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Bulletin - Western Michigan University: The Graduate Catalog
1982-1984

Western Michigan University

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Since the last printing of The Graduate College Bulletin 1982-1984, three new graduate programs have been added and nine have been modified. These program changes are listed below. For more complete information, consult the adviser in the appropriate department.

**Biomedical Sciences**

Gyula Ficsor, Adviser
124 Wood Hall

Master of Science in Biomedical Sciences (new program requirements in non-thesis option)

**Economics**

Raymond Zelder, Adviser
5075 Friedmann Hall

Master of Arts in Economics (new program track—Applied Economics)

**Health and Human Services**

Richard Williams, Adviser
Henry Hall

Graduate Specialty Program in Holistic Health Care (new graduate specialty program)

**Mathematics**

Department Office
3318 Everett Tower

Doctor of Philosophy in Mathematics (new doctoral specialization in Graph Theory and Computer Science)

Master of Science in Applied Mathematics (new program and admission requirements)

Master of Science in Biostatistics (new program requirements)

**Social Work**

Director of Admissions
402 Moore Hall

Graduate Specialty Program in Policy Planning and Administration (new graduate specialty program)

Master of Social Work (new program requirements)

**Sociology**

Robert Wait, Adviser
2512E Sangren Hall

Doctor of Philosophy in Sociology (new program requirements)

Doctor of Philosophy in Sociology (new doctoral specialization—Medical Sociology)

Master of Arts in Sociology (new program requirements)

**Vocational Education**

Jack Humbert, Adviser
3018 Kohrman Hall

Master of Arts in Teaching Vocational Education (new master’s program)

**Department Names**

Since the last printing of The Graduate College Bulletin, 1982-1984, a number of academic departments have changed their names and the corresponding prefix for their departmental courses. The changes are listed below.

**Consumer Resources and Technology (CRT)** replaces the names of three departments which have merged: Distributive Education, Home Economics, and Agriculture.

**Business Information Systems (BIS)** replaces the department name Business Education and Administrative Services.

**Finance and Commercial Law (FCL)** replaces the department name General Business.

**School of Library and Information Science (LIB)** replaces the name School of Librarianship.
Courses

Since the last printing of The Graduate Catalog Bulletin, 1982-1984, a number of graduate level courses have been added, modified, or deleted. These courses are listed below, under the major heading of their respective college and in alphabetical order by department name. The listing includes, at minimum, the course title, and an indication (in parentheses) whether the course is "new," "modified," or "deleted." For more complete information, consult the graduate adviser in the appropriate department.

College of Arts and Sciences

Biomedical Sciences (BMED)
532 Bacterial Physiology (modified)
555 Human Environmental Physiology (deleted)
570 General Pathology, 4 hrs. (new)
572 Cancer of Neoplasia (modified)
597 Medical Service Representative Seminar (deleted)

Communication Arts and Sciences (CAS)
550 Public Relations Program Development, 3 hrs. (new)
561 Teaching Communication in the Elementary School (modified)

Computer Science (CS)
503 Programming the Microcomputer for Teachers (modified)
510 Computer Science Fundamentals (deleted)
527 Theory of Computer Graphics (modified)
542 Data Base Management Systems (modified)
544 Software Systems Development (modified)
554 Operating Systems (modified)
625 Computer Structures (modified)
631 Advanced Data Structures (modified)
643 Advanced Data Base Management Systems (modified)
680 Mathematical Theory of Formal Languages (modified)
682 Artificial Intelligence (modified)

Economics (ECON)
602 Applied Economics, 3 hrs. (new)

Geography (GEOG)
540 Political Geography (deleted)
543 Cultural Geography (deleted)
545 Studies in Human Geography (deleted)
550 Historical Geography (deleted)
567 Computerized Geodata Handling and Mapping, 4 hrs. (new)

Geology (GEOL)
564 Field Geophysics, 3 hrs. (new)
615 Contaminant Hydrology, 3 hrs. (new)

Languages and Linguistics
LANG 558 Modern Language Instruction (in French, German, Spanish, or other language) (modified)
LING 501 Intermediate Critical Languages I (modified)
LING 502 Intermediate Critical Languages II (modified)
LING 508 Reading Critical Languages (modified)
LING 509 Writing Critical Languages (modified)

Mathematics (MATH)
507 Numerical Analysis (modified)
520 General Topology I (modified)
550 Teaching of Secondary Mathematics (modified)
571 Foundations of Analysis (deleted)
602 Mathematical Modeling I, 3 hrs. (new)
620 General Topology II (modified)
621 Algebraic Topology (modified)
640 Graph Theory I (modified)
641 Graph Theory II (modified)
642 Graph Theory III (deleted)
670 Measure and Integration (modified)
671 Introduction to Functional Analysis (modified)
673 Real Analysis (modified)

Public Administration (PADM)
725 Doctoral Research Seminar (modified)

College of Business

Business Information Systems (BIS)
561 Advanced Cobol (modified)
564 Information Resource Management, 3 hrs. (new)
583 Coordination Techniques (deleted)
584 Improvement of Skill Instruction in Secretarial Subjects (deleted)
585 Principles of Skill Instruction (deleted)
586 Improvement of Instruction in Typewriting (deleted)
588 Improvement of Instruction in Accounting/Computing Programs (deleted)
589 Organization and Teaching of Office Practice (deleted)
590 Vocational Block Programs (deleted)
591 Improvement of Instruction in Basic/Business/Economic Education (deleted)
602 Computer Usage and Information Processing (modified)
680 Principles of Business (deleted)
682 Guidance in Business (deleted)
683 Supervision and Administration of Business Education (deleted)
684 Tests and Measurements in Business Education (deleted)
690 Methods and Materials in Business Education (deleted)
720 Specialist Project (deleted)

Finance and Commercial Law (FCL)
520 Portfolio Analysis and Management (modified)
522 Real Estate Management (modified)

College of Education

Education and Professional Development (EPD)
504 Adult Development and Learning (modified)
511 Developmental Reading Theory and Application (modified)
542 Administration and Methods of Driver Education (deleted)
544 Psychology of Driver Education (deleted)
555 Alcohol Education (deleted)

Special Education (SPED)
535 Adapting Teaching Strategies for Exceptional Persons, 3 hrs. (new)
543 Orthopedic Conditions (modified)

College of Engineering and Applied Sciences

Agriculture (AGR)
520 Soil Science (deleted)

Consumer Resources and Technology (CRT)
500 Seminar in Distribution, 3 hrs. (new)
522 Textile Clinic, 2 hrs. (new)
524 The Socio-Psychological Aspects of Clothing, 3 hrs. (new)
560 Soil Science, 3 hrs. (new)
565 Problems in Nutrition, 3 hrs. (new)
569 Experimental Foods Research, 2 hrs. (new)
590 Projects/Problems in Home Economics, 1.4 hrs. (new)
598 Independent Study in Consumer Resources and Technology, 1-6 hrs. (new)

Distributive Education (DED)
500 Seminar in Distributive Education (deleted)
570 Organization and Operation of Distributive Education (deleted)
572 Teaching Techniques and Materials in Distributive Education (deleted)
573 Coordination Techniques in Cooperative Education (deleted)
596 Independent Study (deleted)
598 Readings in Distributive Education (deleted)
671 Curriculum Development in Distributive Education (deleted)
710 Independent Research (deleted)
Veterans Assistance

Since the last printing of The Graduate College Bulletin, 1982-1984, a new statement has been issued advising students who receive benefits from the Veterans Assistance Administration of their additional rights and responsibilities:

1. All students have a grade report mailed to them shortly after the close of each semester or session. 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 request with proper identification. Student copies picked up are free; there is a $2.00 charge for mailed copies.

2. A 3.00 grade point average is required of master’s degree students at all times for continued certification. A 3.25 grade point average is required of specialist and doctoral degree students at all times for continued certification. Students who fall below these standards must seek the appropriate counseling from the Director of Records before re-certification can be made.

3. Even though incomplete grades in graduate courses remain on transcripts after the one year time limitation, incomplete grades more than one year old will be counted as “E” grades in considering eligibility for certification to the VA.

4. Students are certified on the basis of attendance and academic progress toward degree goals. Serious over-payment 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 enrollment for the coming year and declaring personal responsibility for regular attendance during that year.
Western Michigan University is located in Kalamazoo, midway between Chicago and Detroit. Three major highways and numerous bus routes connect the city with other midwestern cities. The population of Kalamazoo is 79,802 and of Kalamazoo County is 211,921.

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.

It is the policy of Western Michigan University not to discriminate on the basis of race, sex, age, color, national origin, religion, or handicap in its educational programs, activities, admissions, or employment policies as required by Title IX of the 1972 Education Amendments, Executive Order 11246 and Executive Order 11375, and Section 504 of the Rehabilitation Act of 1973.

Changes in administration and instruction may be made subsequent to the date of publication.

