic Music Composition</td>
<td>2 hrs.</td>
<td>Original electronic music composition including a study of techniques since 1950, application of studio technique to sound production, and the operation of the synthesizer as a performance instrument. Advanced students will develop and submit an outline of a compositional project. The student will be assigned a number of hours weekly for independent work in the studio for realization of the project, which will receive periodic guidance and criticism from the instructor. May be repeated for credit. Prerequisite: MUS 263.</td>
</tr>
<tr>
<td>MUS 366</td>
<td>Instrumental Arranging</td>
<td>3 hrs.</td>
<td>A course designed to give the student experience in arranging music for instrumental groups with emphasis placed on making effective use of the resources available in the average junior high and high school music situation. Prerequisite: MUS 361.</td>
</tr>
<tr>
<td>MUS 373</td>
<td>Creating Music in the Classroom</td>
<td>4 hrs.</td>
<td>Using the elements of music as a focus, students explore their creative potential by devising musical activities for use in the general music classroom. Because classroom experience in area schools is an integral part of the course, students must have functional piano skills. Prerequisites: MUS 240 and MUS 244, or consent of department.</td>
</tr>
<tr>
<td>MUS 375</td>
<td>Twentieth Century Music Literature</td>
<td>2 hrs.</td>
<td>A chronological survey of 20th Century music literature through listening and analysis.</td>
</tr>
<tr>
<td>MUS 380</td>
<td>Psychology of Music</td>
<td>2 hrs.</td>
<td>Physical, psychological and physiological aspects of sound and systems of tonal relationships. The effects of music on the individual and the consideration of music as a form of communication; the nature and measurement of musicality; the nature of musical memory; the underlying bases for musical taste and for aesthetic experience in music with emphasis on cultural influences. Prerequisite: PSY 194.</td>
</tr>
<tr>
<td>MUS 381</td>
<td>Research in the Psychology of Music</td>
<td>2 hrs.</td>
<td>Development and employment of research methods and techniques applied to the psychology of music. Experimental projects will be required in areas dealing with music and/or musical behavior. Prerequisite: MUS 380 with a grade of &quot;C&quot; or better.</td>
</tr>
<tr>
<td>MUS 383</td>
<td>Observation and Measurement in Music Therapy</td>
<td>1 hr.</td>
<td>Overview of techniques of behavior measurement and accountability paired with actual clinical observations. Prerequisite: MUS 281 or concurrent. Reserve time for observation.</td>
</tr>
<tr>
<td>MUS 395</td>
<td>Performance Development and Technique</td>
<td>3 hrs.</td>
<td>A workshop format utilizing exercises, scene rehearsals and performances in order to develop students’ performing ability in musical theatre. Content includes sound and motion exercises, routines of a song or aria, and projection and auditioning techniques. Prerequisite: Consent of adviser.</td>
</tr>
<tr>
<td>MUS 450</td>
<td>Music Appreciation: The Symphony</td>
<td>3 hrs.</td>
<td>The course in THE SYMPHONY is a general music course which presents music for symphony orchestra from the listener’s point of view. It deals with the materials, structure, texture, sonority, and style of orchestral music since the mid 18th century as well as the cultural milieu which gave rise to and brought about changes in musical style. Music reading ability not required. Not open to graduate music majors.</td>
</tr>
<tr>
<td>MUS 466</td>
<td>Seminar in Music Theory</td>
<td>2 hrs.</td>
<td>Research projects in music theory. Research methods and analytic discipline are stressed. Study will be focused in an area of the student’s need or interest. Prerequisite: MUS 261.</td>
</tr>
<tr>
<td>MUS 472</td>
<td>Clinical Practicum in Music Therapy I</td>
<td>2 hrs.</td>
<td>A lecture/lab course to provide an opportunity for the music therapy student to apply music therapy principles with assigned individual/group clientèle in the Music Therapy Clinic and/or affiliated community agencies. Prerequisites: MUS 289, MUS 290, and MUS 383. Reserve time for clinical participation. Liability insurance required.</td>
</tr>
<tr>
<td>MUS 473</td>
<td>Clinical Practicum in Music Therapy II</td>
<td>2 hrs.</td>
<td>A continuation of MUS 472. Prerequisite: MUS 472. Reserve time for clinical participation. Liability insurance required.</td>
</tr>
<tr>
<td>MUS 479</td>
<td>Influence of Music of Behavior</td>
<td>3 hrs.</td>
<td>A study of the relationship between music and personality of the function of music in personality adjustment and development. The study of research methods shall be pursued through analysis and evaluation of published studies, and skills essential to research shall be developed. Prerequisite: MUS 472. Reserve time for clinical participation. Liability insurance required.</td>
</tr>
<tr>
<td>MUS 480</td>
<td>Music Therapy Methods and Materials</td>
<td>3 hrs.</td>
<td>Survey of materials available for use in music therapy programs and methods of adapting such materials to institutional use. Study of publications and techniques developed specifically for use in music therapy programs. Prerequisite: MUS 472. Reserve time for clinical participation. Liability insurance required.</td>
</tr>
<tr>
<td>MUS 481</td>
<td>Music Therapy Internship</td>
<td>2 hrs.</td>
<td>A six-month internship at an approved state mental hospital. Prerequisite: Consent of department. Liability insurance required.</td>
</tr>
<tr>
<td>MUS 490</td>
<td>Undergraduate Workshop in Special Problems</td>
<td>1-3 hrs.</td>
<td>Designed for students interested in some special field of music not formally listed for instruction. All special problems must be approved by the Director of the School of Music, but may be under the direct guidance of any member of the Music faculty. This course may be elected as many as three times.</td>
</tr>
</tbody>
</table>

Open to Upperclass and Graduate Students

MUS 518 | Improvisation | 2 hrs. | A course in the fundamentals of instrumental improvisation. Assignments will be made in such areas as improvisation in the early music
tradition, improvisation on given melodic, harmonic, and/or rhythmic materials, as well as "free" improvisations. Prerequisite: MUS 161.

MUS 530 Advanced Choral Conducting 2 hrs.
Supervised experience in conducting vocal ensembles. The student may be called upon to prepare an ensemble for public performance. Prerequisite: MUS 330.

MUS 531 Advanced Instrumental Conducting 2 hrs.
Supervised experience in conducting instrumental groups. The student may be called upon to prepare an ensemble for public performance. Prerequisite: MUS 331.

MUS 540 Elementary School Music 2 hrs.
Emphasizes the place of music in the curriculum and the use of music in the day-to-day activities in the classroom. The fundamental musical skills are developed in order to assist the teacher to achieve these objectives.

MUS 542 Studies in Music Education: (topic) 2 hrs.
Topic to be announced. Selection will be made from the following or similar topics: Music in the Humanities, Evaluation of Music Education Materials, and Curriculum Planning for Innovation in Music Education. This course may be repeated to an accumulation of not more than 4 credits.

MUS 544 Music Education Materials: (topic) 2 hrs.
A study of the theoretical basis for and practice in analyzing and evaluating music for use in music education programs. This course may be repeated for a maximum of 4 credits.

MUS 546 Computer Assisted Instruction in Music 3 hrs.
The primary goal of the course is to teach students who already program some of the specific techniques used in developing original software for CAI in music. The main activity in the course will be programming, and one of the products of the course should be, for example, a program of sufficient sophistication as to at least potentially qualify for publication. Prerequisite: CS 105 or CS 502 or consent of instructor.

MUS 555 Jazz Arranging 2 hrs.
Jazz Arranging is a study of the art of arranging for the jazz ensemble—both traditional and contemporary. The course will undertake a detailed study of instrument ranges, transpositions and sound potential, and will cover voicings, voicing practices, calligraphy, and contemporary trends within the medium. Prerequisite: MUS 161, "C" or better.

MUS 556 Advanced Jazz Arranging 2 hrs.
A study and application of the art of arranging for the jazz ensemble, studio orchestra and show orchestra. The course will undertake a detailed study of scoring for winds, brass, strings, vocals and percussion in relation to traditional and contemporary trends within the medium. Prerequisite: MUS 161, "C" or better.

MUS 558 Jazz Improvisation I 2 hrs.
A study and directed application of the fundamentals of jazz improvisation including basic chord and scale construction and recognition, harmonic function, chord-scale relationships and basic blues and popular song forms. All students will be required to develop aural and performance skills relative to those theory skills. Prerequisite: MUS 161, "C" or better.

MUS 559 Jazz Improvisation II 2 hrs.
A study and directed application of advanced techniques of jazz improvisation including chord extension, voicings, inversions and substitutions, chord function and progressions and complex scales and their applications. All students will be required to develop aural and performance skills relative to those theory skills. Prerequisite: MUS 558 and MUS 218 Jazz Ensemble or concurrently.

MUS 560 Counterpoint 2 hrs.
A study of the contrapuntal techniques of the 18th, 19th and 20th Centuries. Written assignments are closely correlated with the contrapuntal styles of significant composers. Prerequisite: MUS 161 with grade of "C" or better.

MUS 561 Counterpoint 2 hrs.
A continuation of MUS 560. Prerequisite: MUS 560.

MUS 562 Advanced Composition 2 hrs.
A study of twentieth century techniques in composition with original work in vocal and instrumental forms. Prerequisite: MUS 362.

MUS 563 Advanced Composition 2 hrs.
A continuation of MUS 562. Prerequisite: MUS 562.

MUS 566 Musical Acoustics 3 hrs.
A course designed for the music student. Discussion as well as laboratory demonstrations of such principles as: simple vibrating systems; waves and wave propagation; complex vibrations; resonance, intensity and loudness levels; tone quality; frequency and pitch; intervals and scales; tuning and temperament; auditorium and room acoustics; and psycho-acoustics. Prerequisite: MUS 161.

MUS 567 Orchestration 2 hrs.
A study of the characteristics of instruments, and of arranging for the various individual choirs, for combinations of choirs, and for full orchestra. Prerequisite: MUS 261.

MUS 568 Orchestration 2 hrs.
A continuation of MUS 567. Prerequisite: MUS 567.

MUS 570 Introduction to Musicology 3 hrs.
History, purposes, scope of musicology; leading historians, past and present; modern methods of research, with special emphasis on primary sources and bibliography of the field. Prerequisite: MUS 261.

MUS 571 Introduction to Musicology 3 hrs.
A continuation of MUS 570.

MUS 572 Baroque Music (1600-1750) 3 hrs.
A survey of the choral and instrumental music of the Baroque masters such as J.S. Bach and G.F. Händel. Special attention to the development of style from monody through harmonic polyphony. Prerequisite: MUS 270 and MUS 271.

MUS 573 Classical Music (1750-1800) 2 hrs.
Examination of the chief works of Mozart and Haydn, with intensive study of symphonic form and the development of the classic opera. Prerequisites: MUS 270 and MUS 271.

MUS 574 Romantic Music (1800-1910) 3 hrs.
Music of the important composers of the period beginning with Beethoven, along with the historical, cultural, and political background of the era. Special attention is given to the development of Nationalism. Prerequisite: MUS 270 and MUS 271.

MUS 575 Musicology and Research 2 hrs.
Presentation of musicological material in formal writing as well as informal classroom lecture, specific research projects with emphasis on selection and qualitative judgment of materials used.

MUS 576 Musicology and Research 2 hrs.
A continuation of MUS 575. Prerequisite: MUS 575.

MUS 577 Symphonic Literature 2 hrs.
A survey of music written for symphony orchestra during the Classic and Romantic periods.

MUS 578 Chamber Music Literature 2 hrs.
A survey of chamber music literature of the Classic and Romantic periods.

MUS 579 Operatic Literature 2 hrs.
A survey of opera from 1600 to the present.

MUS 580 Solo Literature: (Topics) 2 hrs.
Solo literature for a specific medium (voice, piano, violin, etc.) will be studied from a theoretical, historical, and performance point of view. Topics to be announced. May be repeated for credit. Prerequisite: MUS 270 and MUS 271.

MUS 581 Choral Music Literature 3 hrs.
A survey of choral music (mass, motet, anthem, cantata, oratorio) from the Renaissance through the Romantic period.

MUS 582 Western Music Before 1600 4 hrs.
A survey of music to 1600. Major developments in style, notation and performance practices will be stressed using works of theorists and primary manuscript sources.

MUS 583 Jazz History and Literature 4 hrs.
A survey of the history of jazz including aspects of sociology and history as they relate to the art form of jazz. All periods in jazz history, from its earliest roots in Africa and the slave culture in the United States, up through the blues, dixieland, swing, bop, mainstream and the more eclectic period of jazz rock and free-form jazz will be explored. Important works will be examined from each period in order to grasp the essentials of a particular style. Prerequisite: MUS 568 or department's consent.

MUS 585 Medieval Music 2 hrs.
A survey of music in Western Europe from the end of Antiquity to the early 15th century. The major developments in style, theory, and notation will be explored within the context of the general cultural and political environment of the era. Problems of performance practice will receive special attention with emphasis on primary manuscript sources and scholarly performing editions. Prerequisites: MUS 270 and MUS 271.
THEATRE

D. Terry Williams, Chair
Helen L. Bray
James Daniels
Russell J. Grandstaff
S. Mark Hoffman
David Karsten
Greg D. Roehrick
Nancy Sadusky
Lydia Stillwell
Vern Stillwell
Judith K. Massie, Administrative Assistant

The Department of Theatre offers programs leading to Bachelor of Arts and Bachelor of Science degrees. Students should refer to degree and General Education requirements within this catalog for specifics. The Department of Theatre concentrates on undergraduate programs that stress the interdependency of academic and production experiences, the importance of a broad theatre background, and the mastery of theatre fundamentals in preparation for the more advanced theatre training offered in graduate schools or professional theatre internships/practice programs.

Opportunity for participation in the production program begins with the freshman year. The department presents five faculty-directed productions in the mainstage season, and several productions in the Studio Series. Additional plays are presented in the laboratory theatre program and in the directing classes. All regular enrolled students in good academic standing are eligible to participate in these productions.

Admission as a major

Enrollment in the theatre curriculum is contingent upon admission to the University and the approval of the Department of Theatre. Information regarding application is available on request through the department office. Information regarding admission and transfer credit may be obtained by contacting the theatre adviser at the Department of Theatre office at Shaw Theatre.

Advising

Adviser: Dr. Vern Stillwell
Shaw Theatre: (616)383-1760

The department adviser will assist any student enrolled in the University with course selections in theatre. Appointments are made through the department secretary. Theatre majors and minors must confer with the theatre student adviser, who will help them plan their program and complete the required major or minor slip as soon as they begin their course work in theatre.

Transfer Credit

It is department policy to accept no more than 18 hours of transferred credit toward a non-teaching major, 12 hours toward a teaching major, and 9 hours toward a minor.

Programs

The Department of Theatre offers curricula including two majors, and two minors.

Theatre Major

50 credit hours

This program is designed for students who want to prepare for graduate study in theatre or advanced, specialized professional training. It offers a program combining a broad background in theatre with a concentration in acting and directing, or design and technical theatre.

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>120</td>
<td>Theatre Production</td>
<td>3</td>
</tr>
<tr>
<td>125</td>
<td>Stagecraft I</td>
<td>3</td>
</tr>
<tr>
<td>140</td>
<td>Elements of Stage Acting</td>
<td>3</td>
</tr>
<tr>
<td>175</td>
<td>Script Analysis</td>
<td>3</td>
</tr>
<tr>
<td>230</td>
<td>Stage Makeup</td>
<td>3</td>
</tr>
<tr>
<td>235</td>
<td>Theatrical Costuming</td>
<td>3</td>
</tr>
<tr>
<td>324</td>
<td>Stage Lighting and Sound</td>
<td>3</td>
</tr>
<tr>
<td>327</td>
<td>Scenic Design</td>
<td>3</td>
</tr>
<tr>
<td>355</td>
<td>Directing I</td>
<td>3</td>
</tr>
<tr>
<td>370 or 371</td>
<td>History of Theatre I or II</td>
<td>3</td>
</tr>
<tr>
<td>470</td>
<td>Development of Theatre Art</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives arranged with departmental adviser: ................................. 14

A grade of "C" or better is required in all courses.

Theatre Education Major

30 credit hours

A major for students planning to teach and direct theatre programs in secondary or elementary schools.

Required Courses

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>120</td>
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<td>3</td>
</tr>
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</tr>
<tr>
<td>370 or 371</td>
<td>History of Theatre I or II</td>
<td>3</td>
</tr>
</tbody>
</table>

A grade of "C" or better is required in all courses. A teaching methods course must be arranged with the departmental adviser. Students electing this major are strongly urged to minor either in English or Communication in order to increase the breadth of their general speech and/or English background and enhance their prospects for employment in the teaching profession.

Note: Although Theatre Education is an acceptable major, Michigan Secondary certification will be in communication/speech. All teachers to be certified must meet requirements of the University, the College of Education, and the State Board of Education.

Theatre Minor

24 credit hours

This program is designed to offer the student a core of three required courses totaling 9 hours with the remaining 15 hours arranged in consultation with the departmental adviser. Students may plan their electives in acting/directing, design/technical theatre, or a combination of both. A grade of "C" or better is required in all courses.

Programs

The Department of Theatre offers curricula including two majors and two minors.
### Theatre Education Minor

24 credit hours
A grade of "C" or better is required in all courses.

**Required Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 Theatre Production</td>
<td>3</td>
</tr>
<tr>
<td>140 Elements of Stage Acting</td>
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</tr>
<tr>
<td>175 Script Analysis</td>
<td>3</td>
</tr>
<tr>
<td>Electives in Theatre</td>
<td>15</td>
</tr>
</tbody>
</table>

### Theatre as an Elective

The department offers courses for students who want to explore specific areas of theatre, broaden their background and appreciation of theatre, and/or acquire skills in a particular area.

**Recommended Courses**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 Introduction to Theatre</td>
<td>3</td>
</tr>
<tr>
<td>120 Theatre Production</td>
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</tr>
<tr>
<td>140 Elements of Stage Acting</td>
<td>3</td>
</tr>
<tr>
<td>175 Script Analysis</td>
<td>3</td>
</tr>
<tr>
<td>210 Improvisation</td>
<td>3</td>
</tr>
<tr>
<td>230 Stage Makeup</td>
<td>3</td>
</tr>
<tr>
<td>370 History of Theatre I</td>
<td>3</td>
</tr>
<tr>
<td>371 History of Theatre II</td>
<td>3</td>
</tr>
</tbody>
</table>

Theatre 100, Introduction to Theatre, may be used to satisfy a General Education requirement.

### Music Theatre Performer

See "Interdisciplinary Program" in the College of Fine Arts.

### Theatre Courses (THEA)

(Courses described in italics are approved for General Education.)

**THEA 100 Introduction to Theatre**

3 hrs.
Considers theatre as a part of the individual's cultural heritage and liberal arts background. Students attend theatre performances and have opportunities to participate in University Theatre. (Lab fee required for play attendance.)

**THEA 110 Explorations in Performance**

3 hrs.
Instruction and practice in the various forms of performance for non-theatre majors.

**THEA 120 Theatre Production**

3 hrs.
An introductory course in the principles and practices of theatre production. Available to secondary education majors in communication and English.

**THEA 125 Stagecraft I**

3 hrs.
A beginning course in technical production including familiarity with theatrical equipment and materials, planning and construction of basic stage scenery, and laboratory work in University Theatre productions. Lab fee $10.00. Prerequisite: THEA 120.

**THEA 140 Elements of Stage Acting**

3 hrs.
Study and practice of the basic principles of acting. (Lab fee for play attendance.)

**THEA 147 Body Dynamics for the Actor**

3 hrs.
An introductory course stressing the interrelationship of body and voice in stage performing. Prerequisite: THEA 140.

**THEA 175 Script Analysis**

3 hrs.
The study of selected plays from the standpoint of the theatrical artist. Emphasis on thorough examination of the play script preparatory to production.

**THEA 210 Improvisation**

3 hrs.
Techniques of improvisational performing. This course includes spontaneous and planned exercises to evoke and inspire the actor's capacity for inventive imagination and sense of ensemble. Prerequisite: THEA 147 or consent of instructor. (Lab fee for play attendance.)

**THEA 225 Stagecraft II**

3 hrs.
A course in technical production including the planning, construction and painting of complex stage scenery, and laboratory work in University Theatre productions. Lab fee $10.00. Prerequisite: THEA 125 or consent of instructor.

**THEA 226 Drafting and Color Media**

3 hrs.
A methods course for beginning students in scenic, costume, lighting design, and technical production. This course provides instruction and practice in the use of various color media for design renderings, the techniques which apply to scale models, and theatrical drafting. Prerequisite: THEA 125 or consent of instructor.

**THEA 230 Stage Makeup**

3 hrs.
Study and practice of the basic principles and techniques of stage makeup.

**THEA 235 Theatrical Costuming**

3 hrs.
An introductory course in the creation of costumes for the stage, including study and practice in costume construction and basic principles of costume design and laboratory work in the University Theatre. Prerequisite: THEA 120 or consent of instructor.

**THEA 241 Voice Dynamics for the Actor**

3 hrs.
Exercises in the use of character masks, pantomime, stage combat, and techniques to aid physical characterization. Prerequisite: THEA 246.

**THEA 246 Performing Period Styles**

3 hrs.
Study and practice of acting in plays from selected major periods of theatre activity prior to the 20th century. Topics may include Greek, commedia dell`arte, Shakespeare, Moliere, Restoration, and examples from 18th and 19th century drama. Prerequisite: THEA 246.

**THEA 255 Directing I**

3 hrs.
Functions of the play director as teacher, interpreter, coordinator, and collaborator. Focus is upon principles and problems of directing. Students prepare and direct scenes from realistic plays. Prerequisite: THEA 120, THEA 140, THEA 175, junior/senior standing or above.

**THEA 256 Directing II**

3 hrs.
A continuation of THEA 255. Students prepare and direct one short realistic play and one short nonrealistic play. Prerequisites: THEA 355, or consent of instructor.

**THEA 324 Stage Lighting and Sound**

3 hrs.
A course in the design of the theatre lighting and sound and in the practical application of those designs to the stage. Includes laboratory practice in the staging of University Theatre productions. Prerequisite: THEA 125, (THEA 226 recommended) or consent of instructor.

**THEA 327 Scenic Design**

3 hrs.
A course in the design of stage costumes and accessories. Prerequisites: THEA 135 (THEA 226 recommended) or consent of instructor.

**THEA 341 Special Techniques of Physical Characterization**

3 hrs.
Exercises in the use of character masks, pantomime, stage combat, and techniques to aid physical characterization. Prerequisite: THEA 246.

**THEA 346 Performing Period Styles**

3 hrs.
Study and practice of acting in plays from selected major periods of theatre activity prior to the 20th century. Topics may include Greek, commedia dell`arte, Shakespeare, Moliere, Restoration, and examples from 18th and 19th century drama. Prerequisite: THEA 246.

**THEA 355 Directing I**

3 hrs.
Functions of the play director as teacher, interpreter, coordinator, and collaborator. Focus is upon principles and problems of directing. Students prepare and direct scenes from realistic plays. Prerequisite: THEA 120, THEA 140, THEA 175, junior/senior standing or above.

**THEA 356 Directing II**

3 hrs.
A continuation of THEA 355. Students prepare and direct one short realistic play and one short nonrealistic play. Prerequisites: THEA 355, or consent of instructor.

**THEA 370 Theatre History I**

3 hrs.
Survey of theatre history from the beginnings to 1642. Playwrights, acting styles, theatre production, theatre architecture, and audience taste are studied.

**THEA 371 Theatre History II**

3 hrs.
Survey of theatre history from 1642 to the 20th century. Playwrights, acting styles, theatre production, theatre architecture and audience taste are studied. Theatre 371 may be taken without first having taken Theatre 270.

**THEA 372 Music Theatre Script Analysis and Critique**

3 hrs.
Students will learn how to analyze the libretti and scores of opera, operetta, musical comedy, ballet, and dance theatre. Students are required to attend and submit critiques of several live productions. Prerequisite: Consent of adviser.
THEA 390 Professional Theatre Internship
3 or 6 hrs.
Advanced theatre majors may receive credit for participating in the Professional Theatre Internship Program with major professional theatres. Students must arrange an internship application and number of credits with the department's Internship Coordinator. A maximum of six credit hours may be applied to a major in theatre. Prerequisite: Consent of Internship Coordinator.

THEA 400 Special Topics in Theatre
3 hrs.
An investigation of topics of special interest related to theatre. Repeatable for credit under a different title. Examples of topics for study may include: dialects, mime, puppetry, script writing, advanced directing, theatre administration, touring theatre, advanced improvisation, stage management, technical direction, advanced lighting, sound design. Prerequisites: Variable.

THEA 425 Advanced Technical Problems
3 hrs.
An investigation of the application of modern materials and techniques to the problems of technical theatre production. Prerequisite: THEA 225 or THEA 327 or consent of instructor.

THEA 427 Advanced Design
3 hrs.
A course for advanced students in the design of scenery, costumes, lighting, and properties; the professional drafting of those designs for theatre production; and the preparation of the designer's resume and portfolio. Prerequisites: THEA 324 or THEA 327 or THEA 336 or consent of instructor.

THEA 430 3-D Makeup
3 hrs.
An advanced laboratory for the design and construction of three dimensional makeup. Prerequisite: THEA 230 or consent of instructor.

THEA 440 Acting Studio
3 hrs.
An advanced course in the art of acting with emphasis on the individual needs of the student actor. May be repeated for a maximum of 6 credit hours. Prerequisite: THEA 246.

THEA 470 Development of Theatre Art
3 hrs.
A survey of the development of theatre art and its relationship to the concurrent development in other arts. Recommended for students considering graduate work in the fine arts. Prerequisite: THEA 370 or THEA 371, or consent of instructor.

THEA 490 Individualized Study in Theatre
Variable
Designed to enable upper division theatre majors, or students in special programs, to initiate, plan and execute projects in particular aspects of theatre. Must be planned in collaboration with a member of the theatre faculty who will act as supervising teacher. Not designed to replace other theatre courses. Up to six semester hours may be accumulated, though the student may register for a maximum of three credits each time. Projects may involve study and research in an area of special interest, special performances or other creative activities. Prerequisite: Consent of performance or tech/design area, departmental adviser, and departmental chair.
Goals of the College

1. The goals of the College of General Studies will be compatible with the goals of the University.

2. The most comprehensive goal of the College of General Studies is to assist students in developing the ability to think critically and to engage successfully in intellectual pursuits. The General Studies program seeks to engender the disposition to seek knowledge and the habit of bringing knowledge of all kinds to bear on decision making.

3. The College of General Studies aims to assist students in developing confidence in their ability to make judgments while acquiring a willingness to reconsider their judgments in the light of new insights, information, and patterns of values.

4. The College of General Studies acknowledges positively more than one mode of inquiry and encourages exploration of interdisciplinary interests and programs of study.

5. The College of General Studies maintains a coherent program that assists students in developing a responsible awareness of themselves as human beings and of their social and physical environments.

Within the framework of these goals, the faculty of the College has developed individual courses for the Distribution Program which provide alternate choices for students in meeting their general education requirements. Students in the Distribution Program choose from among interdisciplinary courses offered by Humanities, Science, and Social Science, and from among General Purpose courses which apply toward general education area requirements.

General Purposes Courses (GENL)

(Courses described in italics are approved for General Education.)

GENL 151 Library Resources I
1 hr
Students will be introduced through lectures, projects and exercises, to materials, methods and people that can help them find what they want in the library. They will become acquainted with (1) library organization, including the card catalog; (2) forms of publication—books, documents, periodicals, microforms, etc.; (3) indexes, bibliographies, on-line computer retrieval systems and other reference tools which aid in the pursuit of information; and (4) strategies for using the library effectively. All of this is intended to help students with their course work and to pursue their personal and career interests in the future. Does not count for General Education. Cannot be repeated for credit.

GENL 195 Methods of Inquiry
4 hrs.
An introduction to independent study techniques, with emphasis on asking questions and locating sources of information. Students will design an independent study project and do some preliminary investigation in their field of interest.

GENL 304 Introduction to the Non-Western World
4 hrs.
A survey of the traditional cultures of certain major societies which have developed essentially apart from the stream of Western civilization. This is followed by an analysis of the Western impact on these societies and their reactions thereto, and by a study of contemporary social, economic, and political problems of non-Western countries.

GENL 305 Non-Western Societies in the Modern World
4 hrs.
An analysis of the distinctive cultural configuration of one of the following regions: East Asia, Southeast Asia, South Asia, the Middle East and North Africa, Sub-Saharan Africa. The types of transition being made in the particular region from a traditional to a modern society will be explored through an examination of the interrelationship between technology, social structure and ideology.

GENL 333 American Studies
1-4 hrs.
A variable-topics course reflecting the broad range of the American cultural experience. Although the topics may vary, the objective is to broaden our understanding of America through the wide range of themes that such a course offers. Topics might include: Film and American Life; Sports as American Metaphor; the American Way of Death; the World of American Mystery Fiction; America through Photography; Country Music and the American Scene; and American Humor, Wit and National Character. May be repeated for credit when topic changes. Does not count for General Education.

GENL 341 Library Resources II
2 hrs.
Students are asked to select a section of the course that emphasizes either the humanities, the social sciences or the sciences. Students will be introduced through lectures, exercises and a term project to some of the standard reference sources and the basic library research methods in the field emphasized in their section of the course. The course is intended to be of immediate use to students who have specific library needs related to courses in their fields. The course is also intended to provide a broad acquaintance with aids to research in the various disciplines,
which are useful for general as well as specialized inquiry, resulting in insight as well as skill. Does not count for General Education credit. Cannot be repeated for credit.

GENL 499 Independent Study in General Studies 1-8 hrs.

Various extra-classroom activities, including independent reading or research under the direction of a faculty member or projects associated with field experience or travel of recognized educational value. Prior arrangement with a faculty member and prior approval of the Chair of the General Studies Faculty and the office of the Dean of the College. May be repeated for credit. This course will not be accepted for General Education credit without the approval of the Coordinator of General Education Advising.

HUMANITIES

Vishal Sharma, Chair
Philip D. Adams
Lynwood H. Bartley
Lewis H. Carlson
Joseph M. Cordic
Beverly P. David
Audrey Davidson
Richard dePauw
Howard Dooley
James M. Ferreira
Reginald Gammon
Arnold Gasserton
Gilda Greenberg
Richard Joyce
Dale H. Porter
Larry tenHarmsel

Humanities courses are concerned with expressions of human values in their cultural contexts. In every culture there are people who ask: What is the meaning of our lives? What is human life worth? Humanities courses examine, usually through a historical perspective, a variety of intellectual, emotional, spiritual, and imaginative responses to those questions. The values associated with such responses are explored in order to provide perspectives for the student's own judgments. Humanities courses are interdisciplinary. Their emphasis is often on the arts, but always in relation to the ideas and conditions of particular cultures or historical periods. Questions of value also extend to the study of mass media and human communication. Science, technology, and social science may be used to illuminate the contexts in which ideas, values, and artistic images are expressed.

Humanities Courses (GHUM)

(Courses described in italics are approved for General Education.)

GHUM 102 Direct Encounter with the Arts 4 hrs.
A course that uses a direct approach to introduce students to their cultural world by guiding them through first-hand experiences in a number of arts: cinema, photography, theater, sculpture, music, poetry, dance, and architecture. Classroom discussions are held following the students' participation in the various art events scheduled each semester, with students expected to write journals or response papers about the major events of the course. There will be a course charge in lieu of textbooks.

GHUM 105 Introduction to Humanities 4 hrs.
A study of one or more of the following themes: love, death, heroism, morality, and freedom, as they have appeared in myth, philosophy, religion, and the arts.

GHUM 300 Arts and Ideas (variable subsections) 4 hrs.
A. Classical to Renaissance
This course, by showing the key stages in the interplay of religion, science, philosophy, and the arts from the age of Socrates to the Renaissance, explores the background of the modern look. It will show that the values and perceptions of life that seem so natural to us today are the results of centuries of insight and controversy.
B. Renaissance to Modern Times

A continuation of GHUM 300A, from the Renaissance to the Twentieth Century. May be taken separately; GHUM 300A is not a prerequisite.

C. Twentieth Century
A continuation of 300A and 300B, with the emphasis on a comprehensive examination of selected arts of modern Western culture (four from among the following: architecture, dance, film, literary arts, music, painting, and sculpture), demonstrating their relationship to the major intellectual and social currents of the twentieth century. May be taken separately from GHUM 300A and GHUM 300B, neither of which is a prerequisite.

GHUM 302 American Culture 4 hrs.
A study of significant concepts in American life focusing on the relationship of the individual to society as seen from the perspectives of literature, the arts, and social and political theory.

GHUM 310 Minority Culture 4 hrs.
An interdisciplinary study of minority cultures in terms of their relations with the majority culture and their ability to maintain a separate identity. Attitudes, problems, and symbols that characterize minority cultures are examined through literature and other arts as well as diverse socio-cultural perspectives.

GHUM 315 Human Communication 4 hrs.
An investigation of the processes by which people use symbol systems, centrally concerned with both personal and cultural communication behavior. The course is intended to increase understanding of and sensitivity to communication processes and their limitations through increasing the students' consciousness of their own communication behavior and through exposing them to the ideas of various communication specialists.

GHUM 316 Mass Media: Messages and Manipulation 4 hrs.
An examination of mass communication in general and of particular mass media. Students will consider the processes, effects, and functions of mass media, and their personal responses to these, through considering relevant scholarship from such diverse fields as sociology, history, psychology, anthropology, art, and literature.

GHUM 402 Beyond 2000: Utopian Visions and Futurism 4 hrs.
A lecture/discussion course which introduces the student to the classic literature of utopias and contemporary futurology, covering utopias of escape and reconstruction from Plato to Skinner, the anti-utopias of Huxley and Orwell, and futurist views of the world of the 21st century.

GHUM 409 Women: Past, Present and Future 4 hrs.
This course will concern itself with the subject of “women” as a legitimate held for scholarly inquiry in order to establish the facts and explore the myths of women’s role in Western culture. The approach will be interdisciplinary, historical for background, biological to explore facts versus myths, artistic models, literary tradition, changing social forces and the contemporary world of female consciousness.

GHUM 410 Critical Times 4 hrs.
An interdisciplinary study of selected short periods of cultural change. Emphasis will be on the unity of the period and on how significant
SCIENCE

Visho Sharma, Chair
Shirley Bach
Franklin G. Fisk
Ronald Flaspohler
David Hargrave
Robert H. Poel
Kamlesh Sharma
Michael D. Swords
Joanne Ursprung

An important part of the general education of a person is an understanding of the science and technology that have had such a tremendous impact on our daily lives and on the shaping of our culture. The main emphasis of some Science Area courses is comprehension of the development of scientific thought and the relationship of science to other aspects of our cultural development.

Other courses consider recent discoveries and technological advances. Also considered are the possible environmental or social consequences of applying these advances. The scientific knowledge necessary to understand the new technology is presented. This is followed by explicit consideration of different points of view and the evolution of alternative solutions in terms of practical considerations and moral and ethical values.