Cover and text format of this catalog were designed by the Office of University Publications.
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University Officials

Board of Trustees,
Appointment expiration date
Dr. Julius Franks, Jr.,
Grand Rapids,
December 31, 1982
J. Michael Kemp, Chairman,
Kalamazoo,
December 31, 1982
Robert D. Caine,
Hickory Corners,
December 31, 1982
Gayl F. Werme,
Portage,
December 31, 1984
Fred W. Adams,
Grosse Pointe,
December 31, 1986
Charles H. Ludow,
Kalamazoo,
December 31, 1986
Maury E. Farley,
Ann Arbor,
December 31, 1988
Alfred L. Edwards,
Ann Arbor,
December 31, 1988
John T. Bernhard, Ex-Officio
University President

Officers
Chauncey Brinn, Secretary
Robert B. Wetnight, Treasurer

Administrative Officers
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Elwood B. Ehle, Vice President for Academic Affairs
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L. Michael Moskovits, Assistant Vice President for Academic Affairs
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Robert W. Hannah, Vice President for Governmental Relations
Chauncey Brinn, Secretary
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Kenneth M. Smythe, University Attorney
Thomas J. Carr, Assistant Vice President and Director of Auxiliary Enterprises
Russell Gabier, Assistant Vice President (Alumni and Development)
William J. Kowalski, Assistant Vice President (Facilities Engineering)
A. Bruce Clarke, Dean, College of Arts and Sciences
Darrell G. Jones, Dean, College of Business
Richard T. Burke, Dean, Division of Continuing Education
John E. Sandberg, Dean, College of Education
Richard E. Boughtner, Acting Dean, College of Engineering and Applied Sciences
Robert H. Luscombe, Dean, College of Fine Arts
Norman C. Greenberg, Dean, College of General Studies
Laurel A. Grotzinger, Dean and Chief Research Officer, The Graduate College
William A. Burian, Dean, College of Health and Human Services

The Graduate College
Laurel A. Grotzinger, Dean and Chief Research Officer
Rolin Douma, Associate Dean for Program Development
Sid Dykstra, Associate Dean for Student Services
Conrad Katzenmeyer, Associate Dean for Research and Sponsored Programs
Lorene Farrand, Administrative Assistant to the Dean
Billie Donoghue, Administrative Assistant for Program Development and Director, Admissions and Records

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Western Michigan University was established by the State Legislature in 1903. Although the University has continued to meet its initial obligations, the preparation of teachers, the growing educational needs of the State have changed the role of the institution to that of a multi-purpose university. Students today may enroll in graduate programs in the Colleges of Applied Sciences, Arts and Sciences, Business Education, Fine Arts, and Health and Human Services, as well as in the Schools of Librarianship and Social Work. The University’s enrollment for Fall 1981 was 20,269, with 3,430 enrolled in eighty-three graduate programs.

Graduate programs were first offered in 1938 in cooperation with the University of Michigan. This cooperative program continued until 1952, when the State Board of Education authorized Western to grant its own master’s degree. With rapidly increasing enrollments, new master’s degree programs were initiated. Today Western Michigan University has fifty-eight master’s degree programs. Master of Arts degrees are awarded in eighteen programs in the following general categories within the College of Education: Counseling and Personnel, Curricula in Teaching, Early Childhood Education, Educational Leadership, Physical Education, Reading, Special Education, Teaching in the Community College, Teaching the Economically and Educationally Disadvantaged, Teaching in the Elementary School, and Teaching in the Middle or Junior High School. Eighteen other graduate programs at Western also lead to the Master of Arts degree: Anthropology, Art, Biology, Blind Rehabilitation, Chemistry, Communication Arts and Sciences, Economics, English, Geography, History, Home Economics, Mathematics, Medieval Studies, Physics, Political Science, Psychology, Sociology, and Speech Pathology and Audiology. The University also offers the Master of Science degree in Accountancy, Applied Mathematics, Biomedical Sciences, Biostatistics, Business, Computer Science, Earth Science, Geology, Information Science, Occupational Therapy, Librarianship, Manufacturing Administration, 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 Library Administration, Master of Music, Master of Public Administration, and Master of Social Work degrees.

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. Western Michigan University offers doctoral programs in eight areas: The Doctor of Education degree is offered in Counseling and Personnel, Educational Leadership, and Special Education; the Doctor of Philosophy degree is offered in Mathematics, Psychology, Science Education, and Sociology. The newest doctoral program, initiated in 1980, is the Doctor of Public Administration.

Admission Dates

Admission to The Graduate College is required of each student planning to secure a degree beyond the baccalaureate. Applications for admission should be submitted by the following dates:
- Fall Semester: July 1
- Winter Semester: November 1
- Spring Session: March 1
- Summer Session: May 1

A foreign student must apply for admission by March 15 for the Fall Semester, and September 15 for the Winter Semester.

Since applications are considered on a first-come, first-served basis, it is advisable to apply well before these deadlines because admission to some programs is closed when all openings are filled. Also, some programs require the results of entrance examinations which are scheduled in advance of these deadlines.

A graduate student retains active admission status for one year from the date of last enrollment in The Graduate College. A graduate student who no longer has active admission status may request it by submitting a re-entry application to The Graduate College at least one month before registering for classes. A student who plans to attend classes after receiving an advanced degree also needs to submit an application for re-entry.

Admission Application Fee

A non-refundable application fee of $15 must accompany each application for admission to The Graduate College.

Admission Procedures

Admission to The Graduate College is secured through the following steps:
1. Request an "Application for Admission" from The Graduate College.
2. Determine from The Graduate College Bulletin the degree sought and the curriculum to be studied.
3. Return the "Application for Admission" and the $15 application fee before the published admission dates.
4. Request the Registrar of each college previously attended, except Western Michigan University, to send an official transcript of credits to The Graduate College. The transcripts are due in The Graduate College prior to the published admission dates.

Types of Admission

The admission of students to all graduate programs is a two-step process. The first step involves admission to The Graduate College; the second involves admission into a program by a department or unit. Both
steps must be taken before admission is granted, one step alone does not lead to admission. This process is followed by a student acquiring regular degree admission or probationary non-degree admission.

Regular admission — Degree status

a. Admission is granted to the student who has a bachelor's degree with an acceptable academic record, who has passed the required entrance examinations, and who has met the admission requirements of the department or units to which the student plans to study. For further information see the admission requirements of that graduate program.

b. Admission with reservation is granted to the student with a bachelor's degree who has fulfilled the general requirements for admission but may not have fulfilled the specific requirements of a particular program. Such admission is also granted to the student during the final semester or session of enrollment in an academic program if the academic record is satisfactory.

c. Dual enrollment admission is granted to the senior at Western Michigan University who has an acceptable academic record, who has applied for graduation, and who has no more than six credits to complete for a bachelor's degree. The student may elect graduate courses, in addition to those required at the undergraduate level to complete the bachelor's degree, to encompass a full academic program. Such dual enrollment is permitted for one semester only. Graduate credit thus earned may not be used to meet undergraduate requirements. A student must request dual enrollment status on the application for regular admission to a degree program.

Probationary admission — Non-degree status

Probationary admission on nondegree status is granted to the student with a bachelor's degree and a somewhat less than satisfactory academic record or anyone having a bachelor's degree from a non-accredited college. A point hour ratio of at least 2.3 in the final two years of undergraduate study, as well as the approval of the department or unit in which he or she plans to pursue graduate study, is required for probationary admission. A student admitted on nondegree status may establish eligibility for regular admission to a degree program by completing the specified departmental prerequisites, by securing grades of "B" or better in the first six graduate credits, by passing the English Qualifying Examination, and by securing departmental approval.

Permission To Take Classes

A student with a bachelor's degree who wishes to enroll in courses, but does not plan to pursue a program leading to a graduate degree, or is not eligible for admission, may enroll in certain classes with Permission to Take Classes (PTC) status. This status also is granted to a student enrolled in a certificate program and to a guest visiting student from another university. PTC status does not constitute admission to The Graduate College, and the courses taken under this status might not apply to a particular degree program. For the student eligible for admission, a maximum of nine credits taken under PTC status may be considered in any degree program if he or she should later decide to apply for admission to a program of study leading to a graduate degree. PTC status is not available to students with dual enrollment.

Admission Of Foreign Students

A foreign student with a degree from an institution in the United States will be expected to meet the same academic standards required of U.S. citizens for degree admission. Additionally, all foreign applicants must establish that they have the financial capacity to cover the educational and living expenses which are incurred by a typical non-resident graduate student. Foreign students must demonstrate their English proficiency by submitting the results of a recognized English proficiency test. The University generally accepts scores from the Test of English as a Foreign Language (TOEFL) and the Michigan Test of English Language Proficiency (MTELP) as a basis for determining English language competence.

The applications of prospective foreign graduate students whose qualifications meet the minimum admissions standards of The Graduate College and the OISS will be referred for consideration to the academic department in which the student hopes to study. Foreign students wishing to apply for admission to Western may secure an application from the Office of International Student Services (OISS). Additionally, all foreign applicants should be consulted for details regarding the time and place of graduate classes. A student is encouraged to register as early as possible to facilitate securing the courses of his or her choice. Students are encouraged to register during the advance registration period when possible since classes with low enrollment may be cancelled in order to reassign staff to areas of heavier student demand. Any changes in a student's schedule must be made in accordance with the procedures announced in the Schedule of Classes. A student may not withdraw from graduate courses beyond the mid-point of each semester or session.

Eligibility Of Faculty For Graduate Study

Western Michigan University faculty members holding continuing appointments, and all University staff are eligible to apply for admission to doctoral programs at Western, but only in the academic units where they are not employed. WMU faculty holding explicitly temporary or term appointments may apply for admission to any doctoral program. All faculty and staff are eligible to apply for master's or specialist programs at Western.

Michigan Intercollegiate Graduate Studies (MIGS)

The Michigan Intercollegiate Graduate Studies (MIGS) program is a guest scholar program which enables graduate students of Michigan institutions offering graduate degree programs to take advantage of unique educational opportunities on the campuses of the other institutions. Western Michigan University participates in this program.