Other courses are directed toward students in elementary education. Scientific concepts and processes are considered in the context of elementary general education programs that see science as a vital part of the general education of children.

Science Courses (GSCI)

(Courses described in italics are approved for General Education.)

GSCI 130 Social Issues in Physical Science
4 hrs.
A course designed to look at current science-related problems of society having their factual core of knowledge in the physical sciences. Sufficient understanding of this knowledge is acquired to give non-scientists an understanding of the trade-offs resulting from alternative attempts to solve a problem. Emphasis will be placed on understanding the scientific enterprise, how it relates to modern technology, and how both relate to people and to societal issues.

GSCI 131 Physical Science in Elementary Education
4 hrs.
This course is designed to introduce students to some of the broad concepts of physical science and to the methods of inquiry that have been useful in developing these concepts. Student experiences are designed to further understanding of the interrelationships between the physical sciences and society, as well as those between the physical sciences and elementary general education, and will be taught in laboratory groups of limited size. Because of its broad-based nature, this course is especially valuable for elementary education minors and is at the same time appropriate for majors and minors in all fields of endeavor.

GSCI 132 Aims and Achievements of Science
4 hrs.
This course is designed as a broad philosophical and historical view about science as a human endeavor. It examines the aims or goals of science and compares these to the achievements of the scientific enterprise, as well as demonstrating the methods of science and other methods of obtaining reliable information. The course, designed for the non-scientist, is a non-mathematical examination of science and the way it affects and is affected by culture. The interrelationships between science and other disciplines and some of the important issues of our day are discussed.

GSCI 133 Issues in Social Biology
4 hrs.
This course involves a study of some recent advances in biology and medicine, their social and ethical implications, and the public-policy problems raised by such questions as organ transplantation, drugs, population control and size, genetic engineering, pollution, and the ethical and moral concerns implicit in these.

GSCI 134 Problem-Solving and Decision-Making
4 hrs.
This course helps students become more proficient in the essential skills of solving problems and making decisions at a professional as well as personal and social level. It accomplishes this through the study of many approaches and techniques, including those used with great success in science and technology. It also provides an understanding of the meaning of informed consent, risks and benefits; new technologies to extend life and to societal issues.

GSCI 231 Physical Science in Elementary Education II
4 hrs.
This course is a continuation of GSCI 131. Physical Science in Elementary Education, for those students who desire or need further study in the concepts and methods of the physical sciences. Instruction will be in laboratory sections of limited size; and a learning-by-doing inquiry approach will be utilized. This course will further elaborate on some concepts introduced in GSCI 131 and will also introduce additional important concepts in the physical sciences. Prerequisite: GSCI 131 or consent of instructor.

GSCI 432 Science and Parascience
4 hrs.
The goal of this course is to examine open-mindedly several “alternate visions” of the nature and origin of human life in the light of the attitudes and objectives associated with science. Topics include: astrology, future-prediction, “harmonies” between entities, ESP, telepathy, the aura, PK, UFO’s, extraterrestrial life, ancient astronauts, and others.

GSCI 433 Science, Technology, and Society
4 hrs.
This course consists primarily of seminars and discussions centering on the impact of science and technology on contemporary society, viewed from a variety of perspectives. One objective will be to assist the student in acquiring knowledge about current scientific and technological problems.

GSCI 434 Biomedical Ethics and Society
4 hrs.
This course concentrates on contemporary scientific and ethical issues in biomedicine. The range of issues discussed includes: new reproductive technologies and their appropriate use; experimentation on human subjects (the meaning of informed consent, risks and benefits); new technologies to extend life and the quality of the life extended; biological engineering, death, transplantation, and resource allocation; ethical aspects of biomedical innovation.
The primary focus of social science is the realm of human experience. Within this field of study, of special concern is the analysis of the social processes that link all human beings. The empirical, data-based approach that characterizes social-scientific inquiry seeks to foster a better understanding of the emergence and nature of the regularities of human life.

The main objective in the teaching-learning process is to facilitate the development of self-awareness, an awareness that individuals experience life and define and express their humanity within a human group that is part of a larger social network. To achieve this, social science courses are designed to provide the student an opportunity to examine the cultural relativity of behavior, ideas, and values as well as the dynamic and changing processes by which these are diffused across cultures. The idea that humanness has a socially-determined and historical, as well as individual, basis; the view that there are reciprocal influences of environmental settings, cultural processes, social forces, and individual expression; the view that the social processes of any group tend to define the limits of individual activity; the importance of an empirical analysis of private and social perspectives as well as the predictions that these permit; perspectives which go beyond the specificities of the regular social science disciplines; and experiences-based views of social reality that are placed into juxtaposition with one or more theoretical formulations of social processes, the views of student peers, and those of the instructor.

Social Science Courses (GSSC)
(Courses described in italics are approved for General Education.)

GSSC 222 The Status of Women
4 hrs.
This course is designed as a general exploration of the content and the effect (including affect) of the traditional definition of “woman.” Attention is given to such sources as law, religion, literature and art, mass media, psychology, biology, and social conventions, and to the social processes which transmit and reinforce sex role behavior.

GSSC 301 Men, Women, and Work
4 hrs.
This course examines recent significant changes in the structure and conditions of work in industrial society from historical, sociological, political and economic perspectives. These changes include a shift from “smokestack” to service and government employment, the increasing employment of women, and the role of government in regulating the treatment of workers.

GSSC 325 Self-Images and Social Images
4 hrs.
An inter-disciplinary inquiry into the personal and social factors which shape self-images. The course will examine how images of the self are related to the images of other individuals and groups. The aim is to understand how this process affects the quality of our lives.

GSSC 351 The Twentieth Century Experience
4 hrs.
This course will survey and analyze such key issues as war and peace, revolution and human rights, in the context of changing ideas and theories. These issues will be presented against the socio-economic background of world population, urban growth, food and energy, agriculture and industrialization. The course will emphasize the need for a new ethics to match our growing technological capacities.

GSSC 356 In Pursuit of Awareness
4 hrs.
This course is a study of the methods and techniques by which individuals acquire, transmit, utilize and block knowledge. The students apply various theories of perception in case studies, exercises and simulated problems during classroom sessions and in written assignments. These sessions and assignments are designed to give students insights and skills of interpretation that will be useful to them throughout their lives.

GSSC 425 Theories of Human Behavior
4 hrs.
A critical inquiry into the development of social science method and theory with a focus on key individuals who have influenced the directions of present-day inquiry.

GSSC 444 Female and Male: Psychological Perspectives
4 hrs.
This course will examine traditional and contemporary psychological theories and related research on women and men. The course will investigate age-old assumptions about sex roles and sex identity through an analysis of the psychological literature of the twentieth century.
The College Faculty
Molly Vass
Morton Wagenfeld

The College of Health and Human Services provides programs in Alcohol and Drug Abuse, a concentration in Health Care Administration, Holistic Health Care, and Blind Rehabilitation and Mobility (at the graduate level), Gerontology, Occupational Therapy, Physician Assistant, Social Work, and Speech Pathology and Audiology. Through these professional programs, education, research, and community assistance in health and human services are provided. The programs cover direct service roles in the health and human service professions, as well as functions of policy development, planning, and administration. Students may earn the degrees of Bachelor of Science in Occupational Therapy, Bachelor of Arts or Science in Speech Pathology and Audiology, and Bachelor of Medical Science for Physician Assistant, Master of Arts in Blind Rehabilitation and Speech Pathology and Audiology; Master of Science in Occupational Therapy, and Bachelor and Master of Social Work through their studies.

Mission

The mission of the College of Health and Human Services at Western Michigan University is to contribute to the improvement of the quality of health and human services in the west Michigan area, the State of Michigan, and the nation as a whole through degree and non-degree instructional programs, research, and community service activities. The mission includes a commitment to foster development of a comprehensive health and human service system responsive to the citizens of the state and the nation which contributes to enhancement of the overall quality of life in general.

Through the qualitative and innovative educational and professional service programs of the College a commitment is being made to the integration of education—within the College, between the College and other colleges of the University, and between the College and our communities, both professional and geographic. The College is further committed to ensuring that its teaching, learning, and discovery processes will focus on preparing people who understand their professional tasks in the context of a concept of quality that embraces the wholeness, challenge, and beauty of life and who will be prepared for leadership in a moral and professional sense as well as in an organizational sense.

Advising

Students admitted to Western Michigan University must also be admitted formally to the College’s programs through the individual departments, school or units. Interested candidates should contact the departments or program directors for further information.

Financial Aid

Scholarships and other forms of financial assistance are available for most programs in the College. Please refer to the section on Scholarships and Financial Aid.

Health and Human Services Courses (HHS)

HHS 511 The Health System and Its Environment
3 hrs.
This course provides a descriptive analysis of the organization of the health system. The student who participates can expect to gain an understanding of the structure of health services as well as the processes of operation of the service system and the ways in which consumers make use of the system. The analysis focuses on the interplay of forces within the system as well as behind the system and its environment.

HHS 512 Health Resources Administration
3 hrs.
This course is an introduction to principles and problems of health resources administration. The course focuses on two major areas. First, in a general introduction concerning the structures of the financing of health services, the course explores public and private mechanisms, insurance, and other financing plans. Second, the course examines the principles of financial administration for health services in the institutional and private practice setting. In this context major current issues and problems such as cost containment in health financing are analyzed.

HHS 513 Special Studies in Health Care Organization and Delivery
Variable Credit
This course deals with intensive analysis of the organization, design, and delivery of health care services in specialized areas. The specialized areas cover long-term, mental health, and mental retardation services, as well as group medical practice.

HHS 514 Basic Principles and Organization of Health Planning
3 hrs.
This course is an introduction to the principles and methods of planning in the health system. It includes a descriptive analysis of the significance of planning effective health care...
services, alternative planning frameworks, and technical approaches to the planning process. In addition, the course surveys the history of planning in the health care systems as well as the current structure arrangements for carrying out planning in the health arena both at the macro and micro levels.

HHS 515 Administrative Functions in the Health Care Setting 3 hrs.
This course focuses on the knowledge and skills necessary for the major administrative functions in health organizations. These include goal setting, decision making, personnel management, data processing, service design, and general principles of financial management.

HHS 530 Clinical Theory for Health and Human Services 1-4 hrs.
This course covers selected theories which form the foundation for health and human service practice in specialized areas. Students are expected to master the content as a basis for building foundation knowledge for clinical practice. Theory of environmental health, systems theory for the health setting, theories of substance abuse for nursing and medical practice, and community health theory are among the possible areas of study. The specific topics are announced with each semester offering.

HHS 560 Clinical Practice in Selected Health and Human Service Areas 1-4 hrs.
This course covers variable topics in clinical health and human service practice. It is a skills and development course which helps students to become proficient in specific techniques and procedures related to patient care or client service. Clinical applications of biofeedback, clinical practice in genetic counseling, the role of the health team in clinical practice, the patient and clinical laboratory services, basic clinical skills for the substance abuse setting, and community health education practice are among the possible areas of study. The specific areas are announced with each semester offering.

HHS 561 Problem-Solving in Health and Human Service Organizations 1-4 hrs.
This seminar covers variable topics relating to problem-solving in health and human services. It is a skill development course which helps students to become proficient with theoretical constructs and specific procedures for application in the health and human services system. Technology for health planning, the health system and its environment, organization of health practice teams, and financial problem-solving in the health agency are among the topics covered. The specific topics to be discussed are announced with each semester offering.

HHS 570 Field Education in Health and Human Services 1-4 hrs.
This registration is designed to give the student a total learning experience during which the student can apply some of the knowledge and information obtained in the health and human services academic setting and further develop and refine his/her professional skills with the guidance and assistance of those professionals currently working in the health and human service area. By permission of instructor.

### Interdisciplinary Programs

#### Gerontology Minor

**Advisers**
Bilby Cheatum  
Physical Education  
Geraldine Richardson  
Occupational Therapy  
Eileen K. Page-Robin, Director  
Gerontology

Gerontology, the study of the aging process and of old age, is offered as a multidisciplinary minor at Western Michigan University. Gerontology includes the study of aging through a disciplinary perspective, as well as the medical specialty known as geriatrics.

In the program, students are required to take courses in social work, psychology, sociology, and physical therapy. The program is designed to give students a broad understanding of the aging process and the factors that influence the development of aging. The program requires 12 credit hours of coursework, including the following:

- **SOC 352 Introduction to Social Gerontology**  
- **SWRK 464 Social Work Practice in Gerontology**  
- **OT 470 Functioning of the Older Adult**  

Field Education:
- Either HHS 570  
- Or a practicum in a participating department 3 or 4 hrs.

**Electives:**

- **BMED 531** Biology of Aging 3 hrs.
- **BIS 292** Consumer Principles and Practices 3 hrs.
- **FCL 326** Investment Analysis 3 hrs.
- **ECON 313** Poverty and Economic Security 3 hrs.
- **ECON 318** Economics of Health Care 3 hrs.
- **ED 504** Adult Development and Learning 3 hrs.
- **GSCI 434** Biomedical Ethics 4 hrs.
- **CRT 260** Nutrition 3 hrs.
- **CRT 266** Food for Man 3 hrs.
- **CRT 413** Marriage and Family in Maturity 3 hrs.
- **HIPR 572** Recreation for the Aging 2 hrs.
- **SWRK 563** Concepts in Rehabilitation 3 hrs.
- **SWRK 572** Community Agency Resources 2 hrs.

#### Integrated Language Arts Minor (ILAM)

**June Cottrell, Adviser**

**Program**

This 24-hour interdepartmental minor for preservice elementary school teachers is recognized in the program and is an integral part of each course. Each course focuses on a particular aspect of language development which will be presented through a balance of lectures, discussions and workshop opportunities for student initiated topics.

Students can enter the program in their sophomore year. In general, ED 250, Human Development and Learning, (or its equivalent), is a prerequisite for admission to the program. ENGL 282, Children's Literature, is also recommended. Program bulletin and application form are available in the Advising Office of the College of Arts and Sciences or the Educational and Professional Development Department and from the Integrated Language Arts (ILAM) Adviser, June Cottrell, 323 Spraul Tower, 383-4080.

Students must see an adviser for entrance into the minor. A 2.75 GPA is required. A minor slip is required.
BLIND REHABILITATION
William R. Wiener, Chair
Robert O. La Duke
Steven J. La Grow
Paul Ponchillia
Susan Ponchillia
James Leja
Marvin Weessies
Adjunct Faculty
George Whitaker, M.D.

The Department of Blind Rehabilitation offers professional education programs in orientation and mobility, and rehabilitation teaching. In addition, the department provides direct services to students on campus who have severe visual impairments and, in cooperation with the Michigan Commission for the Blind, provides training to visually impaired individuals within the community. Through a federal grant the department is able to offer assistance with tuition and provide stipends to qualified students who enter graduate study in either of the specialties. Part of the department’s function is to conduct workshops for professionals working in the field, provide consulting services, and initiate pertinent research.

Blind Rehabilitation Courses (BLRH)
Open to Upperclass Students

BLRH 501 Visual Impairment and Blindness: An Overview
2 hrs.
The purpose of this course is to provide basic information to graduate students and workers in the health and human service professions so that they will be able to work more effectively with blind individuals. It is also intended for undergraduate students who may be interested in entering a career in blind rehabilitation and would like to further explore their interest. Tests and assignment will be different for the graduate and undergraduate students. The graduate student will have additional readings and will be expected to conceptualize the relationship between their discipline and blindness services. An overview of visual impairment will be provided with both theoretical and practical components.

BLRH 584 Computer Technology for Visually Impaired Persons
1 hr.
This course is designed to introduce the student to computer technology as it relates to visually impaired persons. Students will learn the uses, parts, and operating commands of common adaptive computers, as well as the software used with them. In addition, the major adaptive forms of output will be investigated, including speech, braille, and large print. Experimental aspects will be stressed. Students planning to enter this course should have the ability to touch type. Prerequisite: Computer literacy or permission of instructor.

BLRH 588 The Dynamics of Blindness and Rehabilitation
2 hrs.
The development of the status of the blind and their integration into a sighted society. The relationship of the emotional and social correlates of blindness to the development of the blind individual as a contributing member of society.

BLRH 589 Inter-Professional Seminar Regarding Blind Multihandicapped Persons
1 hr.
Interdisciplinary approach to the study of multihandicapped conditions in which blindness is a common denominator.

BLRH 590 Physiology and Function of the Eye
2 hrs.
The anatomy, structure and function of the eye. Various eye diseases and malfunctions are stressed. The student is given an opportunity to observe all types of eye conditions and eye prostheses.

BLRH 591 Braille and Other Communication Methods
2 hrs.
Provides students with a basic knowledge of the braille literary code—reading and writing, and an overview of other communication methods available to the visually impaired.

BLRH 592 Education of the Visually Handicapped
2 hrs.
An overview of the education of visually handicapped children and adults. An introduction to the literature, history, principles, practices and problems in the field, including curricular and methodological adaptations of various educational programs.

BLRH 594 Principles of Orientation and Mobility
2-3 hrs.
An examination and application of the fundamental principles underlying the acquisition of sensory information by severely visually impaired individuals.

BLRH 597 Introduction to Cecuitency
2 hrs.
Exploration of ways to assess the functional use of residual vision. Methods and means of increasing the functional use of residual vision and defining its limitations.