Any graduate student in good standing in a master's, specialist, or doctoral program at a participating institution is eligible to participate. The student's good standing at the home institution affords the opportunity to study at the host institution, providing the proposed program of study is approved by a departmental officer and MIGS liaison officer at both the home and host institutions. The officers of the host institution determine whether the experiences sought are unique or not available at the home institution. The officers of the host institution determine whether space and other necessary resources are available at the host institution. This type of enrollment is limited to one term for master's or specialist degree students, or two terms for doctoral degree students. For further information, contact a graduate adviser or the MIGS liaison officer in the Graduate College.

Registration

Registration will be held according to the schedule and procedures given in the Schedule of Classes, which is published prior to the semester. This Schedule of Classes will be sent upon request and should be consulted for details regarding the time and place of graduate classes. A student is encouraged to register as early as possible to facilitate securing the classes of his or her choice. Students are encouraged to register during the advance registration period when possible since classes with low enrollment may be cancelled in order to reassign staff to areas of heavier student demand. Any changes in a student's schedule must be made in accordance with the procedures announced in the Schedule of Classes. A student may not withdraw from graduate courses beyond the mid-point of each semester or session.

Student Load

The maximum number of semester hours that may be elected by a full-time graduate student is fifteen in a semester and eight in a session. Any enrollment in excess of these maximums must be made with the written approval of the student's graduate adviser and be reviewed by The Graduate College. The normal full-time load for a graduate stu-
dent during the Fall and Winter semesters is three or four courses (9-15 hrs.) with at least nine hours needed to be classified as a full-time student. During the Spring and Summer sessions, the normal full-time load is two courses (6-9 hrs.) in the least five hours needed to be classified as a full-time student. The normal load for a student with a Graduate Assistantship or Associateship is two or three courses (6-9 hrs.). A student who is employed should reduce his or her load accordingly. The normal load for a student employed full time is one course per semester or session.

Course Numbering System
Two levels of courses are offered in The Graduate College: (1) Those numbered 600 and above are open only to graduate students, and (2) those numbered 500 through 599 are open to both advanced undergraduate and graduate students. In all courses open to both undergraduates and graduates, a distinction is made between the work expected from graduates and that from undergraduates. The work expected from graduates may be of higher quality or greater quantity or both.

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.

Undergraduate Credit In A Graduate Program
In certain instances, an adviser may permit a student to include up to six semester hours of 300 or 400 level courses in a graduate program, provided the student receives written permission from the adviser and The Graduate College prior to registering for these courses and then earns a grade of "B" or better. Such courses are to be taken in cognate areas outside the student's department or as part of an interdisciplinary program. These courses earn undergraduate credit which is not computed into the graduate point-hour ratio. The rate of the tuition fee for these courses is the same as the rate for undergraduate credit.

Graduate Credit by Examination
Each academic unit responsible for offering a graduate program may, with the approval of its Dean, establish a procedure for granting credit by examination for any course numbered 500 through 699. All credit by examination is subject to the following regulations:

1. The academic unit which offers a graduate program shall determine if an equivalency examination may be used to obtain credit for a particular 500 or 600 level course in that academic unit.

2. All equivalency examinations will be administered and graded by no fewer than two faculty members from the academic unit offering the particular course.

3. All credit by examination shall be graded "Credit" or "No Credit." "Credit" will be posted on the transcript as "Credit earned by examination" without letter grade or honor points. Students who do not achieve a sufficient score to receive "Credit" will have no entry made on their transcripts.

4. Credit by examination can be used to meet all other University graduation requirements except the residency requirement.

5. Credit by examination can be earned only by those students admitted to a specific graduate program and who have current enrollment.

6. Credit by examination earned at another university may transfer in accordance with the current policies of The Graduate College governing the transfer of credit.

7. Examination fees shall be assessed by the academic unit. It is expected that students will pay the examination fee in advance of taking the examination.

Transfer Credit
Master's degree: Six semester hours (three and four quarter or term hours are transferred as two semester hours) of graduate credit may be transferred from other schools provided:

1. The credits were earned in institutions accredited for graduate study and are of B grade or better. The student's average for all graduate work taken at another institution must also be B or better.

Second master's degree: When a student wishes to secure a second master's degree, he or she may include a maximum of ten credits from his or her first graduate degree program. The second degree program must fulfill all of the other usual requirements for a master's degree except the English Qualifying Examination.

Specialist degree: A student with a master's degree from another university who completes the remaining credits for a specialist degree at Western Michigan University may transfer up to thirty-six credits. A student without a master's degree who completes the credits for a specialist degree at Western Michigan University may transfer up to twelve credits.

Residency
The following residency policy was adopted by the Board of Trustees of Western Michigan University on July 20, 1973:

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

Student Fees
In Winter 1981-82 the following fee schedule was used for graduate study on campus:

- Resident, $54.00 per credit hour
- Non-Resident, $130.70 per credit hour

The above rates include $2.75 per credit hour facility fee for all students.

Students enrolling for less than three hours will be assessed the regular rate plus a $10.00 Service Fee.

The fee for graduate study in courses offered off campus through the Division of Continuing Education was $64.00 per graduate credit hour for Michigan residents and $140.75 for non-residents.

Resident Study: Any graduate student who has previously registered for and received a grade of "Incomplete" for Master's Thesis, Specialist Project, or Doctoral Dissertation and wishes to use the services of University staff and facilities to complete the remaining work to remove the "Incompletes" must, if he or she is not otherwise enrolled, pay a resident study fee of $25.00 for the semester, or $12.50 for a session.

Graduate appointees: Appointees are entitled to a charge privilege for tuition and related fees. However, installment payments must be made. An account is considered to be delinquent sixty days after the beginning of a semester and thirty days after the beginning of a session. At that time a 1 percent monthly service charge will be added to the unpaid balance.

Delinquent accounts are subject to all University collection procedures, including referral to an external collecting agency. Further information call The Graduate College (383-1669).

Other fees:
- Admission application fee, $15.00
- English Qualifying Examination fee, $2.00
- Late Registration Fee, $20.00
- Graduation fee (assessed when the application for graduation is submitted to Bursar's office), $15.00
- Student government assessment, $3.00 each semester

Health Maintenance Fee—For Study on Campus

<table>
<thead>
<tr>
<th>Hours</th>
<th>Cr. Hours</th>
<th>Per Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-4 Cr. Hours</td>
<td>$14.40</td>
<td>$14.40</td>
</tr>
<tr>
<td>5 or more Cr. Hours</td>
<td>$31.00</td>
<td>$69.00</td>
</tr>
</tbody>
</table>

*Plus appropriate user fees or the option to pay the full fee.

Student fees are subject to change by Western Michigan University Board of Trustees at any time without notice.
the previous domicile has been abandoned and a Michigan domicile established.

2. The residence of a student who is a minor follows that of his or 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 or her permanent home, not only while in attendance at the University but thereafter as well, and has no domicile elsewhere.

5. The residence of a student who otherwise would be classified as a non-resident follows that of his or her spouse because the spouse would qualify as a resident for tuition purposes.

6. An alien lawfully permitted for permanent residence in the United States and who has obtained neither permanent visa, nor his wife and minor children, who have met the other requirements herein for residence, may register as residents of this state.

Refunds And Change Of Class Load

All changes in registration or complete withdrawal must be made in accordance with the procedures published in the Schedule of Classes. A student may not withdraw from graduate courses beyond the midpoint of each semester or session. A student who withdraws from the University or who reduces his or her credit hour load, resulting in lower fees, will be granted a partial refund of the total paid, subject to the following conditions:

1. Changes in student credit hour load prior to the final day to add a course are considered to be reassessments, and a refund will be granted, in full, for any net reduction in such credit hour load. Alternatively, an increase in credit hour load will result in an upward adjustment of the fee assessment.

2. Reductions in credit hour load after the final day to add a course are not subject to any refund.

3. Complete withdrawal from all courses after the final day to add a course and up through the fifth week of classes in a semester or second week in a session will result in a 50% refund. The refund date is determined by the date the Registrar's Office receives a change in enrollment form from the student.

Grading System

A student receives a grade in each course in which he or she registers. Grades are indicated by letters and assigned honor points as shown in the table below. Credit toward a degree program will be granted only for courses in which a grade of "C" or better is earned.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Definition</th>
<th>Honor Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Outstanding, Exceptional</td>
<td>4.0</td>
</tr>
<tr>
<td>B</td>
<td>Extraordinary</td>
<td>3.5</td>
</tr>
<tr>
<td>BA</td>
<td>Very good, High pass</td>
<td>3.0</td>
</tr>
<tr>
<td>CB</td>
<td>Satisfactory, Acceptable</td>
<td>2.5</td>
</tr>
<tr>
<td>C</td>
<td>Adequate</td>
<td>2.0</td>
</tr>
<tr>
<td>D</td>
<td>Poor</td>
<td>1.5</td>
</tr>
<tr>
<td>X</td>
<td>Unofficial Withdrawal</td>
<td>1.0</td>
</tr>
<tr>
<td>W</td>
<td>Withdrawal</td>
<td>0.0</td>
</tr>
<tr>
<td>CR</td>
<td>Credit</td>
<td>0.0</td>
</tr>
<tr>
<td>NC</td>
<td>No Credit</td>
<td>0.0</td>
</tr>
<tr>
<td>AUD</td>
<td>Audit</td>
<td>0.0</td>
</tr>
</tbody>
</table>

E — Failure: A student admitted to a degree program must secure three hours of "A" to offset each hour of "E" in his or her graduate record.

X — Unofficial Withdrawal: The symbol "X" is used to indicate that a student has never attended class or has discontinued attendance and does not qualify for the grade of "I." The "X" will be computed into a student's honor-point ratio as hours attempted with zero honor points.

I — Incomplete: This is a temporary grade given for work which is passing in quality but lacking in quantity to meet course objectives. It is assigned when an instructor, in consultation with a student, concludes that extenuating circumstances prevent the completion of all course requirements. Incompletes, except those given in Master's Thesis 700, Specialist Project 720, and Doctoral Dissertation 730, and courses directly related to them, which are not removed within one calendar year will remain part of the student’s permanent record.

W — Withdrawal: A grade of "W" is given in a course when a student officially withdraws from that course or from the University before the midpoint of the semester or session.

CR or NC or Credit or No Credit: The credit/no credit grading system (A, B, C, B-, C-, D, D-, E = no credit) is used in all 700-level courses, as well as some terminal and five-week courses and programs approved by the Graduate Studies Council. The student's permanent record will indicate "CR" when the course is passed and "NC" when the course is incomplete or failed.

AUD — Audit: The symbol "AUD" is used to indicate when a student has enrolled in a course as an auditor.

Honor Points

The number of honor points earned in a course is the number of semester hours credit 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 four-hour course gives 4x3, or 12 honor points. Honor points are not involved in courses in which the credit/no credit grading system is used. Undergraduate credit is not computed into the graduate point-hour ratio.

Graduated with Honors: A student attaining a point-hour ratio of 4.0 at the conclusion of a master's program at Western Michigan University will be "Graduated with Honors." All graduate courses completed, including those not specifically listed in the degree program, will be computed in the student's overall grade point average.

Fellowships, Associateships, Assistantships

Western Michigan University provides fellowships and assistantships for students planning to pursue graduate study. Applications are due by February 15, and appointments are usually made by April 1 for students planning to enroll in the fall semester. Students with appointments are required to pay regular tuition fees; non-resident students will be granted a limited number of grants, enabling them to resident tuition rates for part of their credits. Appointments are often renewable, except for Graduate College Fellowships and Thurgood Marshall Assistantships.

The following appointments are available:

- Graduate College Fellowships of $4,000 for two semesters are offered to outstanding students entering Master's degree programs. An entering student is defined as one who will have earned no more than six graduate credits by the beginning of the fall semester. Awards are made on the basis of scholarship and leadership potential.

- Doctoral Assistantships of $5,000 for two semesters are offered to students enrolled in the following doctoral degree programs: Counseling and Personnel, Educational Leadership, Mathematics, Psychology, Science Education, Special Education, and Sociology.

- Thurgood Marshall Assistantships up to $5,400 for three semesters are offered to students enrolled in the professional programs at the University. Inquiries should be sent to the chairperson of the department.

Policies Governing Graduate Appointees

1. Definitions

A graduate appointee is a student enrolled in a program leading to a graduate degree and receiving a University-administered stipend or salary which is not less than one-third of the prevailing full amount set by the University for that particular type of appointment.

Although graduate appointments differ in many important ways, each can be classified either as an assistantship or a fellowship. The critical difference
between an assistantship and a fellowship lies in the primary intent of the award— as payment for service (fellowship) or as a scholarship (assistantship) to help the awardee achieve an educational goal. Although there may be some aspect of service connected with a Fellow's particular departmental activity, this activity is part of the training designated for all participants in the Fellow's academic program and the service rendered is secondary to the educational goal. Although all, or nearly all, of an Assistant's service to the department should also be part of the learning experience in the discipline, the primary thrust is in doing part of the work of the department.

More than one fractional appointment may be held simultaneously. However, in no case shall one person hold more than the equivalent of one full appointment at one time. A student with a full appointment is not permitted to have other employment.

2. Types of Appointments

a. Assistantships

Graduate Assistants are apprentices in the profession. Although the service aspect is emphasized in the definition in order to make a distinction, Graduate Assistants, first and foremost, are students and valued members of the community of scholars. They are chosen for their scholarship and manifest interest in the discipline as well as for their ability to perform the needed service.

1. The service of Graduate Teaching Assistants (T.A.s) consists of activities directly related to students in the teaching enterprise.

2. The service of Graduate Research Assistants (R.A.s) consists of research activity under the supervision of a faculty member.

3. The service of Graduate Non-Teaching Assistants (N.T.A.s) includes all other work in the department not falling under the other categories but generally accepted as appropriate.

b. Fellowships

Fellows are students who have distinguished themselves by outstanding academic achievement or special abilities. Fellowships are provided by the University or by another donor with the approval of the University. The fellowship grant (stipend) is a gift to help the Fellow achieve an educational goal, rather than a payment for services.

3. Service Requirement

The kinds of service required of Graduate Assistants may vary among departments, which determines its own range of appropriate possibilities subject to administrative review. Whatever kinds of service are expected, however, a full assistantship in any department consists of twenty hours of service per week or its equivalent and precludes other employment. Equivalency is calculated on the basis of the value assigned by a department to the performance of each particular service.

4. Stipends and Salaries

The amount of the stipend is set by the donor with the concurrence of the Vice President for Academic Affairs.

Salaries for full-time Assistants in each type of appointment are determined at the vice-presidential level and shall be uniform throughout the University, except that a department with the approval of the appropriate dean may elect to have a graduated scale (based on time in the department) up to an amount of which may differ by more than 10% from the University-stipulated amount. Fractional awards are made for fractional appointments.

5. Affirmative Action

The University Affirmative Action Policy shall apply to graduate appointments.

6. Professional Ethics

Graduate Assistants shall adhere to the same standards of Professional Ethics as those of the regular faculty.

7. Notification of Status

Enrollment Status

Evidence of Status

Enrollment Status

Notification of Status

6. Professional Ethics

Graduate Assistants shall adhere to the same standards of Professional Ethics as those of the regular faculty.

8. Professional Development

Graduate Assistants are apprentices to the profession and shall be provided with information prepared by the Graduate College concerning current University-wide procedures, practices, privileges, and responsibilities that relate to graduate assistants. Each department is responsible for providing any supplemental information on these matters that are necessary and special.

9. Enrollment Status

A full appointment requires a minimum enrollment of six credits per semester or three credits per session.

10. Evidence of Status

For formal identification as a graduate appointee, each appointee should have a special validation sticker on his or her ID card. This validation must be secured at the Office of Registration at the beginning of each term. Validation may be authorized during the spring and summer sessions for graduate appointees on academic year appointments even if the appointee is no longer receiving a stipend or salary.

11. Benefits

a. Tuition Fees

Graduate appointees who are not residents of Michigan, as determined by the University, be granted partial tuition remission for the non-resident portion of their tuition fees. The remitted tuition will be credited toward "in-kind" earnings and taxable income for students on appointments requiring service.

b. University housing

Graduate appointees will be accorded priority in securing University housing in residence halls or family housing apartments of deadlines are observed and as facilities permit.

c. Library

Graduate appointees will be accorded the same privileges and responsibilities as faculty members in the use of the library facilities. These are specified in the faculty handbook (Western Michigan University Policy Handbook).

d. Parking

Graduate appointees are exempt from paying the motor vehicle registration fee, but are required to register their motor vehicles. Application may be made to the Department of Public Safety for parking privileges in designated lots.

e. Campus Bookstore

Graduate appointees will be accorded discount privileges on purchases at the Western Michigan University Bookstore in the same manner and degree as faculty and staff members.

f. University facilities

Graduate appointees will be accorded the use of University facilities (e.g., student offices, research facilities, etc.) authorized by the director of the facilities on the same basis that they are authorized for part-time faculty.

Graduate Student Research Fund

The Graduate College has established a Graduate Student Research Fund to encourage research by currently enrolled graduate students and to assist them in supplementing Their findings to professional groups. Grants range to a maximum of $500.

Two basic types of proposals are considered for support:

1. The extraordinary or unusual costs incurred in research projects.

2. Travel costs incurred in presenting study reports and research findings at professional meetings.

The typing of theses and dissertations and the purchase of supplies and equipment commonly provided by departments are not considered to be unusual expenses.

Early in the Fall Semester each year the Awards and Fellowships Committee establishes application deadlines and the required format for the proposals. Applications for research travel grants must be secured by The Graduate College.
Other Financial Assistance

1. Federal Financial Aid Programs

Western Michigan University participates in various federally funded financial aid programs to assist students who demonstrate the required criteria. The criteria are set by the U.S. Department of Education and are subject to periodic revision.