BLRH 599 Gerontology
2 hrs.
The course offers an overview of the characteristics, circumstances and needs of the aging population of the United States, and explores the types of services available to meet their needs. The course will focus upon the demography of the aged, the physiological changes, and chronic diseases of aging, the social and economic aspects of aging, the psychological changes which come with age, and a review of the community resources which serve the aged.
OCCUPATIONAL THERAPY

Claire Callan, Chair
Mary Ann Bush
Richard Cooper
Sandra Edwards
Lana Ford
Barbara Hemphill
Shirley Lukens
David Nelson
Cindie Peterson
Geraldine Richardson
Barbara Rider
Doris Smith
Dean Tyndall

The curriculum is designed to prepare students to treat clients with various disabilities and to complete requirements of accreditation established by the American Medical Association in cooperation with the American Occupational Therapy Association. It includes a minimum of six months of supervised fieldwork experience in selected agencies to provide experience with clients in both a medical and a community model and with a wide range of dysfunctions.

Admission

The Occupational Therapy Department has established a maximum enrollment number for each admission period. Consequently, this department has established an admission selection procedure.

Minimum criteria for admission consideration includes the following:
1. Admission to Western Michigan University Pre-Occupational Therapy Curriculum.
2. Junior status (at least 40 hours at the time of application and 56 hours at the time of enrollment).
3. Satisfactory completion (or in progress) of basic course work:
   - Basic Course in Biology or Biomedical Science
   - Normal Growth and Development Covering the Life Span
   - English Composition

   Completion of all above courses with a "C" or better.
4. Documentation of a minimum of 40 hours of service contact with handicapped individuals.
5. Documentation of a minimum of 3 hours of contact with one or more Occupational Therapists.
6. Completion of Department Application Form.
7. Completion of Allied Health Professions Admissions Test.

Specific criteria for selection are based upon:
1. Fifty percent weighting on rank-ordered scores from the Allied Health Professions Admissions Test (AHPAT). This test is administered through The Psychological Corporation and is offered four times per year. (Contact the Occupational Therapy Department for test dates and application procedures.)
2. Fifty percent weighting on cumulative grade point average.

The equal consideration date for fall semester admission is February 14, and July 1 for winter admission. (Contact the department office for information.)

Students interested in applying for Departmental Admission are encouraged to contact a Department Adviser well in advance of expected admission. Imposed deadlines are strictly enforced.

The Pre-Occupational Therapy Curriculum is designed for those students considering Occupational Therapy as a professional choice. The courses recommended for Pre-Occupational Therapy are those designed to meet Department admission criteria and University requirements including General Education and Physical Education (See Occupational Therapy-Program for complete list).

Field Work

Each student is required to successfully complete two three-month experiences. One must be in a medical model and one in a community setting. To be eligible for enrollment in field work, the student must have a cumulative grade point hour ratio of 2.00 or above with no grades less than "C" in required and prerequisite courses. In addition, the student shall receive satisfactory recommendations from departmental faculty as to general competency in assuming professional responsibilities appropriate for field work experience. Students will receive a "C" for credit upon successful completion of the field work experience based on a passing grade on the FWE (Fieldwork Evaluation) Report. Students who withdraw or fail field work will receive "NIC", no credit. Based on an interview with the student, a different field work experience may be rescheduled. Students who fail fieldwork will not be allowed to continue in this program without an appeal process and demonstration of appropriate competencies through a remedial procedure. An optional length field work experience may be scheduled pending available openings.

Remediation Policy

Remediation and Continuance Policy and Procedures
1. A student will complete all required departmental courses and all required prerequisites with a grade of "C" or better.
   - Procedure: Following receipt of the first grade below a "C", students will be notified by the department chairperson in writing reminding them of policy statements for continuation and will be invited to talk with their respective adviser.
2. A student can repeat only one required departmental course and that course only once to attain a grade of "C" or better.
   - Procedure: Following receipt of the second grade below a "C", students will be notified by the department chairperson in writing informing them they will be placed on departmental probation following the grade lower than "C".
   - Procedure: Following receipt of the second grade below a "C", students will be notified by the department chairperson in writing informing them they will be placed on departmental probation and advising them to initiate a remediation conference before the end of the next drop/add period or be in jeopardy of being dismissed from the program.
3. A student who fails to attain a grade of "C" or better in a professional or required prerequisite course will be placed on departmental probation following the grade lower than "C".
   - Procedure: Following receipt of the second grade below a "C", students will be notified by the department chairperson in writing informing them they will be placed on departmental probation and advising them to initiate a remediation conference before the end of the next drop/add period or be in jeopardy of being dismissed from the program.

Miscellaneous

The following courses are offered on a credit/no credit basis only: OT 236, 490, 491. Materials fees are required for some courses.

Program

Bachelor of Science Degree

Minimum hours required for this curriculum ............................................. 128

Course Requirements:
All courses listed under A. through D. are the recommended courses for all Pre-Occupational Therapy students. (See Department Adviser for further information.)

General Education Requirements .................................................. 35

Physical Education Requirements ................................................ 2

Courses Required for Admission

1. Behavior Sciences (Psychology, and Sociology or Anthropology) ........... 9
2. Basic course in Biology or Biomedical Sciences (BMED 112 or equivalent) .... 3-4
3. Normal Growth and Development (covering the Life Span) (OT 225 or equivalent) .... 3
4. English Composition ........................................................................ 3
5. Satisfactory completion of all Basic Skills Remediation Requirements.
Occupational Therapy Courses (OT)

OT 202 Orientation to Occupational Therapy 2 hrs.
Orientation to the profession of occupational therapy. Will include the history of the profession, current professional roles, issues and trends in the field.

OT 200 Professional Language and Interactions 3 hrs.
A basic course which includes medical terminology, techniques of information gathering, and professional interpersonal communications. Prerequisite: OT major.

OT 225 Growth, Development, and Aging 3 hrs. Fall, Winter
A study of physical, mental, emotional, and social patterns of growth, development, and aging. Aspects to be given special emphasis for the occupational therapy student will be motor development, physiology of aging, growth patterns, and functional development in any of the above aspects.

OT 236 Independent Pracicum 2 hrs.
Participation in a health service or agency to provide experience with hospital procedure and an orientation to patient groups. A daily log is required. Students must submit a proposal for the course for departmental approval prior to registration. Prerequisite: OT major.

OT 312 Adapted Activities 4 hrs.
Includes basic tool use, instruction in core craft and group activities including leather, ceramics, copper tooling, recreation, games and music. Emphasis placed on activity analysis and performance processes. Class demonstration

OT 311 Introduction to Theory and Treatment Process I 3 hrs.
This course is designed to introduce the student to the development of a theory and demonstrate the relationships of theory to current professional practice. Students will learn and apply occupational therapy theory, assessments, and techniques to treatment programs for clients with physical dysfunction accompanied by psychosocial problems. Emphasis is on an integrative approach and holistic intervention. Prerequisites: OT 344 or OT 350.

OT 312 Adapted Activities 4 hrs.

OT 313 Occupation Theory Pracicum I 3 hrs.
This course is designed to introduce the student to the development of a theory and demonstrate the relationships of theory to current professional practice. Students will learn and apply occupational therapy theory, assessments, and techniques to treatment programs for clients with physical dysfunction accompanied by psychosocial problems. Emphasis is on an integrative approach and holistic intervention. Prerequisites: OT 344, OT 350, or concurrent.

OT 314 Life Skills: Assessment and Treatment 2 hrs.
Examination of the role of occupational therapists in the education, evaluation, and training of life skills. Prerequisites: OT major and OT 344.

OT 351 Introduction to Theory and Treatment Process I 3 hrs.
This course is designed to introduce the student to the development of a theory and demonstrate the relationships of theory to current professional practice. Students will learn and apply occupational therapy theory, assessments, and techniques to treatment programs for clients with physical dysfunction accompanied by psychosocial problems. Emphasis is on an integrative approach and holistic intervention. Prerequisites: OT 350 or concurrent.

OT 352 Investigation to Theory and Treatment Process II 2 hrs.
Companion course to Introduction to Theory and Treatment Process I. Application of occupational therapy theory, assessment, and treatment programs for clients with psychosocial problems accompanied by physical dysfunction. Emphasis is on the integrative and holistic approach to client intervention. Prerequisites: OT 351 or concurrent.

OT 354 Personal and Environmental Adaptations 3 hrs.
This course will cover core components of assessment including process and procedures and testing situations. An integrated approach to psychological and physiological assessments throughout the lifespan is included. Students will learn the evaluative process, how to critique instruments and the research methodology used to develop assessments. Selected assessments are covered including their administration and interpretation. Prerequisite: OT 331.

OT 355 Assessment Principles and Instruments 3 hrs.
This course will cover core components of assessment including process and procedures and testing situations. An integrated approach to psychological and physiological assessments throughout the lifespan is included. Students will learn the evaluative process, how to critique instruments and the research methodology used to develop assessments. Selected assessments are covered including their administration and interpretation. Prerequisite: OT 331.

OT 356 Research Methodology 3 hrs.
A course designed to utilize methodologies of research and apply them to occupational therapy practice. Students will critically analyze research literature and write a research proposal. Prerequisite: Senior status and OT 203.

OT 451 Applied Theory and Treatment Process 2 hrs.
This course is designed to provide clinical experience in community agencies in order to develop skill in the utilization of assessments, the development of treatment plans, the implementation of treatment plans, and the evaluation of the patient’s growth related to the treatment plan. Emphasis is directly related to the content of OT 451. Prerequisites: OT 451.

OT 460 Research Methodology 3 hrs.
A course designed to utilize methodologies of research and apply them to occupational therapy practice. Students will critically analyze research literature and will write a research proposal. Prerequisite: Senior status and OT 203.

OT 470 Functioning of the Older Adult 3 hrs. Fall, Winter
The objective of this course is to provide understanding of the basic physiological and psychological changes characteristic of human aging and pathological conditions which have consequences for function and behavior.

OT 480 Administration-Supervision-Counselation 3 hrs.
This course will cover the basic principles of administration in Occupational Therapy including planning, organizing, staffing, directing, and controlling. Administrative skills including leadership, decision-making and professional writing; health care delivery systems; and the consulting process and its relationship to the delivery of OT services will be covered. Prerequisite: Senior status and OT major.

OT 490 Field Work Level II 3 hrs.
A three-month affiliation in hospitals or community agencies providing the student experience in designated areas of occupational therapy. Departmental consent only. Prerequisite: Completion of all basic professional course work and prerequisite courses.

OT 491 Field Work Level II 3 hrs.
A three-month affiliation in hospitals or community agencies providing the student experience in designated areas of occupational therapy. Prerequisite: Graduate Students—completion of all basic professional course work and prerequisite courses; undergraduate students—completion of all academic work.

OT 530 Sensory Integration and The Child 3 hrs.
Study of theoretical principles and their application to evaluation and treatment of the child with sensory integration dysfunction. Students will observe and participate in screening and evaluation of children, and they
will design treatment plans for selected clients. Prerequisites: OT 335, OT 351, OT 353 or concurrent; or OTR, RPT, or consent.

OT 597 Studies in Occupational Therapy
2-4 hours
Examines selected topics within the field of Occupational Therapy. Topics considered will vary from semester to semester. May be repeated for credit. Prerequisites: Advanced OT major or departmental permission.

PHYSICIAN ASSISTANT PROGRAM

Program Staff
James B. Hammond, Director
Sherrell Busboom, Clinical Coordinator
Jeanne Fielder, Clinical Coordinator
Samuel G. Shorter, Clinical Coordinator

The Physician Assistant Program is a professional program which educates assistants to primary care physicians. These assistants perform many of the tasks required in a medical practice and free the physician to spend more time on the difficult and complex matters of medicine. Through the appropriate use of a physician assistant, patients receive more individualized quality care.

Graduates of the program are awarded the Bachelor of Science in Medicine degree and are eligible to sit for the National Certifying Examination for Physician Assistants prepared by the National Board of Medical Examiners (NBME).

Western's Physician Assistant Program has been fully accredited by the Committee on Allied Health Education and Accreditation (CAHEA) since its inception. A major goal of the Program is to increase the availability of health care services to underserved areas.

As a member of the health care team, the physician assistant works under the supervision and direction of a licensed physician. Together they form a team to better meet the time constraints and needs of the patients. To accomplish this, students are provided a wide variety of opportunities and learn to (1) obtain a comprehensive health history; (2) perform a complete physical examination; (3) record the data; (4) perform uncomplicated diagnostic laboratory tests; (5) understand and use data received from all major diagnostic laboratory tests; (6) prepare a tentative diagnosis and treatment plan; (7) perform certain basic treatment procedures and (8) make an appropriate clinical response to commonly encountered emergency care situations.

Admission

Requirements

The PA Program has the following requirements for application to the professional curriculum. No application missing one or more of these requirements will be considered for admission.

1. A minimum of 1,000 hours (six months) of health care experience (not including education). Many types of experiences are acceptable. The Program staff will answer questions about applicability of health care experiences.

2. A minimum of sixty (60) semester hours of college credits, including CHEM 101 and CHEM 120 or equivalents.

3. University requirements for admission.

Recommended

1. Life science credits in the range of 15-20 semester hours, including the Chemistry requirements.

2. Humanities, social and behavioral sciences and the arts are positive selection factors.

Application Procedure

Admission to the professional curriculum of the PA Program requires separate application. Application forms may be obtained from the PA Office in Bigelow Annex.

Selection Process

The selection committee has established the following policies for selection to the junior year.

The three-step process consists of:

1. Review of application data: each application is reviewed by at least three members of the selection committee and the candidates are identified for interviews.

2. Interviews: candidates are scheduled for separate required interviews.

3. Final selections: the selection committee reviews all the data including the results of the interviews and recommends candidates for admission.

Students are admitted to the program at the beginning of the Junior (Pre-Clinical) academic year each fall semester. Because of the keen competition for class positions, priority is given to those candidates who present the best overall profile. Selection is based on all aspects of the academic record, assessment of previous health care experience, evidence of good character, and the possession of those attitudes and aptitudes required for the effective health care professional.

The Curriculum

This upper division curriculum is divided into two parts. The first part is devoted to the basic medical sciences upon which the theoretical concepts of disease can be built. Subjects covered in this portion include anatomy, biochemistry, pharmacology, microbiology, and pathophysiology. During this time the students begin instruction in the clinical areas such as interviewing, history taking and physical diagnosis.

During the senior or clinical year, each senior PA student enrolls in six required clinical rotations including: community and mental health, family medicine, internal medicine, surgery, pediatrics and gynecology, and pediatrics. In addition, each senior student is permitted one elective clerkship in any of the medical specialties.

Curriculum Requirements

1. All courses listed (104 hrs.) are required.

2. Students are required to obtain at least a grade of "C" in each course or they must undergo a prescribed academic review process to determine their continuance in the program.

3. Students are required to successfully pass a comprehensive examination in medical terminology at the start of the fall semester of their junior year.

4. Students must meet Intellectual Skills and Computer Literacy requirements.

Junior (Pre-Clinical) Year

Fall Semester

BMED 401 Principles and Techniques of Laboratory Diagnosis .................. 3
CHEM 206 Integrated Chemistry for PAs ....................................... 5
MDSC 301 Medical Terminology ............................................. 1
MDSC 303 PA History and Legislation Seminar ............................... 1
MDSC 304 Patient Evaluation ................................................ 3
MDSC 311 Gross Human Anatomy .......................................... 5
MDSC 317 Introduction to Medicine ......................................... 3

Winter Semester

BMED 319 Clinical Physiology for PAs .................................... 5
MDSC 314 Patient Evaluation II ............................................... 3
MDSC 327 Emergency and Internal Medicine .............................. 6
MDSC 410 Pharmacology I for PAs ......................................... 4
Spring Session
MDSC 306 Pathophysiology I 2 hrs.
MDSC 324 Patient Evaluation III 1 hr.
MDSC 387 Pediatrics Seminar 3 hrs.
MDSC 409 Allergy 1 hr.
MDSC 413 Dermatology 1 hr.
MDSC 302 General Surgery 2 hrs.

Summer Session
MDSC 308 Clinical and Diagnostic Skills 1 hr.
MDSC 312 Community and Mental Health 1 hr.
MDSC 316 Pathophysiology II 2 hrs.
MDSC 334 Patient Evaluation IV 1 hr.
MDSC 478 Obstetrics and Gynecology 3 hrs.
MDSC 412 Pharmacology II for PAs 2 hrs.

Senior (Clinical) Year
Fall Semester, Winter Semester, and Spring Session
MDSC 3307 Techniques of Patient Counseling 1 hr.
MDSC 422 Pediatrics Clerkship 4 hrs.
MDSC 423 Obstetrics and Gynecology Clerkship 4 hrs.
MDSC 433 Obstetrics and Gynecology Seminar 1 hr.
MDSC 424 Internal Medicine Clerkship 4 hrs.
MDSC 434 Internal Medicine Seminar 2 hrs.
MDSC 425 Surgery Clerkship 4 hrs.
MDSC 435 Surgery Seminar 2 hrs.
MDSC 426 Community and Mental Health Clerkship 4 hrs.
MDSC 436 Community and Mental Health Seminar 2 hrs.
MDSC 427 Elective Clerkship 4 hrs.
MDSC 438 Elective Seminar 2 hrs.

Summer Session
MDSC 427 Family Medicine Preceptorship 6 hrs.
MDSC 437 Family Medicine Seminar 2 hrs.

Physician Assistant Program Courses (MDSC)
MDSC 301 Medical Terminology 1 hr.
The language of medicine—through an understanding of the Greek and Latin derivations and construction of medical terms, the student learns the vocabulary of the health-related professions.

MDSC 302 General Surgery Lecture 2 hrs.
This course presents topics related to general surgery including acute, chronic and emergent problems. Topics will include pre/post operative care techniques, nutrition, fluid and electrolyte balance as well as presentations on selected surgical procedures and their management. Prerequisites: MDSC 301 and PA curriculum.