Application procedures for the College Work-Study Program and the National Direct Student Loan Program:

- Submit either a Financial Aid Form (FAF) or a Family Financial Statement (FFS) to the appropriate address on the application.
- The FAF and FFS may be obtained from college financial aid offices or the Office of Student Financial Aid and Scholarships at Western Michigan University.
- Submit any additional information requested by the WMU Office of Student Financial Aid and Scholarships.

a. College Work-Study Program (C W-S): This provides work opportunities for students who are in need of financial assistance to attend or continue in college. Ordinarily, they work between 10-15 hours per week while attending school and up to forty hours per week during vacation periods.

b. National Direct Student Loan (NDSL): Through this program, formerly National Defense Student Loan, loans are available to graduate students who have demonstrated a financial need. A full-time graduate student may borrow up to a cumulative total of $12,000, including loans received as an undergraduate. The actual amount borrowed may not exceed the student's demonstrated need. The interest rate of five percent and repayment start six months after leaving college. The minimum monthly repayment is $30. Part or all of the monthly payments may be deferred up to three years while in the Armed Forces, as an officer in the Commissioned Corps of the U.S. Public Health Service, as a volunteer under the Domestic Volunteer Service Act of 1973, as a full-time volunteer in an organization comparable to the Peace Corps or ACTION agency programs, or for a temporarily totally disabled person or unable to work because of caring for a disabled spouse.

c. Federally Insured Student Loan Program (GSL): The Federal government guarantees loans made by private lending institutions to graduate students who are enrolled as at least one-half-time students. A cumulative maximum of $25,000 may be borrowed including both undergraduate and graduate (maximum of $5,000 per year) loans. The interest rate is seven percent for those borrowers who have a Guaranteed Loan outstanding prior to January 1, 1981, and a nine percent rate for those who do not. The student pays no interest on the loan while in school at half-time status or better for two months thereafter. Provided her adjusted family income is $30,000 or less or the student can demonstrate need according to the criteria set by the U.S. Office of Education. A minimum monthly payment of $50 may be required by the lender. Applications for this program must be obtained from a student's local lending institution. The names of participating lending institutions can be obtained from the Office of Financial Aid Office at your present college or (for Michigan residents only) at the WMU Office of Student Financial Aid and Scholarships.

d. State Direct Student Loan (SDSL): The Michigan Higher Education Student Loan Authority was created to provide a source of guaranteed loans (State Direct Loan Program) to legal residents of Michigan who are unable to secure guaranteed loans from private lending institutions. Students accepted for enrollment or enrolled in good standing at WMU may apply at the Office of Student Financial Aid and Scholarships for loans to help pay educational expenses.

Graduates may borrow up to a cumulative maximum of $25,000 including loans as an undergraduate for graduate and professional study. The maximum loan for any academic year cannot exceed $2,500 or the total cost of education less other financial aid received, or be more than 50% of the total educational costs for the year involved as determined by WMU whichever is less. The Michigan Higher Education Student Loan Authority will determine the amount of each loan after consideration of WMU's recommendation. Contact WMU's Office of Student Financial Aid and Scholarships for further details.

e. United Student Aid Fund Program (USAF): Nonresidents of Michigan unable to obtain a federally guaranteed loan in their own state should check with their local lending institution to learn if it participates in this program. The conditions of this program are the same as for the federally insured loan program. The names of participating institutions can be obtained from United Student Aid Funds, Inc., 6610 N. Gradeland Avenue, P.O. Box 50827, Indianapolis, Indiana 46250.

Students unable to obtain this loan through a lending institution in their own area should contact the WMU Office of Student Financial Aid and Scholarships for referral to a lender of last resort.

f. Auxiliary Loan to Assist Students (ALAS) in Michigan it is called "The Michigan Auxiliary Student Loan." This program formerly was officially known as the Parent Loan for Undergraduate Students (PLUS). Graduate students can borrow up to $3,000 per academic year up to a maximum aggregate of $15,000. The interest rate is 14%. Repayment is deferred until the borrower ceases to attend school at least half-time status. However, the borrower is responsible for payment of the interest even while in school. Payment arrangements are determined by the lender. Students unable to obtain this loan through a lending institution in their own area should contact the WMU Office of Student Financial Aid and Scholarships for referral to a lender of last resort. A borrower under this program must meet the lender's standard of creditworthiness.

g. Short-Term Loan: The loan funds provide emergency assistance for enrolled full-time or part-time graduate students to meet educational expenses. These loan funds have been established by University friends, alumni, faculty, and staff. Many of these funds provide loans for a maximum of six months at interest of five percent. Some funds restrict loans to students in certain curricula, of various academic ranks, from a given geographical location, etc. Application for these loans must be made in person at the Office of Student Financial Aid and Scholarships.

2. Non-Federal Financial Aid Programs

a. Monthly Education Payment Plans: Western Michigan University has approved two monthly payment plans which provide parents with the opportunity to borrow from $400 up to a maximum of the entire educational expense of their son or daughter. Inquiries concerning this program should be directed to the following addresses:

- Insured Tuition Payment Plan
  6 Saint James Avenue
  Boston, Massachusetts 02116
  or
  The Tuition Plan
  Concord, New Hampshire 03301

b. Off-Campus Employment: Students may find work through numerous local employers in the Kalamazoo area. Students looking for work can receive assistance through the Student Employment Referral Service in the Office of Student Employment Referral Service actively seeks out employment opportunities for students within the Kalamazoo area. When applying for campus, students seeking employment are encouraged to contact this office.

c. On-Campus Employment: A large number of students are employed by the various areas and departments of the University. Each handles its own student employment program. Areas and departments are requested, but not required, to list job vacancies with the Student Employment Referral Service. These employment opportunities can best be secured by direct contact with the areas and departments.

3. Military Science Subsistence Allowance: Students enrolled in the Advanced Course of the Military Science program are eligible to receive $100 a month for up to ten months of each year for two years. Contact the Department of Military Science for further information.
Student Employment Referral Service

Students may find employment through numerous local employers in and around the city of Kalamaoo and on campus. Students looking for work can receive assistance through the Student Employment Referral Service in Elsworth Hall, Room A114. The Student Employment Referral Service actively recruits employment opportunities for students within the Kalamaoo area and on campus. On campus, each department handles its own student employment program, and these employment opportunities can best be secured by direct contact with departments. Departments are asked, but not required, to list job vacancies with the service. When arriving on campus, students actively seeking employment are encouraged to contact the Student Employment Referral Service.

Veterans' Assistance

The Academic Records Office on the third floor of the Seibert Administration Building certifies veterans under the G.I. Bill and its extensions. Veterans may contact this office to discuss G.I. Bill eligibility. The areas of assistance include, but are not limited to, veterans' educational benefits, vocational rehabilitation benefits, and tuition assistance. If difficulties or questions arise in receiving benefits, the veteran should contact the Veterans Administration Department. Forms may be obtained at the Academic Records Office.

The Family Educational Rights and Privacy Act

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

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 from students' education records without the written consent of the student, except to personnel within the institution, to officials of other institutions in which the student seeks to enroll, to persons or organizations providing financial aid, to student health care providers, to account 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 others present. More specific 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 education records. These members include faculty, administration, clerical and professional staff, 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 Section 4, to include: student name, address, telephone number, date and place of birth, curriculum and major field of study, dates of attendance, degrees and awards received. The institution has adopted procedures covering the privacy of previous educational agency or institution attendance 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 education records, to challenge the contents of their education records, to have a hearing if the outcome of the challenge is unsatisfactory, and to submit explanatory statements for inclusion in the student records, which include admissions, personal, academic, and financial files, and academic, cooperative education, and placement records. Students wishing to review their education 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 would be made at the student's expense at the prevailing rate of ten cents per page. Education records do not include records of instructional, administrative, and educational personnel which are the sole possession of the maker and are not accessible or revealable to any individual except a temporary substitute, records of the law enforcement unit, student health 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: institutional information submitted by their parents, confidential letters and recommendations associated with admissions, employment or job placement, or honors to which they have waived their rights of inspection and review; or education records containing information about more than one student, in which case the institution will permit access only to that part of the record which pertains to the inquiring student. The institution is not required to permit students to inspect and review confidential letters and recommendations placed in their files prior to January 1, 1975. Provided those letters were collected under established policies of confidentiality and were used only for the purposes for which they were collected.

Students who believe that their education records contain information that is inaccurate or misleading, or is otherwise in violation of their privacy or other right may discuss their problems informally with the person in charge of the records involved. If the decisions are in agreement with the students' requests, the appropriate records will be amended. If not, the students will be notified within a reasonable period of time that the records will not be amended and will also be informed of their right to a formal hearing by the Registrar. Students may then request a formal hearing which must be made in writing to the Registrar within ten days after receiving such requests. If the students request a formal hearing, the Registrar, or a person designated by the Registrar, who does not have a direct interest in the outcome of the hearing, will conduct a hearing if the outcome is in question and the student waives their right of inspection and review. The hearing officer shall have access to any and all information relevant to the issues raised and may be assisted or represented at the hearing by one or more persons of their choice, including attorneys, at the students' expense. The hearing officer will adjudicate such challenges will be the Registrar, or a person designated by the Registrar, who does not have a direct interest in the outcome of the hearing. Decisions of the hearing officer will be final, will be based solely on the evidence presented at the hearing, and will consist of written statements summarizing the evidence and stating the reasons for the decisions, and will be delivered to all parties concerned. The education records will be corrected or amended in accordance with the decisions of the hearing officer if the decisions are in favor of the students. If the decisions are unsatisfactory to the students, the students may place in the education records a statement commenting on the information in the records, or statements setting forth any reasons for disagreeing with the decisions of the hearing officer. The statements will be placed in the education records, maintained as part of the students' records, and released whenever the records in question are disclosed.

Revisions and clarifications will be published as experience with the law and institution's policy warrants.

Student Academic Rights

1. Introduction

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

a. In the Classroom

The professor in the classroom and in conference should have 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.

b. 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 standards of academic performance established for each course in which they are enrolled.

c. Protection of Freedom of Expression

Students should be free to take reasoned exception to the data or views offered in any course of study and to express their own judgments and points of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.

2. Policies and Procedures

a. Students should be fully informed by the faculty about course requirements, evaluation procedures, and academic criteria to be used in each class. This information should
b. Procedures for Reviewing Student Grievances Related to Grading

1. 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.

2. 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.

3. 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.

4. 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 to 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 Graduate Committee on Academic Fairness.

5. The Graduate Committee on Academic Fairness consists of three faculty and three graduate students. When a case is presented to the Committee, the Committee shall investigate, making sure that all interested parties have a full opportunity to present their positions. 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.

6. If the Committee decides that there should be no change of grade, they will inform the student, the faculty member, the department chairperson or head, 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.

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

8. Occasions do occur when a faculty or an administrative official may wish to question a grade or grade change. Such instances, these procedures, beginning with review by the Ombudsman, shall be available to them.

c. Policies and Procedures Regarding Requirements

1. All students who seek advice on academic requirements will be provided with written copies of their academic advisors’ recommendations, and students will not be held responsible for errors made by their advisors. This section is not to be interpreted to mean that the student is relieved of the responsibility of reading 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.

2. 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.

3. Every department shall provide systematic procedures for students to express their views on matters of program and curriculum.

4. University policy and implementation of such policy should not be determined and enforced according to the rate of rapid solution of programming or records. Special care should be taken to insure that no individual is treated unfairly because of computer processing.

5. The University Ombudsman will have the authority to investigate complaints and recommend or negotiate fair solutions on behalf of the student.

University Ombudsman

The Ombudsman is a presidential appointee chosen with the active participation of students, faculty, and staff and confirmed by the Board of Trustees. The position of University Ombudsman was created to investigate and mediate grievances and to provide justice for all members of the University community. Simple and rapid procedures have been established for the hearing of requests, complaints, and grievances. The Ombudsman investigates such matters, and where he/she discovers a malfunction in the administrative system or an abuse of power, he/she assists the individual in accomplishing a quick and fair resolution of his/her problem. He/She can remedy some problems alone, but when appropriate, he/she refers persons to other University members and/or offices. The Ombudsman is authorized to make thorough investigations and has prompt access to all University offices and relevant records. No person shall suffer any penalty because of seeking assistance from the Ombudsman. All information presented to that office by persons seeking assistance shall be considered confidential. The Ombudsman is alert especially to the chief causes for student concerns and makes recommendations for the elimination of these causes consistent with the fundamental purpose of the University.

University Libraries

The University Libraries consist of the Main Library (Dwight B. Waldo Library) and four branches: the Music Library, the Physical Sciences Library, and the Educational Resources Center Library. The University Libraries are organized and maintained for the purpose of providing materials and services necessary to the instruction and research carried on at the University. The collection numbers over 1,900,000 items including books, bound periodicals, music scores, recordings, maps, documents, and materials in microform. Nearly 11,000 periodical and serial titles are currently received. The Library system is a depository for Michigan and United States government documents and receives the microprint edition of the United Nations documents as well as monographs and reports of the major associated organizations.

Dwight B. Waldo Library (which is named for the first President of the University) houses the main collection. Built in 1959, it was enlarged in 1987 to almost double its original size.

The use of various approval and gathering plans as a part of the acquisitions program by the Library placed an emphasis on building a strong collection of current imprints in the fields of study at the University. Special collections housed with the regular collection include:

1. The Ann Kercllcr Memorial Collection on Africa is an extensive collection of materials on Africa south of the Sahara. Started more than a decade ago, it has grown rapidly to become a noteworthy addition to library resources.

2. The South Asia Collection is another area of special strength. Together with the Kercllcr African collection it helps support the University’s commitment to area studies.

3. The Randall Frazier Memorial Collection, honoring a notable alumnus, has a wealth of material on the history and culture of Black America.

Special collections which are housed separately include:

1. 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.

2. The Cistercian Studies Library provides rare and specialized resources for the in-depth study of the medieval period in history. Its support of the programs of the University’s Medieval Institute is supplemented strongly by the holdings of material on the history of religion, and philosophy of this era which are a part of the main library collection.

3. The C. C. Adams Ecological Collection consists of the personal collection and papers of the pioneer American ecologist, Charles C. Adams.

4. The microfilm collection of over 500,000 contains such items as the Human Relations Area File, the American Periodical Series, the Newspaper and Labor History Library. Early American Newspapers of the 18th and 19th centuries, the U.S. National Archives, books printed in Great Britain from 1475-1640, and ERIC documents (documents in educational research published by the Educational Resources Information Center).

5. The Map Library, a unit of Reference Services, holds some 158,000 items which include Army and U.S. Geological Survey maps, some aerial photography maps of special historical interest, and various domestic and foreign maps which are cataloged and available for use. In addition to maps, the Map Library also possesses over 850 atlases.
before 1601, corporation and insurance company reports, foreign dissertations, etc. Loan copies of the Center's Handbook, describing the contents of the collection are available in our Interlibrary Loan Center and from our Acquisitions Department.

Self-service photocopy machines are located throughout the library system. An attendant-assisted copying service is located at the Waldo Library Circulation Desk. Microform copies are available at the Waldo Circulation Desk, and at the Business Library and the Educational Resources Center Library.

Graduate students engaged in projects requiring extensive use of library resources may apply in writing to the Circulation Office of Waldo Library for assignment of a special locker or a locked carrel in Waldo Library.

Housing

All students enrolled at Western Michigan University are permitted to live in housing of their own choosing. However, students are encouraged to give consideration to the financial, educational, and social benefits of living in a residence hall or a student family apartment as well as the convenience of being close to their 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 possible while 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 any residence hall. Generally, 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 they anticipate coming to the University. Individuals returning to the University as re-enrollees and newly admitted graduate students will receive information by return mail upon requesting details from the Manager of Residence Hall Facilities.

Admission to the University does not carry a guarantee that a residence hall assignment will be available. Likewise, receiving a contract and submitting a residence hall assignment request does not guarantee space will be available. Assignments are made on a first-come, first-served basis up to the space available. Requests received after all halls have been filled to capacity will be placed on a waiting list.

Nineteen halls offering a variety of services are located in all sections of the campus. Some halls are coeducational and others are specifically designed for the needs of different groups of students. Eighteen residence halls are located in Sangren Hall and the remaining one (Spindler) is located in one of the new residence halls on the east side of campus.

Most of the residence halls furnish 30 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 8:00 a.m. to 1 p.m. on Sunday. The food service menu offers an excellent variety of items with an extensive menu developed in consultation with professional dietitians and residents. Food service residence halls are available during the fall and winter semesters and during the Thanksgiving recess.

Different assignment patterns are used in the various residence halls. Some halls are reserved exclusively for men, others for women. Students, unless assigned, are assigned by sex to alternate floors or alternate suites. In locations where coed-type assignments exist, separate bath and toilet facilities are provided.

The residence hall offerings at Western attract over 6,000 students each Fall/Winter semester. The residents assigned to the halls represent individuals from all walks of life and academic interests. Among the majority of the students who are from all of the 50 states, many foreign countries are represented. Such a diverse group of individuals provides a stimulating atmosphere for the individual interested in learning about others.

Both undergraduate and graduate students are welcome at residence halls. Students most often prefer a specific hall because of location or assignment pattern (coed). During the fall and winter semesters graduate and upperclassmen students from nonfood hall, or Davis, a coed food service hall, of special interest. Students must be in or older to live in Waldo Hall and not to be a junior standing to live in Davis. No hall is reserved for the exclusive use of graduate students.

Charges for residing in a residence hall are kept as low as possible, recognizing the minimum services necessary and desired by most students.

Family Housing

The 590 on-campus apartments provide convenient, inexpensive housing for many graduate student families. The one- to two-bedroom style apartments are available in either furnished or unfurnished condition.

Approximately 1,500 students, spouses, and children live in the apartments on a year-around basis. It is our experience that these families have similar economic and social circumstances, making for pleasant relationships among neighbors. and friends. Because many of these families have small children, special babysitting arrangements can usually be worked out with a neighbor. Some families are quick to find their niche in the Family Housing community.

Married couples, with or without children as well as single parents with dependent children are eligible to reside in Family Housing. Assignments are made based on the date of application—later a person applies the better the chance for receiving an assignment. Priority is given to student families with Graduate Assistantships. Early application is encouraged and may be submitted even before official admission to the University. All inquiries should be made directly to the Family Housing Office, Faunce Student Services Building. The telephone number is 616-383-870.
Off-Campus Housing
Approximately 70 percent of Western's stu-
dents live in off-campus apartment complexes. Rental listings of apartments, houses, and sleeping rooms are maintained and printed for distribution. Listings of students in need of roommate are updated regularly and used extensively by the thousands of students who live off-campus and share their housing costs. Western Off-Campus Housing assists students in off-campus living as an opportunity to pursue individual lifestyles; their experiences are often plagued by strained roommate relations and rental difficulties that interrupt their academic achievement. Recognizing the significance of an adequate housing environment for all students, the University's rental listing program is supplemented with ten counseling and educational programs. University Off-Campus Housing provides a wide variety of student housing services, including counseling, and educational programs as well as tenurized services. For additional information regarding off-campus housing, contact the Office of Commuter Student Services, Room 3150, Faunce Student Services Building.

University Health Center
The Western Michigan University Health Center is a student-oriented health facility which exists to support and promote optimal health for the students. Health and wellness are an integral part of a student's capacity to benefit fully from all learning experiences offered during college years. The University Health Center offers health care which facilitates recovery from illness, and opportunities for health decisions and information which contribute to disease prevention and wellness.

University Health Center Services and the Student Health Fee
The University Health Center provides students with all examinations, treatments, minor surgical procedures, which would be expected in a physician's office, as well as laboratory testing, x-ray and pharmacy facilities, and health education opportunities. Payment for all services rendered within the University Health Center, except for pharmaceuticals, is covered by a Student Health Fee (SHF) assessed in full at the beginning of each semester or session to students carrying 5 or more hours a semester or 3 or more hours a session. Students carrying less than 5 hours a semester or 3 hours a session are assessed a reduced fee. This fee entitles them to routine physician visits at no further charge, but all other Health Center services are rendered on a "fee for service" basis. These students may, however, choose to pay the difference between the reduced assessed fee and the full Student Health Fee and utilize Health Center services at no further charge (with the exception of pharmaceuticals which are offered at reduced rates).