MDSC 303 PA History and Legislation Seminar 1 hr.
Principle events in the history of the Physician Assistant profession are described. Legislative history and current developments are discussed. Additional topics include: important of professional associations, hospital privileges, PA/physician agreements, and the process for interviewing, resume writing, and other preparation for employment.

MDSC 304 Patient Evaluation I 3 hrs.
The first in a series of four courses is presented sequentially through the pre-clinical year. It provides instruction in the systematic evaluation of patient problems through history taking and physical examination. Lectures, demonstrations, student examination of patients, and critique of those examinations are included among the instructional techniques. Emphasis is placed upon techniques of interviewing and physical examination that insure the acquisition of an accurate data base that is essential for diagnosis and the preparation of the treatment plan. The student learns how to record the data and orally present a complete data base accurately and professionally. Both the traditional and problem oriented medical records are studied.

MDSC 306 Pathophysiology I 2 hrs.
These courses include the common diseases, how they present and some of the commonly accepted treatments. Emphasis is placed upon the significance of laboratory findings in diagnostic processes.

MDSC 307 Techniques of Patient Counseling 1 hr.
An introduction to patient counseling with emphasis upon interviewing techniques, current theories of personality, psychopathology and including such specialized techniques as methods of crisis intervention, counseling patients with substance abuse problems, coping problems, sexual dysfunction problems. In addition, psychotherapeutics counseling is discussed.

MDSC 308 Clinical and Diagnostic Skills 1 hr.
This course gives PA students experience in various clinical skills such as suturing, administration of injections, surgical gowning procedures and aseptic techniques. Also included is a series of lectures on common diagnostic laboratory procedures, the indication for, interpretation, and clinical significance of results. Students are given a basic knowledge of clinical radiology.

MDSC 311 Gross Human Anatomy 5 hrs.
This course is designed to help the Physician Assistant student achieve a sound understanding of the structure of the human body through lectures, discussions and laboratory cadaver dissection. Topographical and regional anatomy as applied to clinical medicine are stressed.

MDSC 312 Community and Mental Health Lecture 1 hr.
This course introduces topics in community and mental health that range from descriptions of community resources to diagnostic categories and terms in the field of psychiatry. Emphasis will be placed on acquainting students with a wide range of clinical presentations, referral options, and therapeutic guidelines related to the role of the Physician Assistant in the health care system. Prerequisites: MDSC 311 and PA curriculum.

MDSC 314 Patient Evaluation II 3 hrs.
Second in a series of courses beginning with 304.

MDSC 316 Pathophysiology II 2 hrs.
Continuation of 306

MDSC 317 Introduction to Medicine 3 hrs.
This first in a series of courses which present the etiology, clinical presentation of signs and symptoms, diagnosis and treatment of common medical disorders, emphasizing socio-cultural factors, and patient needs while presenting systematic clinical problem solving and professional issues in the field of medicine as they relate to the Physician Assistant.

MDSC 324 Patient Evaluation III 1 hr.
Third in a series of courses beginning with 304.

MDSC 327 Emergency and Internal Medicine Lecture 6 hrs.
In this course, physician and PA lecturers explore the etiology, presentation, diagnosis and treatment of medical disorders commonly encountered by adults, including emergent and nonemergent conditions in each body system, with emphasis on clinical problem solving. Prerequisite: MDSC 317 and PA curriculum.

MDSC 334 Patient Evaluation IV 1 hr.
Fourth in a series of courses beginning with 304.

MDSC 337 Pediatric Medicine Lecture 3 hrs.
This course deals with a systematic developmental approach to the etiology, clinical presentation of signs and symptoms, diagnosis and treatment of common medical disorders in pediatrics, topics areas such as human growth and development, neonatal problems, infectious diseases of childhood and selected disorders of each body system. Prerequisite: MDSC 317 and PA curriculum.

MDSC 347 Obstetrics/Gynecology Lecture 3 hrs.
This course introduces the student to women’s health care through inquiry into the fields of obstetrics and gynecology, knowledge of normal processes and abnormal conditions, and increased awareness of the unique needs of women seeking health care. Prerequisite: MDSC 317 and PA curriculum.

MDSC 409 Allergy 1 hr.
This course covers basic theoretical and proven concepts of allergy and immunology. Emphasis is placed on clinical recognition of allergic symptoms, importance of accurate etiologic diagnosis and the relationship between pathophysiological changes and their corrections by proper therapy.

MDSC 410 Pharmacology I for PAs 4 hrs.
This course emphasizes the general principles of pharmacology as a basis for the rational clinical use of drugs. The course is comprehensive but pragmatic. Factors affecting drug action, such as rates of absorption, metabolism and excretion are discussed. Mechanism of action is covered. The principle thrust is to acquaint the student with drugs commonly used in therapy, their side effects and toxic manifestations.

MDSC 412 Pharmacology II for PAs 3 hrs.
This course deals with the practical aspects of pharmacology as they relate to primary-care Physician Assistant. This is a continuation of Pharmacology I.

MDSC 413 Dermatology 1 hr.
This course provides an introduction to the general field of dermatology including normal structure and function of the skin, techniques of history taking and examination, recognition of common skin diseases, and basic concepts of treatment.

MDSC 422 Pediatric Rotation 4 hrs.
During this six-week rotation emphasis is placed on normal variations of growth and
This six-week rotation is designed to provide an opportunity for the PA Student to develop proficiency in the special history taking and examination of the Obst/Gyn patient. While on the obstetric service, the management principles of pregnancy, labor and delivery, including prenatal and postnatal complications are taught. The gynecology emphasis is placed on exposing the students to methods and programs relating to cancer detection, venereal disease and birth control. Emphasis is on those obstetric and gynecologic disorders most commonly encountered by the primary care physician assistant.

**MDSC 424 Obstetrics and Gynecology Rotation**
4 hrs.
A six-week rotation during which the indications, limitations, and methods of performing the necessary diagnostic procedures and therapeutic measures used in the treatment of general medical disorders are reviewed. Patient problems and conditions as experienced in the outpatient clinic, emergency room, and the hospital are covered in this course. The student, through the collection and review of historical, physical and laboratory data, develops and understandings of patient evaluation and treatment.

**MDSC 425 General Surgery Rotation**
4 hrs.
This six-week surgical rotation is designed to prepare the student to function as an assistant to the generalist. The student’s time is divided between out-patient and in-patient surgical services. Students perform admission histories and physicals and participate in discussions regarding diagnostic tests necessary for proper patient care. The student then follows through preoperative preparations, assists in surgery and helps in postoperative care. In this way, the student learns to assist not only in the management of routine surgical cases, but also in the treatment of various complications.

**MDSC 426 Community and Mental Health Rotation**
4 hrs.
This is a six week rotation which emphasizes common problems found in primary care settings which involve mental stresses and mental illness. The objectives center around proper data collection, problem recognition, basic counseling techniques and referral mechanisms. There is also emphasis on patient’s legal rights and common treatment modalities. Experience is gained with both pediatric and adult patients and with both outpatient and in-patient situations. The student becomes acquainted with the community and mental health framework including major types of problems encountered by patients in the community and the services provided by agencies which care for client’s needs.

**MDSC 427 Family Medicine Preceptorship**
6 hrs.
Family Medicine is an eight-week rotation during the last two months of the program prior to graduation. It provides an opportunity for students to bring the knowledge gained on the previous rotations to bear on primary care. Emphasis is on proper data collection through history and physical examination, formulation of accurate problem lists, accurate investigation and treatment plans. Students are evaluated on their professional manner. Specific objectives include recognition and treatment of problems encountered in family medicine. Emphasis is placed on acquaintance with available community resources such as child welfare, mental health, public health, welfare, drug and alcohol abuse crisis centers, etc. Students assist physicians in medical and surgical procedures. Emphasis is also placed on counseling patients and family members about medical problems and health problems. This includes areas of preventive medicine in health education.

**MDSC 428 Elective Rotation: Variable Title**
2-6 hrs.
This six-week rotation is intended to cover the many sub-specialties of medicine including emergency medicine, dermatology, otorhinolaryngology, ophthalmology, urology, orthopedics, cardiology and oncology. The student may elect to take any combination of these specialties to fill the six-week period. In addition to the specialties, the student may elect to seek further experience in one of the other main specialties such as community and mental health, surgery, internal medicine, ob/gyn, pediatrics or family practice.

**MDSC 432 Pediatrics Seminar**
2 hrs.
During the six week clinical rotation in pediatrics, the student reviews selected readings which include major areas of pediatrics: newborn care, disorders of the newborn, infectious diseases of the newborn, musculoskeletal system, neurologic system, infectious diseases, poisonings, child neglect, psychological aspects of childhood, digestive system disorders. Within these topics emphasis is placed on etiology, signs and symptoms, clinical presentation, diagnosis and management, common pediatric problems. Emphasis is also placed on preventive medicine, care and assessment of well children, immunizations, patient and parent education.

**MDSC 433 Obstetrics and Gynecology Seminar**
2 hrs.
This is a self directed seminar in obstetrics and gynecology which accompanies the obstetrics and gynecology rotation. The student must complete reading assignments in obstetrics and gynecology. Here again the emphasis is on common problems in obstetrics and gynecology which physician assistant would be involved in, including preventive medicine and patient education.

**MDSC 434 Internal Medicine Seminar**
2 hrs.
This is a self directed seminar which accompanies the internal medicine clinical rotation. The reading list centers on the etiology, clinical presentation, diagnosis and management of common problems in adult medicine.

**MDSC 435 Surgery Seminar**
2 hrs.
This is a self directed seminar in surgery which accompanies the clinical rotation in surgery, and deals with the etiology, clinical presentation, diagnosis and management of common problems of surgery.

**MDSC 436 Community and Mental Health Seminar**
2 hrs.
This is a directed self study seminar which accompanies the community and mental health clinical experience and which centers on common problems frequently encountered by patients and emphasizes their recognition and proper treatment. It also emphasizes referral mechanisms and utilization of community resources. The problems include such things as marriage and family counseling, alcohol and drug abuse, anxiety problems, learning disabilities, personality disorders as well as depression and schizophrenia.

**MDSC 437 Family Medicine Seminar**
2 hrs.
This is a self directed seminar in family medicine which accompanies the clinical experience in family medicine. The student is provided with a required reading list which focuses on problems commonly found in primary care in family medicine. These include knowledge of the family structure and function, family dynamics, preventive medicine, periodic health screening, utilization of community resources and common medical problems in dermatology, orthopedics, ophthalmology, internal medicine, nutrition, allergy, immunology, urology, neoplastic disorders, emergency problems, surgery, pediatrics, obstetrics and gynecology.

**MDSC 438 Elective Seminar: Variable Title**
2 hrs.
This independent study seminar takes place during the elective rotation. Through readings and discussion with the precepting physician, emphasis is placed on academic knowledge of the elected area of medicine. Prerequisite: PA curriculum.
The School of Social Work offers both an undergraduate and graduate professional program leading to a B.S.W. and M.S.W., respectively. Both programs are accredited by the Council on Social Work Education. The undergraduate professional program is designed to prepare students for beginning level social work practice, to provide preparation for graduate training in social work, and to offer social welfare content as part of the student's Liberal Arts Education. The graduate-professional program is designed to educate students for social treatment and planning/administration positions in the field of social welfare.

Students enrolled in the undergraduate social work curriculum are required to complete a major consisting of 36 hours. A minor consisting of a minimum of 15 hours is offered for students in other curricula. In addition, the School of Social Work participates in an Undergraduate Program can be found in the General Education 35 hrs. General Education 35 hrs.

Program

Minimum hours required for graduation: 122 hrs.

Course Requirements: 122 hrs.

General Education: 35 hrs.

Requirements for the undergraduate Social Work Major: 32 hrs.

*Completed applications are due at least 15 weeks prior to the semester in which field work is to be taken.

210 Social Work Services and Professional Roles

300 Social Welfare as a Social Institution

350 Individual and Family Behavior

351 Group, Community and Organization Behavior

400 Social Work Practice: The Problem Solving Process

401 Social Work Practice: Values and Problem Analysis

402 Social Work Practice: Policy Analysis and Organizational Context

410 Field Experience and Seminar I

411 Field Experience and Seminar II

433 Dynamics of Race and Culture for Social Work Practice

Note: Following completion of SWRK 210, students must be accepted into the social work curriculum to complete the major.

Required Research Component SOC 382

Methods of Sociological Inquiry: 5 hrs.

Guided Interdisciplinary Minor: 22-24 hrs.

Includes:

- COM 170 Interpersonal Communications
- ENGL 305 Practical Writing

Any one of the following:

- BIOL 101 Animal Biology
- BMED 112 Introduction to Biomedical Science
- ECON 100 Contemporary Economic Problems
- ECON 313 Poverty and Economic Security

Any one of the following:

- PSI 202 State & Local Government
- PSI 300 Urban Politics

Any one of the following:

- PSY 150 Introduction to Human Behavior
- PSY 150 Child Psychology
- PSY 250 Abnormal Psychology

Any one of the following:

- SOC 210 Modern Social Problems
- SOC 300 Sociological Theory
- SOC 352 Introduction to Social Gerontology
- Physical Education: 2 hrs.

Electives: 24-26 hrs.

Students are encouraged to elect additional courses in any area of their specific interest. Particularly recommended in preparation for social work practice are: anthropology, communication, economics, history, philosophy, political science, psychology, sociology. The following Social Work courses are also available as electives for undergraduate students:

100 Introduction to Social Services

464 Problem Solving in Gerontology

465 Correctional Process and Techniques

512 Social Policy and Service Delivery in Selected Problem Areas

513 Social Welfare and the Law

561 Community Development in Selected Countries

562 Community Organization in Urban Areas

563 Social Work Concepts in Rehabilitation

564 Special Studies in Social Welfare Practice

566 Social Service in the Schools

567 Institutional Corrections

568 Non-institutional Corrections

569 Juvenile Justice

572 Community Agency Resources

579 Teaching Apprenticeship in Selected Social Work Curricula

598 Readings in Social Work

The student must satisfy the requirements for the B.S.W. degree.

Any student who fails to meet the following criteria will be notified in writing by the School of Social Work undergraduate adviser that he/she will be in jeopardy of being dropped from the social work major.

1. The student will complete all required social work major courses with a grade of "C" or better.

2. The student can repeat only one required social work major course to obtain a grade of "C" or better and such a course may be repeated one time only.

The School may refuse to permit a student to continue in the curriculum if at any time it is deemed that the student is exhibiting a pattern of professionally incompetent behavior as determined by the standards of the National Association of Social Work Code of Ethics governing social workers and their professional relationships with those they serve, with their colleagues, with their employing agency, and with the community. Further details on this policy and procedure may be obtained from the School of Social Work undergraduate adviser.

Social Work Minor

15 credit hours

210 Social Work Services and Professional Roles

300 Social Welfare as a Social Institution

391 Physical Education

Three of the following social work courses: 350, 351, 433, 464, 465, any 500 level social work course (Excluding SWRK 572)

Social Work Courses (SWRK)

(Courses described in italics are approved for General Education.)

SWRK 100 An Introduction to Social Services

3 hrs.

A descriptive course covering knowledge content relating to operation of social service programs. It is a study of the philosophy and value base for these services. Observation visits to field agencies, films, guest lectures and other lab and volunteer experiences may be arranged with the instructor to promote appreciation of knowledge content.

SWRK 210 Social Work Services and Professional Roles

3 hrs.

This course introduces students to the social work profession, its value base and code of...
ethics. The course provides an examination of professional social work roles and the profession's responsibilities in the delivery of social work services to minority and majority groups at various levels of government and within a variety of settings. Required for social work majors and minors. Prerequisite: Sophomore status or consent of instructor.

SWRK 300 Social Welfare as a Social Institution
3 hrs.
Course objective is to enable the student to develop a perspective on the growth of welfare services and their relationship to welfare needs. It is a critical examination of the forces (e.g., social, economic, historical, political, and philosophical) that have led to the institutionalization of social welfare. Prerequisites: SWRK 210 and junior status.

SWRK 350 Social Work Concepts in Individual and Family Behavior
3 hrs.
Provides the student with a basic understanding of human behavior, related to human developmental processes, ego, psychology, learning theory, and family social and cultural dynamics. Examines socialization and its influence on human behavior. Identifies significant physical, mental, emotional, social and cultural factors which affect the development of the personality, biological and family systems. Prerequisite: SWRK 210 and junior status.

SWRK 351 Social Work Concepts in Group, Community and Organizational Behavior
3 hrs.
Provides the student with an understanding of human behavior related to small group process, role theory, communications theory, social conflict constructs, systems concepts, formal organization and community dynamics. Examines the interplay of various forces which affect the development of social groups, communities, and organizations, and the effects of these interdependent systems on the client system. Prerequisites: SWRK 210, SWRK 350, and junior status.

SWRK 400 Social Work Practice: The Problem Solving Process
3 hrs.
This course provides the problem solving process as the conceptual framework for social work practice. The student achieves a beginning level of minimal competence in the following: identifying problems at various system levels, recognizing and seeking varying characteristics, group strengths and process, and evaluation of their effectiveness. Students learn to identify and appraise interventions in reported and simulated social work situations, to select and use interventive behaviors in simulations, and to evaluate the effectiveness of their own interventive behaviors in simulated and real situations. Prerequisites: Senior status, completion of SWRK 400, and enrollment in SWRK 410 concurrently, majors only.