All students wishing to buy into the SHF must do so within the first three weeks of a semester or the first week and a half of a session. Payment must be made at the University Health Center. The Student Health Fee, assessed in full at the beginning of each semester or session, covers all of the following services, when rendered by University Health Center staff, no matter how many times services are required:
- Office visits
- Physical exams and health maintenance visits
- Medical specialties
- Mental Health
- Minor office surgical procedures
- Physical Therapy
- Laboratory studies
- X-rays
- Cases
- Medical supplies
- Allergy injections
- TB testing
- Immunizations
- Prescriptions at Reduced Rates
- Health Education

University Health Center Hours
Regular Clinic Hours during Fall and Winter Semesters:
Monday through Friday: 7:45-11:30 a.m.
1:00-4:45 p.m.; 4:45-10:00 p.m.
Saturday morning: 9:00-11:30 a.m.
Sunday morning: 9:00-11:30 a.m.
Clinic hours during Spring and Summer sessions may vary from those during Fall and Winter semesters. Students should check with the University Health Center for specific hours during these periods.

How to Use University Health Center Services
It is necessary to present a student identification card when utilizing University Health Center services. Students are seen at the Health Center in a walk-in appointment with the physician or physician assistant of their choice, or on a walk-in basis. Students with appointments are seen as scheduled, walk-in students are seen when time between appointments is available. Appointments may be made by calling 383-6005. Monday through Friday: 7:45 a.m.-4:45 p.m. If it is necessary to cancel an appointment, it is requested that a student notify the Health Center so that their time can be used to assist another student.

Hospital/Medical and Surgical Expense Insurance
All students enrolled at Western Michigan University are urged to carry some form of medical and accident insurance which covers medical, surgical, and hospitalization expenses not included in the Student Health Fee. Some insurance companies offer coverage for expenses only when hospitalized. Other companies pay for diagnostic procedures performed by specialists outside the University Health Center as well as hospitalization if you are not presently covered by a medical/surgical insurance program. Consider the hospitalization and accidental insurance plan offered through Western Michigan University. This plan is provided for students and their dependents at reduced rates, and may be applied for when a student is admitted to the University.

Counseling Services
Counseling services are offered to all graduate students and alumni of Western Michigan University. Services include job counseling, a career information library, on-campus interviewing, career exploration, academic counseling, educational goals, and personal or emotional difficulties.

1. Individual counseling to provide students with an opportunity to discuss various concerns, including career exploration, academic counseling, educational goals, and personal or emotional difficulties.
2. Group sessions and workshops to increase self-understanding, facilitate life style and career decisions, improve relationships with others, increase leadership skills, and eliminate behaviors that are self-defeating.
3. Career Exploration and Media Center to disseminate a wide variety of information concerning careers as well as a substantial number of catalogs and bulletins from other American colleges and universities.

4. Career Development Program to assist students in the exploration of individual career possibilities and increase skills necessary for decision making and future planning.

5. Training and Internship Programs to provide training opportunities for graduate students and interns from Counseling and Personnel, Psychology, Social Work, and related programs.

The Counseling Center is accredited by the International Association of Counseling Services and is staffed with professionally trained counselors and psychologists. All students using the counseling service are assured of complete confidentiality.

Appointments may be made by telephone or by stopping at the Counseling Center reception desk between 7:45 a.m. and 4:45 p.m., Monday through Friday. Graduate students unable to use Counseling Center services during regular hours may make arrangements for evening appointments by calling 383-1850.

Testing And Evaluation Services

The services of the Testing and Evaluation Center are open to all graduate students and their families. Interest Inventories, Aptitude Test Batteries, Personality Measurements, and Achievement Tests are available. All these different instruments are administered and interpreted at a small fee to the student or the student's family. Information and applications for most of The Graduate College tests are available in the Testing office. Testing and Evaluation Services is the regional office for the Miller Analogy Test which is given by appointment only.

Testing and Evaluation Services has the largest selection of test files in southwestern Michigan. These tests can be obtained at the Testing office for use by students and faculty members for informational purposes, class projects, research purposes, or most any other valid reason.

If the student is working on a research project, survey, or collecting data for any valid reason, the same test sheets used by faculty members are available at no charge. Testing staff members will assist in the planning of the project wherever possible.

Testing and Evaluation Services is located in West Hillside Apts., D-4, and the phone number is 383-1850. The department hours are 7:45 a.m. to 4:45 p.m., Monday through Friday.

English Language Center For International Students

The Career English Language Center For International Students (CELCIS) provides intensive English language instruction for those prospective students who need further training in English in order to qualify for regular admission to the University. Students in the CELCIS program must be enrolled full-time: twenty (20) hours of classroom instruction per week. Part-time study is not permitted.

Classes at the various levels include: Speaking and Listening Comprehension; Grammar; Reading and Vocabulary; Writing; Pre-Career English (ESP - English for Specific Purposes); Research Paper Writing, and Work in the Language Laboratory.

There are six CELCIS terms per year, each approximately seven and a half (7½) weeks in duration. Both the Test of English as a Foreign Language (TOEFL) and the Michigan Test of English Language Proficiency (MTELP) are offered for CELCIS students at the end of each term. The Certificate of Eligibility for a visa (Form I-20 or DSP-66) is issued by CELCIS for admission to the CELCIS program. Admission to CELCIS does not, however, imply admission to the University for academic study.

For further information and application forms contact Career English Language Center For International Students, Western Michigan University, Kalamazoo, Michigan 49008, Telephone (616) 383-8024.

Office Of International Student Services

Western Michigan University has long recognized the value of international educational interchange. Over the years, hundreds 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 foreign countries. This educational interchange has given the University an international atmosphere which 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 the interchange process.

Foreign Student Services: The Office of International Student Services deals with the special needs and circumstances of foreign students such as processing of applications for admission, conducting an orientation program for new foreign students prior to each enrollment period, assisting with housing arrangements, coordinating community programs involving foreign students, providing advice and counsel to each student's immigration status, serving as a liaison between the student and his/her sponsor, and offering personal and social counseling on a wide variety of concerns.

While at the University, foreign students are encouraged to participate in academic and social activities as their interests and time allow.

Any foreign student interested in seeking admission to Western should contact the Office of International Student Services for an application form and instructions. To qualify for admission, a foreign student must demonstrate to the University that he/she is academically, financially, and linguistically capable of undertaking the academic program being proposed, generally on a full-time basis. Before a prospective student can be admitted and the Certificate of Eligibility for a visa (Form I-20 or DSP-66) issued, educational records documenting all previous secondary and post-secondary schooling must be on file along with a financial statement, signed and returned from a sponsor showing that adequate money will be available to cover the student's educational and living expenses for the duration of anticipated enrollment. Regarding linguistic capability, those prospective students from non-English speaking countries who have not successfully completed at least two years of full-time academic study at another U.S. accredited institution must submit the results (scores) of a recognized English language proficiency examination prior to initial registration. The two examinations preferred by the University are the Test of English as a Foreign Language (TOEFL) and the Michigan Test of English Language Proficiency (MTELP). To qualify for unrestricted full-time enrollment, a prospective student must present a TOEFL "total score" of at least 550 or a MTELP "adjusted score" of at least 85%. Prospective students who are subject to the English proficiency test requirement but who have not submitted test scores prior to the time they report for orientation and enrollment will be required to sit for an on-campus administration of a University prescribed English proficiency examination. Students whose scores on this examination indicate a need for further training in English will be advised accordingly. Within certain limits, a prospective student who has achieved less than the minimum score required for unrestricted enrollment will be allowed to register for courses on a restricted basis. The limits and the restrictions to be observed will be established and applied by the Office of International Student Services.

Foreign Study Services: Students who are interested in or who are planning to study and/or travel in a foreign country are encouraged to utilize the services of the ISS. The Foreign Study Office maintains an extensive library of materials on overseas programs. Students who are undecided can receive advice and counsel which will help them to decide on the appropriateness of a foreign study/travel experience and which of the numerous opportunities would be best designed to suit their circumstances and purposes. Information regarding financial aid possibilities is also obtainable as is information on the International Student Identification Card, the Youth Hostel Pass, and other discount travel documents.

Motor Vehicle Registration

All motor vehicles parked on campus by faculty, staff, and students must be registered with the University. Drivers must obtain application forms and pay the appropriate registration fee to the Department of Public Safety.

All vehicles must be registered within 10 calendar days after the beginning of classes. After this time vehicles must not be parked on campus until registered.
Section II

Master's Degree
Programs and
Requirements

General Requirements

For A Master's Degree

1. Admission
   See Calendar of Events for application
deadline.
   a. Bachelor's degree, indicated on an
      official transcript.
   b. Transcripts of all courses taken
      beyond high school.
   c. A point-hour ratio of at least 2.6
      (A = 4.0) in the credits completed in
      the last two years of undergraduate
      work.
   d. Acceptance by both the Graduate
      College and a unit for a definite pro-
      gram of study.
   e. Meet any additional admission
      requirements as stated in the individual
      program descriptions.

2. Candidacy
   a. A Graduate Student Permanent Pro-
      gram which will constitute an ap-
      plication for admission to candidacy
      must be submitted to the Graduate
      College during the first semester or
      session of enrollment.
   b. Reservations indicated on the Cer-
      tificate of Admission and/or the
      Graduate Student Permanent Pro-
      gram must be removed before can-
      didacy will be approved.
   c. A point-hour ratio of at least 3.0
      (A = 4.0) is required. Honor point de-
      ficiencies acquired in credits earned
      at Western Michigan University can
      not be made up by credits earned at
      another university.
   d. A thirty-hour program may include
      a minimum of four hours of credit in
      500 readings courses.