SWRK 402 Social Work Practice: Policy Analysis and Organizational Context
3 hrs.
This course combines conceptual analysis and training in practice skills. It focuses on the effects of social policy and organizational context on social work practice. It examines the basic processes of policy development and the relationship between policy, ideology, and values. It pays particular attention to the impact of social policy on human service organizations, analyzing the effects of specific policies on workers, clients, and organizational structure and goals. It helps students develop skills for effective functioning in the organizational environment, including organizational change and utilization of organizational resources for effective service delivery. Prerequisites: Senior status, completion of SWRK 401, and enrollment in SWRK 411 concurrently.

SWRK *410 Field Experience and Seminar I
4 hrs.
Two hundred and twenty-five (225) clock hours in the field and fifteen (15) hours in a campus-based seminar. In a social work or allied service agency, students develop a working knowledge of the agency's functions, structure and processes and its service provider role within a total community. Students apply knowledge and develop skills in problem assessment and goal formulation within the context of social work values. Prerequisites: Senior status, submission of field experience application to the Director of Field Education at least fifteen (15) weeks prior to the semester field work is to be taken. Prerequisites: approval of a campus-based schedule so that the student is in a field agency on Tuesdays and Thursdays of each week; concurrent enrollment in SWRK 401 and enrollment in SWRK 411 the following term, majors only.

SWRK *411 Field Experience and Seminar II
4 hrs.
A continuation of SWRK 410. Two hundred and twenty-five (225) clock hours in the field and fifteen (15) hours in a campus-based seminar. Students engage in social work interventions and practice interventive behaviors in solving problems with individuals, groups, organizations and/or a community. Prerequisites: Senior status, completion of SWRK 401 and 410 and concurrent enrollment in SWRK 402. Field experience application not required if student submitted one for SWRK 410. Arrangements of a campus-based schedule so that the student is in field agency on Tuesday and Thursday of each week, majors only.

NOTE: Completed applications for 410 and 411 are due at least 15 weeks prior to the semester field work is to be taken.

SWRK 433 Dynamics of Race and Culture for Social Work Practice
3 hrs.
Focus is upon ethnic/racial groups who are among social welfare consumer groups and social work clientele. Racial/cultural characteristics, group strengths and weaknesses, group priorities and experiences in the context of social welfare and social work will be examined. Implications of ethnic factors for social work practice, social planning, and social work education will be explored. Prerequisite: Consent of instructor.

SWRK 464 Problem Solving in Gerontology
3 hrs.
This course provides the student with information about social welfare programs, both institutional and non-institutional, which are available to our aged population. The student is introduced to different approaches to service delivery and interventive problem solving techniques utilized by professional social workers in working with minority and majority aged population. Open to social work students and students from related professional disciplines with consent of instructor.

SWRK 465 Correctional Process and Techniques
3 hrs.
An overview of the correctional process as it can operate in probation, parole and parole to alter the criminal behavior patterns of legally defined offenders. A broad perspective is employed based on existing criminological theory and accumulated knowledge of the phenomenon of crime and deviancy. Selected techniques for correctional behavior modifications are studied in relation to a typology of normative deviancy in terms of etiology and rehabilitation. Prerequisite: Consent of instructor.

SWRK 512 Social Policy and Service Delivery in Selected Problem Areas
3 hrs.
Intensive study in selected field of service specialization and social problem areas. Attention is focused on learning about the major social policy issues associated with a particular service or problem area. Specific topics will be announced each semester. Prerequisite: Open only to senior undergraduates and graduate students.

SWRK 513 Social Welfare and the Law
3 hrs.
The legal bases of organized social welfare and social work practice are examined through the study of selected examples of social legislation and judicial decisions, the legislative process, development of administrative regulations and court organization. Illustrative case studies are used to demonstrate how social workers can manage within the restrictions and opportunities presented by legal institutions and practices in social and individual case situations. Prerequisite: Consent of instructor.

SWRK 561 Community Development in Selected Countries
3 hrs.
This course is intended to provide basic information needed in understanding community life in developing countries. It places emphasis on the history and philosophy of community development in the context of differential socio-economic systems. Includes evaluation of professional analysis and administrative problems involved in implementing programs. Prerequisite: Consent of instructor.

SWRK 562 Community Organization in Urban Areas
3 hrs.
Social welfare planning and social action methods are studied as approaches for preventing and resolving aspects of social problems in medium and large size urban communities. Emphasis is placed on the organizing of neighborhood and consumer groups for social interaction and improvement of community conditions. Prerequisite: Consent of instructor.

SWRK 563 Work Concepts in Rehabilitation
3 hrs.
Application of social work problem solving concepts to social psychological problems in the broad field of physical and mental rehabilitation. Both individualized services and programmatic implications are given consideration. Open to M.S.W. students and students from related professional department with consent of instructor.
SWRK 564 Special Studies in Social Welfare Practice
1-4 hrs.
Study of selected topics related to the theory and practice of social welfare activities and endeavors. Focus will be on roles of human service workers and methodologies utilized in these roles in a range of social welfare areas. Specific topics will be announced. Prerequisite: Consent of instructor.

SWRK 566 Social Service in the Schools
3 hrs.
The role of the Social Worker in elementary and secondary schools and the necessary adaptations in the changes taking place in the educational scene are examined and evaluated. Problem solving approaches are given special attention within the structure and organization of the schools and their relationships with the surrounding community. The specific contributions of a school Social Worker as a helping person to the pupils, the school staff and the homes by various interventive means are explored. Prerequisite: Consent of instructor.

SWRK 567 Institutional Treatment of Offenders
3 hrs.
This is a seminar in correctional treatment which focuses on modern means of intervention in closed custody (institutional) settings. Available methods currently utilized to improve the social functioning of the imprisoned lawbreaker will be reviewed. Specific attention is directed at such role functions as correctional diagnostician, correctional counselor, program administrator, institutional parole officer, correctional officer, training school teacher, etc. The impact of custody, classification and prison programming will be examined in detail. Inadvertent products of total institutions on incarcerated inmates will be evaluated in terms of the inmate culture, prisonization and leadership roles. This will be applied to all types of correctional institutions (juvenile and adult, men and women, misdemeanant and felon). Visits to selected institutions will be arranged. Prerequisite: Consent of instructor.

SWRK 568 Non-institutional Treatment of Offenders
3 hrs.
This is a seminar in correctional treatment which focuses on modern means of intervention which emerge from local community resources directed at the improved social functioning of the identified lawbreaker. Specific attention is directed at the role functions relative to such correctional processes as probation, parole, half-way houses, community treatment centers and youth service facilities. Methods and techniques of service delivery to men and women, juveniles and adults, misdemeanants and felons will be analyzed. Visits to selected agencies will be arranged. Prerequisite: Consent of instructor.

SWRK 569 Juvenile Justice
3 hrs.
The course deals with the processing of offenders through the juvenile justice system with concentration on the philosophy and functioning of juvenile courts. Personal and organizational factors that are associated with or that determine offenders' passage through the juvenile court are examined. Prerequisite: Consent of instructor.

SWRK 572 Community Agency Resources
2 hrs.
A study of community agencies and resources for those concerned with family and personal problems. Emphasis is placed upon the availability of these resources and their effective use by business and industry, speech therapists, guidance counselors, teachers, etc. Not recommended for Social Work Students.

SWRK 597 Teaching Apprenticeship in Selected Social Work Curriculum Areas
1-4 hrs.
The course focuses on the development of educational skills for social workers through faculty directed participation in teaching activities in a selected social work course. Specific learning objectives and expectations for apprentices are arranged with participating faculty. This course may be taken a second time (1-4 credits, or a maximum of 8 total toward degree) by a student who wishes to increase teaching skills through applied practice in another social work area.

SWRK 598 Readings in Social Work
1-4 hrs.
Offers advanced students with good scholastic records an independent program of study, arranged in consultation with the instructor. One to four hours credit per semester.

SPECIALTY PROGRAM IN ALCOHOL AND DRUG ABUSE
Adviser: Dennis Simpson
Room B 304, Ellsworth Hall
Western Michigan University offers a program for the professional education of substance abuse specialists through the Graduate Specialty Program in Alcohol and Drug Abuse (SPADA). The departments of Biology and Biomedical Science, Counselor Education and Counseling Psychology, Psychology, Sociology, the School of Social Work, the Center for Public Administration Programs, and Occupational Therapy provide a multidisciplinary and interdisciplinary basis to the specialty. Courses are planned and taught by faculty from the contributing disciplines.

Students receive preparation for dealing with various aspects of substance abuse, including prevention, community education, treatment and rehabilitation, program management, and evaluation. Program graduates are employed by many public and private organizations, including social agencies, psychological clinics, family counseling services, alcohol and drug councils, hospitals, schools, and industries. Students receive their master's degree in their respective disciplines and, upon completion of the eighteen-hour SPADA program requirements, receive a Certificate of Specialty in Alcohol and Drug Abuse.

Further details regarding the specialty are available in The Graduate College Catalog.
Transfer Students

It is recommended that transfer students enroll at Western at the beginning of the first semester of the sophomore year. Those who enroll at a later stage may find that an additional semester of study will be required to complete the undergraduate curriculum.

Students interested in a major in speech pathology and audiology should contact the department office in the Speech and Hearing Center on the East Campus for an appointment with an undergraduate adviser. Because the sequencing of courses included in this major is critically important, students should seek academic advising from the department as soon as possible.

Speech and Hearing Processes Minor

The departmental minor in speech and hearing processes requires a minimum of fifteen hours of credit in speech pathology and audiology coursework. In consultation with a departmental adviser, students may design a minor option in areas such as speech-language-hearing science, audiology, speech-language-hearing disorders or other individually tailored sequences complementary to the student’s educational and vocational objectives. The only undergraduate courses specifically excluded from consideration in a minor sequence would be SPPA 400 and SPPA 401, both of which are clinical practicum registrations available only to departmental majors. Minor slips are required.

Integrated Language Arts Minor (ILAM)

The Department of Speech Pathology and Audiology is one of five participating departments in the Integrated Language Arts Minor—a program designed particularly for preservice elementary school teachers. The program provides opportunities for a wide variety of individual interests and alternative learning styles. For a full description of the program, consult its listing under the ‘Interdisciplinary Programs’ section of the College of Arts and Sciences or its listing in the College of Education or the College of Health and Human Services.

Speech Pathology and Audiology Courses (SPPA)

(Courses described in italics are approved for General Education.)

SPPA 200 Introduction to Communication Disorders 3 hrs.

This course provides a broad view of the nature of language as the primary means of human communication, its normal acquisition, the common disorders of speech, language and hearing, the social and emotional consequences of these disorders, and individual and societal ways of dealing with communication disorders.

SPPA 203 Normal Language Acquisition 3 hrs.

A study of normal language acquisition as a basis for investigating disordered language. The course involves a survey of the stages of language acquisition and a consideration of mechanisms of language acquisition. Prerequisite: Consent of instructor orLING 105 and PSY 194. Majors must take concurrently with SPPA 204 and SPPA 207.
SPPA 204 Phonetics
3 hrs.
A study of human speech sounds as a basis for understanding speech production and speech perception. Means of symbolizing speech sounds are provided to prepare the student for accurate transcription of speech behavior. Prerequisite: Consent of instructor or LING 105 and BMED 112 or BIOL 101. Majors must take concurrently with SPPA 203 and SPPA 207.

SPPA 205 Voice and Respiration
3 hrs.
A study of respiration and phonation, with emphasis on their function in speech production and speech perception. The course includes a detailed study of the structures involved, including neurology. Prerequisite: Consent of instructor or SPPA 203; SPPA 204; PHYS 106; MATH 110 or MATH 116. Majors must take concurrently with SPPA 206.

SPPA 206 The Auditory System
3 hrs.
A study of the structure and function of the hearing system, as related to communicative processes. The course includes a consideration of theories of speech perception. Prerequisite: SPPA 203; SPPA 204; PHYS 106; MATH 110 or MATH 116; or by consent of instructor. Majors must take concurrently with SPPA 205.

SPPA 207 Clinical Laboratory
1 hr.
During this registration the student is required to participate in structured observations of clinical activities including out-patient evaluations, ongoing therapy and multidisciplinary diagnostics. Must be taken concurrently with SPPA 203 and 204.

SPPA 260 Linguistic Development of the Child
2 hrs.
This course focuses on the communicative development of the child, birth through 12 years. The acquisition of language and other communication modes is viewed from a psycholinguistic orientation. Application to the teaching of the language arts is emphasized. Must be taken concurrently with ILAMED 260. Required for the Integrated Language Arts Minor.

SPPA 351 Phonemic Disorders
2 hrs.
A detailed study of the nature of phonemic disorders; orientation to clinical management. Prerequisite: SPPA 204.

SPPA 353 Fluency Disorders
2 hrs.
A detailed study of the nature of fluency disorders; orientation to clinical management. Prerequisite: SPPA 204 and SPPA 403.

SPPA 354 Language Disorders in Children
3 hrs.
A detailed study of the nature of communication problems associated with congenital or acquired impairment of language function in children; orientation to clinical management. Prerequisite: Consent of instructor.

SPPA 358 Disorders of Hearing: Identification and Measurement
3 hrs.
An introduction to the measurement of hearing and the field of audiology. The course includes an introduction to aural pathologies. Prerequisite: Consent of instructor or SPPA 205.

SPPA 369 Special Studies in Communication Disorders
2 hrs.
A survey of neuropathologies and structural deviations which result in communication disorders, including infantile cerebral palsy and cleft palate. Prerequisite: Consent of instructor.

SPPA 400 Practicum in Speech Pathology and Audiology I
2 hrs.
Clinical experience in the management of speech, language, and/or hearing disorders. Prerequisite: Consent of instructor or SPPA 205.

SPPA 403 Vocal Tract Kinetics
2 hrs.
A study of vocal tract kinetics and the neurological basis of speech. The course includes a detailed consideration of speech as the time-varying shaping of the vocal tract. Prerequisite: Consent of instructor or SPPA 205 and SPPA 206.

SPPA 550 Advanced Speech and Hearing Science
2 hrs.
Theories of speech production, reception and perception are considered in this course from the point of view of experimental phonetics and experimental audiology.

SPPA 551 Neuropathologies of Speech
2 hrs.
This course is concerned primarily with surveying selected communication disorders associated with neuropathologies.

SPPA 552 Communication Problems of the Aged
3 hrs.
This course is designed to acquaint the student with receptive and expressive communication problems common to older adults. Emphasis will be on the clinical management of characteristic organic speech disorders and impaired auditory functions associated with aging.

SPPA 554 Speech and Hearing Therapy in the Schools
2 hrs.
Study of clinical work with speech or hearing disordered children in the school setting.

SPPA 555 Hearing Measurement
2 hrs.
This course is designed to acquaint the student with principles, theories, and methods of hearing measurement which provide the basis for clinical and audiometric procedures.
The Graduate College offers a wide variety of programs leading to the master's, specialist, and doctoral degree.

The University has sixty master's degree programs. Master of Arts degrees are awarded in numerous programs in the following general categories within the College of Education: Counselor Education and Counseling Psychology, Curricula in Teaching, Early Childhood Education, Educational Leadership, Physical Education, Reading, Special Education, Teaching in the Community College, Teaching in the Elementary School, and Teaching in the Middle or Junior High School.

A number of other programs at Western also lead to the Master of Arts degree: Anthropology, Art, Biology, Blind Rehabilitation, Chemistry, Communication, Economics, English, Geography, History, Home Economics, Mathematics, Medieval Studies, Orientation and Mobility, Physics, Political Science, Psychology, Sociology, and Speech Pathology and Audiology.

The University also offers the Master of Science in Accountancy, Applied Mathematics, Biomedical Sciences, Biostatistics, Business, Computational Mathematics, Computer Science, Earth Science, Engineering, Geology, Manufacturing Administration, Occupational Therapy, Operations Research, Paper Science and Engineering, and Statistics, as well as the Master of Business Administration, Master of Development Administration, Master of Fine Arts, Master of Music, Master of Public Administration, and Master of Social Work.

In 1960 programs leading to the Specialist in Education degree were introduced. This degree is offered in Educational Leadership and School Psychology.

Doctoral programs were initiated in 1966 and were fully accredited by the North Central Association in 1971. Four of these programs—those in Mathematics, Science Education, Sociology, and Psychology—lead to the Doctor of Philosophy degree. The Doctor of Education degree is offered in Counselor Education and Counseling Psychology, Educational Leadership, and Special Education. The Doctor of Public Administration is also offered.

Please refer to The Graduate College Catalog for further information on these programs. Inquiries about financial assistance should be directed to The Graduate College; inquiries about research opportunities should be directed to the Office of Research and Sponsored Programs.
The Division of Continuing Education offers educational opportunities to qualified persons who wish to pursue their education on a part-time basis. Increasing numbers of men and women are becoming interested and involved in improving their educational backgrounds for a variety of reasons—to improve career opportunities, to supplement past educational experience, to meet certification and licensure requirements, and to satisfy personal learning needs.

In response to the needs of these adult learners, Western's continuing education activities have been expanded to include extension courses for both undergraduate and graduate credit; correspondence and other types of self-instructional courses, conferences, seminars, and workshops; and other types of short courses for business, community, educational, and industrial leaders and other interested adults. Course and program offerings in the twenty-five southwestern Michigan counties served by Western's Division of Continuing Education are planned in conferences between representatives from academic units and continuing education professionals who continuously analyze student's needs and interests. In-service educational programs are planned with business, civic, educational, and professional groups. Advisory services are offered as well as actual training programs.

Western's on campus adult, part-time, and evening students are also served by the Office of Evening and Weekend Programs. The office offers step-by-step guidance in entering or re-entering the University and works with each of the seven colleges to plan, monitor, and promote evening degree programs.

The Office of Conferences and Institutes develops and manages conferences and non-credit seminars in cooperation with university departments, professional groups, and community organizations.

The Division's central office is located in A-Wing of Ellsworth Hall on Western's main campus in Kalamazoo. Five additional regional centers are located as follows:

- **Southwest Regional Center**
  - Lake Michigan College
  - 1100 Yore Avenue
  - Benton Harbor, MI 49022-9654

- **Grand Rapids Regional Center**
  - Two Fountain Place
  - 2 Fountain Street
  - Grand Rapids, MI 49503-3107

- **Muskegon Regional Center**
  - 444 S. Quarterline Road
  - Muskegon, MI 49442

- **South Central Regional Center**
  - Kellogg Community College
  - 632 North Avenue
  - Battle Creek, MI 49016-3299

- **Lansing Study Center**
  - 309 N. Washington Square
  - Lansing, MI 48933-1222

### General University Studies

The Division has developed a baccalaureate program for adult students who are unable to take courses on a full-time basis. Typically served are those with a community college background or its equivalent. This undergraduate degree program is known as the General University Studies curriculum, which leads to either the Bachelor of Arts or the Bachelor of Science degree, depending upon the subject matter content of the program. Specific course requirements vary with the selected area of concentration. All programs must be planned with an academic adviser for the area of concentration. Arrangements for consultation with an adviser will be provided at the student's convenience. Inquiries about the General University Studies programs should be directed to any of the Division's offices.

### General Requirements

The general requirements for a bachelor's degree in the General University Studies curriculum include the following:

1. Complete at least 122 hours of credit, with a minimum of 60 hours of academic work from an accredited four-year, degree-granting institution. At least 30 hours of credit must be taken through Western Michigan University.

2. Completion of a planned area of concentration, involving a minimum of 45 semester hours of credit. Some work may include credit completed in the first two years of the student's preparation or credit given for non-accredited training or experience.

3. Completion of the General Education requirement of 35 semester hours of credit. This work does not have to be exclusive of work included in the area of concentration.

### Areas of Concentration

#### American Studies

Adviser: Lewis H. Carlson, College of General Studies

This bachelor's degree program is designed for those who wish to broaden their understanding and appreciation of American life and institutions. Students with an interest in the humanities, fine arts, or social sciences will find this program to their liking. Although the
The General University Studies bachelor's degree in law enforcement, corrections, or degree in criminal justice is designed for persons who have completed an associate's degree in law enforcement, corrections, or police administration and wish to complete a bachelor's degree through part-time study. Sixty hours of upper division study beyond the associate's degree is required to complete the bachelor's degree in criminal justice. The degree program is interdisciplinary with core courses in law enforcement, courts, and corrections. In addition, each student has an opportunity to take advanced courses in one of these areas.

The requirements are as follows:

1. Prerequisite Courses
   Three social science core courses:
   A. An introductory course in political science
   B. An introductory course in psychology
   C. An introductory course in sociology

   These courses are prerequisites to the criminal justice curriculum and do not count as part of the 45 hours required in the area of concentration.

2. Area of Concentration (45 hours)
   A. Maximum of 12 hours from a two-year college criminal justice degree program
   B. Criminal Justice Core Courses
      (18 hours)
      SOC 362 Criminology
      SOC 462 Criminal Justice Process
      OR
      PSCI 525 Politics of Criminal Justice
      SOC 464 Sociology of Law Enforcement
   C. Environmental concerns
   D. Human relations
   E. International concerns
   F. Technical skills mastery

   These courses must be approved by the program's academic adviser, and may be interdisciplinary—drawn from a number of departments; disciplinary—drawn from a single social science discipline; or applied—identified with the needs of a particular area of study, such as public administration, sociology of education, social science research techniques, or applied service.

Social Science Studies
Adviser: David A. Ede, Department of Religion

This program was designed to provide career-related preparation for students interested or employed in public service occupations, such as community development, social services (not certified), state and local government. The program will appeal to those with an interest in the social sciences and who are considering a related vocational field, as well as to those interested in the study of public issues, politics, and social questions. A bachelor's degree is conferred upon those completing the program requirements.

The requirements for this 45-hour social science concentration are as follows:

1. A minimum of 12 semester hours of credit selected from the following: ANTH 220, Cultural Anthropology, or ANTH 240, Principles of Cultural Anthropology; ECON 201, Principles of Economics; GEOG 205, Our Human World; PSCI 100, Introduction to Political Science; PSY 150, Introduction to Human Behavior; SWRK 210, Social Work Services and Professional Roles; SOC 200, Principles of Sociology, or SOC 300, Sociological Theory.

2. At least 33 semester hours of additional social science credit in anthropology, economics, geography, political science, psychology, social work, and/or sociology. These courses must be approved by the program's academic adviser, and may be interdisciplinary—drawn from a number of departments; disciplinary—drawn from a single social science discipline; or applied—identified with the needs of a particular area of study, such as public administration, sociology of education, social science research techniques, or applied service.

Technical-Scientific Studies
Adviser: Sandra F. Blanchard, College of Engineering and Applied Sciences

This program was designed for those interested in technical studies, including the study of aviation, automotive technology, engineering graphics, manufacturing, supervision, and technical vocational education. A student who has completed a two-year vocational technical study program at a community college, or one who has achieved a comparable level of preparation through a combination of study and work experience, will find this program of interest. A career oriented program, particularly
for those in manufacturing and industrial education, it leads to the Bachelor of Science degree. The requirements for his 45-hour concentration are as follows:

1. A minimum of 45 semester hours of credit from such areas as graphics, materials and processing, technical analysis, transportation technology, and manufacturing management. Students interested in technical vocational education, such as teachers in skills centers, may substitute such areas as industrial arts, drawing, graphic arts, metal working, woodworking, and auto mechanics.

2. Up to 15 hours taken previously may be applied toward this concentration. Some of these credits may be earned through examination, evaluation of previous experience, and non-accredited training.

3. At least 15 hours must be earned through courses at Western. Students desiring certification as teachers in vocational-technical areas must take additional professional courses in methods course construction and evaluation.

Self-Instructional Courses

Self-instructional courses are available to students unable to attend campus classes or needing a course not currently being taught. The Office of Self-Instructional Programs offers over ninety credit courses by correspondence, television, and magazine. All courses are developed by University faculty. Students may register for most courses at any time, in person or by mail, and are given up to one year to complete each course. Television courses require viewing weekly one-hour segments and attending several discussion groups each semester. Self-instructional courses may be taken for credit and applied to an undergraduate degree, subject to limitations defined by the University, college, or department in which the student is studying.
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Health Education Coordinator
Christine Zimmer

Sara Swickard Preschool Coordinator
Joyce DeRight

Sports Medicine Clinic, Director
James Scholl
Grundler, Otto, 1961, Professor of Religion, and Director, Medieval Institute

Gross, Francis

Grinwis, Gordon J., Social Work

Greene, James

Grimshaw, William, General Studies; Dean, International Education and Management

Glenesk, Gail B., M.A., 1970, Associate Professor of English

Gosnell, B. A., 1961, Assistant Professor of Marketing

Gould, B. S., 1963, Professor of History

Gowen, J. C., 1986, Adjunct Professor of Chemistry

Graham, Julia B., 1960, Professor of English

Grass, Kay, 1984, Adjunct Professor of Social Work

Green, Barry D., 1970, Professor of History

Greenberg, Gilda M., 1973, Professor of Humanities and Social Science

Greenberg, Norman C., 1972, Professor of Anthropology and Social Science; Dean, College of General Studies; Dean, International Education and Programs; and Coordinator of University General Education

Greene, James E., Jr., 1963, Adjunct Associate Professor of Marketing

Gregory, Mark, 1981, Associate Professor of History

Griffith, Robert J., 1971, Professor of Spanish

Griffin, Robert J., Associate Professor of Political Science and Assistant Vice President for Academic Affairs

Hardie, Gerald, 1965, Professor of Physics

Hardie, Nita G., 1964, Associate Professor of Social Science and Assistant to the Dean, College of General Studies

Hare, J. Donald, 1977, Assistant Clinical Professor, Physician Assistant Program

Harrell, Donald, 1980, Adjunct Clinical Professor, Physician Assistant Program

Harrington, William B., 1976, Associate Professor of Geology

Harris, Barbara Loss, 1975, Associate Professor of Special Education

Harris, Carolynn J., 1985, Assistant Professor of Spanish

Hartline, John V., 1986, Adjunct Clinical Professor, Center for Human Services

Hathaway, Richard E., 1972, Professor of Engineering Technology

Havens, Gail Ann, 1968, Assistant Professor of Consumer Resources and Technology

Havir, Barbara S., 1969, Assistant Professor of Social Science

Hawk, Webster, C. A., M. A., Western Michigan

Hawks, Graham P., 1960, Associate Professor of History

Healy, Helen Jean, 1965, Associate Professor, Library

Head, Richard E., 1976, Adjunct Clinical Professor of Counseling and Education

Hein, Edward J., 1968, Professor of Education and Professional Development

Heinemann, Jerome H., 1980, Professor of Mechanical Engineering

Hendrix, Daniel P., 1966, Associate Professor of Linguistics

Henderson, Cassius, 1963, Professor and Chair, Department of Electrical Engineering

Hepworth, Barbara Jo, 1981, Associate Professor of Occupational Therapy

Henes, Charles E., 1977, Associate Professor of Accounting

Hens, Charles E., 1977, Associate Professor of Accounting

Herbert, Russell J., 1985, Adjunct Associate Professor of German

Herrman, James, 1960, Professor of History

Hersch, Christian R., Jr., 1968, Associate Professor of English

Hess, Carl, 1973, Professor of Mathematics and Statistics

Heyden, Bradley S., 1980, Associate Professor of English

Hibbs, George W., 1965, Assistant Professor of Health, Physical Education and Recreation

Hilker, Robert, 1968, Professor of Economics

Hinz, James W., 1970, Professor and Chair, Department of Management

Hodges, Richard L., 1970, University Coordinator of Academic Advising

Hodges, Barbara S., 1969, Associate Professor of Social Science

Ho, Alfred K., 1967, Professor of Economics

Hoekstra, Paul E., 1955, Professor of Chemistry and University Coordinator of Academic Advising

Hollander, Alexander, 1980, Professor of Psychology

Hollister, Foster B., 1973, Professor of Psychology

Hornstein, A. J., 1962, Professor of Psychology

Hoskins, John M., 1982, Adjunct Clinical Professor, Physician Assistant Program

Hovey, William H., 1969, Professor of Psychology

Howe, Richard E., 1966, Adjunct Clinical Professor of Counseling and Education

Howard, Charles E., 1965, Adjunct Associate Professor of Political Science

Hudson, J. W., 1965, Associate Professor of Chemistry

Hughey, Allen, 1963, Adjunct Clinical Professor of Counseling and Education

Hukkelberg, Paul, 1955, Professor of Chemistry and University Coordinator of Academic Advising

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Hummel, Marcelline, 1965, Associate Professor of Music

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Hussey, Raymond, 1968, Associate Professor of History

Hussey, John M., 1986, Adjunct Clinical Professor, Physician Assistant Program

Hutchins, James B., 1963, Adjunct Associate Professor of History

Hutt, William H., 1965, Professor of Sociology

Hutton, Charles E., 1973, Professor of History

Huskins, John, 1969, Associate Professor of History

Ishida, Tetsuo, 1980, Associate Professor of Psychology

Ivanoff, Myron, 1965, Adjunct Professor of History
LaDuke, Robert O., 1966, Associate Professor of Blind Rehabilitation and Mobility, B.S., M.A., Western Michigan, Ed. D., Northern Colorado
LaGravois, Steven, 1982, Associate Professor of Blind Rehabilitation and Mobility, B.S., M.A., Western Michigan, Ed. D., Northern Illinois
LaHue, Robert, 1980, Adjunct Professor of English, B.A., Occidental College, M.F.A., Oregon
Laflin, Paul M., 1985, Assistant Professor of Marketing, B.A. Farah College, M.B.A., State University, Ph. D., Michigan State
Lehman, George, 1972, Associate Professor of Social Science, B.A. B.A., M.A., Ph. D., Missouri (Kansas City)
Lev, Harriet, 1986, Assistant Professor of Marketing, B.A., Yorsei University, M.B.A., I.H., Ph. D., Indiana University
Levenson, Stephen, 1980, Adjunct Clinical Assistant Professor, Specialty Program in Alcohol and Drug Abuse, A.B. Indiana University, M.A., Western Michigan
Lehman-Srinivasan, Kathryn, 1987, Assistant Professor of Spanish, B.A., Illinois State, M.A., Ph. D., Pittsburgh
Leichinger, Leslie, 1978, Associate Professor of Social Work, B.A. Oberlin, M.S.W., Syracuse, D.S.W., California (Berkley)
Leib, James, 1986, Assistant Professor of Blind Rehabilitation and Mobility, B.S. M.S., Western Michigan
Linden, John R., 1957, Professor of Consumer Resources and Technology, B.S., M.A., Ph. D., Minnesota
Lindquist, Jay D., 1973, Professor of Marketing, B.S., United States Naval Academy, M.S.E., M.B.A., Ph. D., Michigan State
Link, Lawrence John, 1990, Professor of Art, B.A., M.F.A., Oklahoma
Lipkin, Stanley, 1981, Associate Professor of Communication, B.S., Western Michigan, Ph. D., Iowa
Lind, Raymond A., 1985, Adjunct Professor of Social Work, B.S., Northwestern, M.A., Ph. D., Iowa
Licht, Raymond A., 1977, Adjunct Professor of Social Work, B.S., Brigham Young, M.A., Ph. D., University of Chicago
Lively, Patricia, 1980, Adjunct Assistant Professor, Specialty Program in Alcohol and Drug Abuse, B.A., M.S.W., M.A., Western Michigan
Locke, William L., 1973, Adjunct Assistant Professor of Speech Pathology and Audiology, B.S. Indiana, M.A., Western Michigan
Loeffler, Erka, 1971, Professor of Anthropology, B.A., Vienna, Ph. D., University of Marz (Germany)
Pippen, Richard W., 1963, Professor and Chair, Department of Biology and Biomedical Sciences
B.S., Eastern Illinois; M.A., Ph.D., Michigan
Pocker, David, 1985, Assistant Professor of Music
B.A., Sarah Lawrence College; M.M., Indiana
Poe, Robert, 1970, Professor of Natural Science
B.A., Kalamazoo; M.A., Ph.D., Western Michigan
Poily, Alan, 1976, Associate Professor of Psychology
B.A., Alderson-Broaddus College; M.A., West Virginia; Ph.D., Wisconsin
Ponchilla, Paul E., 1979, Associate Professor of Blind Rehabilitation and Mobility
B.S., Eastern Michigan; M.S., Ph.D., Iowa State
Powell, James H., 1985, Assistant Professor of Education
B.S., M.A., Ed.D., Western Michigan
Poole, Howard R., Jr., 1973, Professor, Division of Academic Services and Head, Office of Institutional Development
B.S., M.S., Ph.D., Purdue
Porter, Dale K., 1970, Professor of Humanities
B.A., Western Michigan; M.A., Stanford; Ph.D., Oregon
Powell, Linda L., 1985, Assistant Professor of Health, Physical Education and Recreation
B.S., Western Michigan; M.A., Northern Iowa; Ed.D., Western Michigan
Pozo, Susan A., 1982, Associate Professor of Economics
B.A., Barnard College; Ph.D. Michigan State
Pratnicki, Marion, 1984, Assistant Professor of Music
B.S., M.A., Michigan State; Ph.D., Arkansas
Prichard, Michael S., 1955, Professor of Math and Statistics
B.A., Western Michigan; M.S., Ph.D., Indiana
Principe, Steve, 1987, Associate Professor of Psychology
B.S., M.S., Ph.D., Arizona State
Pruitt, Joseph L., 1980, Assistant Professor of Political Science
B.S., M.S., Ed.D. Oklahoma State
Prenstrom, Peter G., 1969, Professor of Political Science
B.A., Macalester; M.A., Ph.D. Michigan State
Rhodes, Cullen L., 1985, Professor of Art
B.F.A. Kansas; M.F.A. Ohio
Rhodes, Steven C., 1975, Associate Professor of Communication
B.A., Northern Colorado; M.A., Ph.D., Pennsylvania State
Riccio, Robert J., 1966, Professor of Music
B.A., Antioch; M.M. Yale; D.M.A., Cincinnati College Conservatory of Music
Richardson, Gerald L., 1987, Associate Professor of Occupational Therapy
B.S., Wisconsin; M.A., Western Michigan
Rider, Barbara A., 1976, Professor of Occupational Therapy
B.S., Wisconsin; M.S., Kansas (Lawrence)
Rice, Max J., 1988, Assistant Professor of Military Science
B.A., South Florida; M.A., Western Michigan
Riley, James E., 1960, Professor of Mathematics and Statistics
B.A., Western Michigan; Ph.D., Michigan State
Rimmick, William A., 1966, Adjunct Clinical Professor, Center for Human Services
M.D., Illinois
Ring, Donna, 1984, Instructor, Library
B.S., Northern Michigan; M.S., Western Michigan
Ritchie, William A., 1964, Professor of Political Science
B.A., Marshall; M.A., Ph.D., Michigan
Rittenger, Mark S., 1982, Adjunct Clinical Assistant Professor, Physician Assistant Program
B.S. Western Michigan; D.O. Michigan State
Rives, Daniel, 1984, Adjunct Professor of Social Work
B.S., Kansas; M.S.W. Michigan State
Rizio, John R., 1969, Professor of Management
B.A., Colorado; M.A., Ph.D., Ohio State
Rizollo, Louis B., 1964, Professor of Art
B.S., Western Michigan
Roach, Richard R., 1981, Adjunct Clinical Assistant Professor, Physician Assistant Program
M.D., Minnesota
Robb, Paul A., 1957, Professor of Art
B.A., M.A., Michigan State
Robek, Mark S., 1966, Associate Professor of Philosophy
B.A., Hope College
Quandt, Eldor C., 1967, Associate Professor and Chair, Department of Geography
B.S., Valparaiso; M.A., Kansas State; Ph.D., Michigan State
Quass, Zahir Ahmad, 1978, Associate Professor of Marketing
B.S., Karachi (Pakistan); B.S. Illinois Institute of Technology; M.B.A., Ph.D. Michigan State
Raklovid, Richard F., 1957, Associate Professor of Health, Physical Education and Recreation
B.S., Illinois; M.A., Western Michigan
Rappaport, Phyllis, 1966, Professor of Music
B.S., M.A., Michigan State; Ph.D., M.I.T.
Rauf, Henry A., 1960, Professor of Geography
B.A., Kent State; M.A., Ph.D., Illinois
Ray, Harold L., 1960, Professor of Health, Physical Education and Recreation
B.S., M.S. Syracuse; Ph.D. Ohio State
Ray, Jr., LeRoy L., 1973, Professor and Director of Black Americas Studies
B.S., Kutztown University; Ph.D. M.S. Massachusetts
Reck, Robert F., 1986, Assistant Professor of Marketing
B.A., Western Michigan; M.B.A., Ph.D., Michigan State
Redmond, William, 1986, Assistant Professor of Psychology
B.A., Morehead State; M.A., Ph.D., Michigan
Reese, Linda, 1961, Assistant Professor of Social Work
B.A., M.S.W. Temple University; Ph.D. Bryn Mawr
Redd, Kenneth E., 1960, Professor of Social Work
B.A., Michigan State; M.S.W. Wayne State; Ph.D., Michigan State
Reiss, Joseph, 1972, Professor of French
A.B. Georgetown; M.A., Middlebury College; Ph.D. Wisconsin
Renner, Charlotte, 1987, Professor and Dean, University Libraries
B.A., M.A., Northwestern; M.S., Drexel
Renssenhouse, Barbara, 1959, Associate Professor of Art
B.S. M.A., Western Michigan
Renshaw, Debbie A., 1985, Associate Professor of Business Information Systems
B.S., M.S. Ed. Oklahoma State
Renstrom, Debbie A., 1985, Assistant Professor of Military Science
B.S., M.S. Ed. Oklahoma State
Roper, Joseph J., 1984, Associate Professor of Electrical Engineering
B.S., M.S. Michigan; M.S. Michigan Technological; M.S., Michigan State
Rosenthal, Alvin, 1964, Assistant Professor of Physics
B.A., Ph.D. Colorado
Ross, Martin H., 1966, Associate Professor of Sociology
B.S., M.S., Ph.D., Wisconsin
Ross, Mary E., 1979, Assistant Professor, Library
B.S. M.A. (Music), M.A.L.S., Wisconsin-Madison
Ross, Myron H., 1961, Professor of Economics
B.S., M.A., Temple; Ph.D., Pennsylvania
Rosen, Ernest E., 1966, Professor and Chair, Department of Political Science and Associate Dean, College of Arts and Sciences
B.A., Duquesne; M.Lit., Ph.D., Pittsburgh
Roseman, Jules, 1966, Associate Professor of Communication
B.A., New York; M.A., Ph.D. Michigan State
Rosenkamp, William L., 1957, Associate Professor of Health, Physical Education and Recreation
B.A., Missouri; M.A., Western Michigan
Rozelle, David L., 1970, Associate Professor of Accountancy
B.A. Toledo; M.A. Michigan; M.S., Western Michigan; M.A., Michigan; C.M.A.
Running Johnson, Cynthia, 1966, Assistant Professor of French
B.A. Luther College (Iowa); M.A. Wisconsin; Certificat, L'Ecole du Louvre (Paris); Ph.D., Wisconsin
Russell, David, 1983, Adjunct Clinical Assistant Professor, Specially Program in Alcohol and Drug Abuse
B.A. Central Michigan; M.A. Michigan State
Ryan, Thomas F., 1974, Professor and Chair, Department of Education and Professional Development and Director of Teacher Education
B.A., M.A., Ph.D. Michigan State
Ryan, Virginia, 1984, Adjunct Clinical Assistant Professor, Specialty Program in Alcohol and Drug Abuse
B.A. Sarah Lawrence; M.A., Ph.D., Wayne State
Sackett, Ronald L., 1966, Assistant Professor of Engineering Technology
B.S., Western Michigan
Saffell, Jennifer, 1987, Adjunct Clinical Assistant Professor of Occupational Therapy
B.S., Western Michigan
Saged, Pradipkumar, 1987, Associate Professor of Engineering Technology
B.S. Nagpur (India); M.S., Indian Institute of Science (India); Ph.D. Georgia Institute of Technology
Sahin, Iskender, 1984, Assistant Professor of Mechanical Engineering
B.S. M.E., Technical University of Istanbul; M.S., Michigan; Ph.D. Virginia Polytechnic Institute and State University
Sanders, James R., 1975, Professor of Educational Leadership
B.S., B.S.E. Bucknell; Ph.D. Colorado
Sanders, Margaret, 1977, Professor and Chair, Department of Business Information Systems
B.S., Michigan College; Ed.M., Boston; Ph.D., Michigan State
Scheiber, Frederick W., 1965, Associate Professor of Accountancy
B.S., Eastern Michigan; M.B.A.; M.D., Michigan; Ph.D., Missouri; C.P.A. Michigan
Schein, Stephen J., 1983, Adjunct Assistant Professor of Finance and Commercial Law
B.A., Western Michigan; J.D., Pepperdine University School of Law
Schelle, Claire, 1984, Adjunct Clinical Assistant Professor, Physician Assistant Program
M.D., Medical College of Wisconsin
Schewa, Tim F., 1983, Assistant Professor of Finance and Commercial Law
B.A. Notre Dame; M.S., Ph.D., Illinois
Schlack, Lawrence B., 1981, Associate Professor of Educational Leadership
B.A., Michigan State; M.A., Ph.D., Michigan
Schmaltz, Lloyd J., 1959, Professor and Chair, Department of Geography
B.A., Augustana; A.M., Ph.D., Missouri
Schmidt, Christopher J., 1978, Associate Professor of Geology
B.A., Oberlin; A.M., Ph.D., Indiana
Schmidt, Peter J., 1965, Professor of History
B.A., Minnesota; M.A. (English); M.A. (History), Iowa; Ph.D., Minnesota
Schreiber, William P., 1966, Assistant Professor of Health, Physical Education and Recreation
B.S. Ed. Illinois
Schreiner, Erik A., 1963, Professor of Mathematics and Statistics
B.A., M.A., Ph.D., Wayne State
Schubert, Richard C., 1969, Associate Professor of Mechanical Engineering
B.S. M.E., Illinois; M.S.E. Wayne State
Scott, Herbert S., 1969, Professor of English
B.A. Fresno State; M.F.A. Iowa
Scott, Shirley S., 1970, Associate Professor of English
B.A., M.A., Ph.D., Kent State
Woodward, Charles F., 1966, Assistant Professor of Engineering Technology
B.S., Western Michigan; M.S., Illinois Institute of Technology; C.M.E

Woodworth, Shirley C., 1965, Associate Professor of Communication
B.A., M.A., Ed.D., Western Michigan

Work, Joseph T., 1963, Associate Professor of Music
B.M., M.M., Eastman School of Music; D.M.A., Michigan

Wyatt, Robert M., 1977, Associate Professor of Industrial Engineering
B.S., Ohio State; M.B.A., Western Michigan; M.S.I.E., Michigan

Wyllie, Jacqueline L., 1981, Adjunct Clinical Assistant Professor, College of Health and Human Services
B.S., M.A., Western Michigan; M.S.N., Wayne State

Wyllie, Leard, 1983, Instructor in Engineering Technology
B.S., Park's College; M.S., Western Michigan

Wymain, Robert F., 1964, Associate Professor of Health, Physical Education and Recreation
B.S., M.Ed., Wayne State

Yaeger, Judy A., 1985, Assistant Professor of Business Information Systems
B.S., Wisconsin; M.B.A., Western Michigan; Ph.D., Chicago

Yang, Kung-Wei, 1966, Professor of Mathematics and Statistics
B.S., National Taiwan; Ph.D., Indiana

Yeater, Paul, 1975, Associate Professor of Communication
B.A., M.A., Denver; Ph.D., Michigan

Zabik, Roger M., 1967, Professor and Chair, Department of Health, Physical Education and Recreation
B.S., Ball State; M.S., P.Ed., Indiana

Zaremba, Thaddeus, 1983, Adjunct Clinical Assistant Professor, Specialty Program in Alcohol and Drug Abuse
B.A., Wayne State

Zastrow, Joyce R., 1965, Professor of Music
B.A., Valparaiso; M.M., Indiana; M.M.A., Illinois

Zegres, Stephen, 1978, Associate Professor of Music
B.M., Miami; M.M., Indiana

Zeldin, Raymond E., 1964, Professor of Economics
B.A., Harvard; M.A., Ph.D., Chicago

Zinn, David C., 1965, Assistant Professor of Economics
B.A., Calvin; M.A., Western Michigan

Ziring, Lawrence, 1967, Professor of Political Science
B.S., M.A., Ph.D., Columbia

Zupko, Ramon, 1971, Professor of Music
B.S., M.S., Juilliard School of Music
BUILDINGS AND GROUNDS

EAST CAMPUS
Brink Printing Services—University print shop and mimeographing service.
East Hall—Classrooms and offices for the Departments of Accountancy, Management, and Art. Locker facilities, offices, and a gymnasium for the Department of Health, Physical Education and Recreation.
H.O.I. Building—Central Stores and Department of Transportation.
Montague House—Building is unassigned.
Oakland Recital Hall—Office and classroom space, and a 300-seat auditorium. Building is unassigned.
Physical Plant—Trades maintenance shops, grounds crews and University garage, physical plant department.
Richards Building—Department of Corrections.
Van Riper Speech and Hearing Clinic—The Department of Speech Pathology and Audiology.
Walwood Hall—Snack bar and meeting rooms. Classrooms and offices for College of Business.
West Hall—The Departments of Business Information Systems and Agriculture, Consumer Resources and Technology, Industrial Engineering, and Mechanical Engineering. Dean, College of Engineering and Applied Sciences.
Maybee Hall—Computer Science.
McCracken Hall—Departments of Chemistry, Paper Science and Engineering, and Biology and Biomedical Sciences.
Miller Auditorium—Cultural center for the performing arts of music, opera, drama, and dance. The auditorium has a capacity of 3,550, with seating arranged on three levels in continental style.
Moore Hall—Offices and classrooms for the School of Social Work and offices for the College of General Studies, the Department of Anthropology, and the Intellectual Skills Development Program.
Oaklands—Home of two former University presidents. Currently used for receptions and official gatherings.
Sangren Hall—College of Education. The Departments of Art and Sociology, the Educational Resources Center, and the Reading Center and Clinic.
Seiber Administration Building—University administration offices.
Shaw Theatre—The University Theatre presents productions in this 600-seat theatre.
Trimpe Distributive Education Building—Classroom and office space for vocational and distributive education.
Waldo Library—The library’s total collection numbers more than two million bibliographic items, including books, bound periodicals, recordings, maps, documents, and materials in microform. Also located in the building are the University Archives, the Audiovisual Film Library, and Visually Handicapped Reading Services.
Wood Hall—Departments of Biology and Biomedical Sciences, Psychology, Occupational Therapy, and Geology, and the University greenhouse.

WEST CAMPUS
Bernhard Student Center—Social and recreational facilities are provided for students and are available for other educational ventures as schedules permit. The building includes a snack bar, cafeteria, bowling alley, game room, Western’s Campus Bookstore, U.S. Postal substation, lounges, ballroom, music room, faculty lounge and dining room, and the Board of Trustees meeting room.
Brown Hall—Classrooms for the Departments of Communication, English, and Languages and Linguistics.
Dalton Center—Dean, College of Fine Arts. Departments of Music and Dance. Music library and classrooms.
Dunbar Hall—Classrooms for the Departments of History, Economics, Philosophy, Religion, and Political Science. College of General Studies and Division of Instructional Communications.
Ellsworth Hall—Offices for Continuing Education, Faculty Senate, Foreign Student Affairs, Minority Student Services, Pupil Transportation, Purchasing, Research Services, Public Information, News Services, Sports Information, Placement Services, University Publications, and Women’s Services.
Everett Tower—Faculty offices for Departments of Physics, Geology, and Mathematics. L. Dale Faunce Student Services Building—Office for counseling, financial aid, scholarships, housing, student activities, and orientation. Offices for major student organizations, WIDR, and Western Herald.
Fetzer Business Development Center—A professional environment for management-oriented conferences, seminars, workshops, and development programs.
Friedmann Hall—Offices for dean of College of Arts and Sciences, dean of College of General Studies. Faculty offices for Departments of Computer Science, Economics, History, Philosophy, and Political Science. WMUK-FM studios.
Hackett Hall—College of Health and Human Services. Residence hall.
Hillside West—Honors College. Testing Services, Cistercian Studies and Library, and Medieval Studies.
Kanley Memorial Chapel—the campus religious center, made possible through a gift from the estate of the late William Kanley, an alumnus. Opened in 1951.
Knauss Hall—Instructional facility with four lecture halls and exhibit space.
Knollwood Building—Department of Art, ceramic and sculpture studios.
Knollwood Metal Building—Department of Art foundry and kilns.
Kohrman Hall—Departments of Electrical Engineering, Engineering Technology,
OFF-CAMPUS

Aviation Building—Shops, laboratories, and classroom for aircraft technology and pilot training.
Aviation Test Cell—Aircraft engine testing facility.
Kleinstuch Nature Preserve—Given in 1922 by Mrs. Caroline Hubbard Kleinstuch, this 50-acre tract near the campus and inside the city of Kalamazoo provides instructional space for biological sciences.

ATHLETIC FACILITIES

Bowling Alley—Twenty bowling lanes available in the Bernhard Student Center for physical education classes and recreation.
Ebert Softball Field—A collegiate softball field immediately adjacent to Hyames Field.
Gary Physical Education Center
Physical Education Building—Includes a regulation swimming pool with barrier-free access, nine handball courts, gymnasium floor 90 feet by 120 feet, swimming pool with barrier-free access, nine handball courts, gymnastics area, and locker facilities.

Fields include Intramural Fields—Two multipurpose recreation fields are located in Goldsworth Valley adjacent to Goldsworth Apartments. These additional fields, located at the west end of Goldsworth Valley, are used by physical education classes and the intramural-recreational sports program.

Read Fieldhouse and the intramural building are connected to this building. Intramural Building—Includes a multipurpose gymnasium 120 feet by 235 feet, which accommodates four basketball courts, six volleyball courts, ten badminton courts, four tennis courts, and a gymnastics area. An artificial surface area 140 feet by 160 feet is also in this building. These areas are used for intramural and recreational sports activities, physical education classes, and various intramural athletic programs.

Goldsworth Valley Soccer Field—Regulation soccer field with natural turf and spectator seating.

Hyames Field—A collegiate baseball field with seating for 2,500. Immediately adjacent to Hyames Field is a Ebert Softball Field.

Intramural Fields—Two multipurpose recreation fields are located in Goldsworth Valley adjacent to Goldsworth Apartments. Three additional fields, located at the west end of Goldsworth Valley, are used by physical education classes and the intramural-recreational sports program.

Kanley Field—A running track with all-weather surface. Includes a regular field hockey and field events course on the infield.
Oakland Gymnasium—Located on the East Campus, this building houses the Departments of Health, Physical Education and Recreation, and Military Science (ROTC).

Tennis Courts—Twenty asphalt courts in the Ellsworth Hall-Goldsworth Valley area accommodate physical education classes, intramural and recreational sports, and the intramural tennis program. Davis courts are located on Davis Street below East Hall.

University Recreation Building
Lawson Ice Arena—Facilities include a regular hockey rink, 85 feet by 200 feet; seating capacity of 4,300, four one-wall handball courts; weight room; and dressing rooms for women and men.

Gabel Natatorium—Facilities include a swimming pool 120 feet by 50 feet, seating capacity of 400, movable bulkhead, two one-meter and one three-meter diving boards, classrooms, locker facilities, staff offices.

Waldo Stadium—An intercollegiate football stadium with artificial turf and 25,000 seats. It is used for recreation, intramural activities, and instruction, in addition to competitive athletics.

WESTERN MICHIGAN UNIVERSITY

Key to Building Numbers

A bullet in front of a building name denotes that the building has been made physically accessible to the handicapped.

30 Siedschlag Hall
52 Stadium Drive Apartments
71c Stinson Hall—Goldsworth Valley #3
48 Zimmerman Hall
17 Richards Building
56 Rood Hall
38 Sangren Hall
97 Sara Swickard Preschool
32 Seibert Administration Building
41 Shaw Theatre
98 Soccer Field
8 Spindler Hall
43 Sprau Tower
90 Stores Building
7 Vandercook Hall
5 Van Riper Language, Speech and Hearing Clinic
61 Waldo Library
15 Waldo Stadium
10 Walwood Hall
4 West Hall
36 Wood Hall

Information Center Administration Bldg. (616) 383-0040
Western Michigan University
Kalamazoo, Michigan
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