3. Graduation
   See Calendar of Events for application
deadline.
   a. A diploma application must be submitted by Oc-
      tober 1 for the December Commencement, by Febru-
      ary 1 for the April Commencement, and by June 1
      for the August Commencement.
   b. Minimum Credit Hours: Completion of a minimum of thirty hours of ac-
      cepted credit in a program of study
      approved by the adviser. Normally, only courses numbered 500 and
      above are acceptable. One-half of
      the credits earned must be in
      courses numbered 600 or above.
      Each course included in a program
      must be completed by the day of
      graduation.
   c. Point-hour Ratio: An overall point-
      hour ratio of 3.0 (A = 4) is required.
      No undergraduate credit is computed in
      the graduate point-hour ratio.
   d. Hours After Candidacy: The election
      and completion of at least six hours
      is required after being approved for
      Candidacy.
   e. Transfer Credit: Six semester hours
      (three and four quarter or term hours
      are transferred as two semester hours)
      of graduate credit may be
      transferred from other schools pro-
      vided:
      1) The credits were earned in in-
         stitutions accredited for graduate
         study and are of B grade or better.
         The student's average for all
         graduate work taken at another in-
         stitution must also be B or better.
      2) The Graduate College approves the
         credits for transfer.
      3) The student's adviser verifies that
         the credits contribute to the stu-
         dent's program of study.
   f. Time Limit: All work accepted for the
      degree program must be elected
      within six years preceding the date
      on which the graduate degree is con-
      ferred.
   g. Master's Thesis: A student who in-
      tends to register for the Master's
      Thesis (6 hrs) is required to meet
      the Administrative Assistant for
      Graduate Programs in the Graduate
      College before registering for the
      class in order that the student is in-
      formed about the regulations pertain-
      ing to the preparation of the
      manuscript.

General Requirements

For A Second
Master's Degree

When a student wishes to secure a second
master's degree, he or she may include a
maximum of ten credits from his or her first
graduate degree program. The second
degree program must fulfill all of the other
requirements for a master's degree, except the English Qualifying Examination.

General Requirements

For A Graduate
Specialty Program

A Graduate Specialty Program is a fifteen to
twenty-hour, normally, aggregate of
cohesive, topical graduate courses and, as a
unit, independent of any single degree pro-
gram. Some individual courses within a
graduate specialty program may, however,
like all independent graduate courses, be ap-
icable to the requirements of a degree pro-
gram and may be elected to fulfill those re-
quirements. The entire aggregate of courses
in a Graduate Specialty Program, though,
cannot be applied to a degree program. If a
student possesses a graduate degree or
enrolls concurrently in a Graduate Specialty
Program and a degree program, some of the
required courses in the Graduate Specialty
Program will be in addition to the courses
required for the degree program. To signify
that a student has completed satisfactorily
the approved curriculum in a Graduate
Specialty Program, a certificate is awarded; how-
ever, the certificate is not an award of
license, accreditation, or certification to
render professional services.

Regular admission to The Graduate Col-
lege and to the unit offering the Graduate
Specialty Program is required. A student
must complete the requirements of the
Graduate Specialty Program with a "B" or
better average within a six-year period. The
Graduate Specialty Programs offered by
Western Michigan University are described
on pages 38 and 39.
In order to earn a degree, a student is required to complete a program of study. Each degree candidate must choose a graduate program that is compatible with his or her objectives. The programs listed on the following pages have been developed to provide students with the basic experiences that implement these objectives. The programs are, however, sufficiently flexible to allow for the differing needs of individual students.

Through the counseling process, graduate advisers will help the students choose courses to meet their individual needs. Courses and experiences should be chosen so that the graduate student becomes a person without a discipline. With increased ability to analyze and interpret life situations, and greater insight into problems involved in professional leadership.

**Accountancy**

**Advisers:**
- Gale E. Newell
- Fred W. Schaeberle
- John D. Sheppard
- William R. Welke

Room 151, East Hall

The Master of Science in Accountancy is a thirty-hour graduate program of which at least fifteen hours are in accounting. The program prepares the student for professional careers in industry, commerce, finance, government, and public accounting. The degree meets the Michigan educational experience requirement to sit for the uniform CPA exam in the areas of Financial Accounting, Cost and Management Accounting, Auditing, Taxation, Not-for-Profit, Systems, and Accounting Theory.

**Admission requirements**

Admission to the program is obtained through the Admissions Committee of the Department of Accountancy. The following criteria are used in the evaluation of applications:

- The applicant must have a satisfactory score on the English Qualifying Examination.
- The applicant must have an undergraduate degree and an acceptable academic record as evidenced by official transcripts from all colleges and universities attended. Attention is given to overall grade averages, especially to grade trends and areas of scholastic strength.

The applicant must have received a satisfactory score on the Graduate Management Admission Test.

**Prerequisites**

Undergraduate prerequisites are Principles of Accounting, Income Tax Accounting, Management, Marketing, Statistics, Finance, Business Law, and a course in Computer Usage.

**Program requirements**

Each individual student must include twenty-one graduate credits earned in courses numbered 600 and above and must have prior approval of a departmental adviser. In addition to the Accountancy major requirements, the student must elect a minimum of six graduate hours outside the Department of Accountancy.

**Anthropology**

**Adviser:**
- Robert Jack Smith

Room 102, Moore Hall

The Master of Arts in Anthropology is intended to provide the student with a sound understanding of the discipline as a whole. In addition it requires a concentration appropriate to its academic level, in one of the major branches of Anthropology. These may be identified as archeology, socio-cultural anthropology (including ethnology), physical anthropology, and linguistics (in cooperation with the Department of Linguistics). Research experience in archeology and ethnographic field schools is available.

**Admission requirements**

Admission to the program is obtained through the Admissions Committee of the Department of Anthropology. The following criteria are used in the evaluation of applications:

- The applicant must have an undergraduate degree with a major in Linguistics, Social Science, or its equivalent.
- Three letters of recommendation for admission to a graduate program.
- A statement indicating the reasons for seeking admission to a graduate program.
- A current resume is recommended.

**Program requirements**

- Complete at least thirty semester hours, selected in consultation with the student's major adviser. At least twenty of the hours must be in Anthropology. The remainder may be in Anthropology or in related disciplines as determined by the needs of the student.
- ANTH 601, 602, and 603, or their equivalents, are required.
- Complete an acceptable Master's Thesis (6 hrs.)
- Pass a comprehensive written examination on the field of Anthropology.

**Art**

**Adviser:**
- Deb Roseboom

Advising Coordinator Room 1406, Sangren Hall

The Department of Art offers three graduate programs. The Master of Arts is a one-year program for professional artists and art educators. This program with an emphasis on art education requires a minimum of thirty-six credit hours. With an emphasis on art practice, it requires thirty credit hours. The Master of Fine Arts is a two-year program with sixty credit hours required. The Master of Arts in the Teaching of Art is a thirty credit hour program for art educators. The following are the major areas of concentration in all programs: Ceramics, Graphic Design, Jewelry and Metalsmithing, Multimedia, Painting, Photography, Printmaking, Sculpture, and Textile Design.

**Admission requirements for all programs**

1. Deadlines for application:
   - For Spring, Summer. Fall semesters: March 1
   - For Winter semester: October 1
2. An undergraduate degree with a major in art or its equivalent.
3. A portfolio of art works or slides must be submitted directly to the graduate adviser of the Department of Art. It should include twenty to thirty examples of work in the student's area of concentration and other related areas.
4. A statement indicating the reasons for seeking admission to a graduate program and the specific area of concentration.
5. Three letters of recommendation for admission or a graduate assistantship.
6. A current resume is recommended.
Master Of Arts In Art

Art Education emphasis, minimum thirty-six credit hours. for students interested in art education, essentially for furthering their skills as public school or junior college teachers. Art Practice emphasis, minimum thirty-credit hours. for students interested in advanced study in art practice for professional reasons.

Program requirements
1. Twelve hours in one area of concentration.
2. Six hours in advanced art history.
3. Two hours in ART 625, Graduate Seminar.
4. A review of all art work by a graduate committee before the end of the first semester.
5. Two hours in ART 613, Graduating Presentation. This course includes a final exhibition and oral presentation which must be approved by a departmental committee before the MFA degree is granted.

Additional requirements for each emphasis
Art Education emphasis:
1. Nine hours in advanced art education courses.
2. Five additional hours in art practice or approved cognates.
3. A final paper or thesis.

Art Practice emphasis:
1. Five additional hours in art or art history.
2. Three hours in an approved cognate.

Master Of Fine Arts

The sixty-hour Master of Fine Arts degree is recommended as a terminal degree for practicing artists and for prospective higher education art professors. It is intended for artists who have a clear notion of their artistic purposes and are primarily interested in continuing their personal and artistic development. The Department of Art provides all graduate students with a studio and encourages them to work independently under the advice of one or more faculty members. An extensive schedule of exhibitions and visiting artists is an important part of the graduate program.

The Department of Art is a member of the National Association of Schools of Art. The MFA program requirements meet or exceed the recommendations of the College Art Association of America.

Program requirements
1. Twenty-four hours in the major area of concentration.
2. Nine hours in art history.
3. Fourteen hours in electives, of which nine must be in Art.
4. Three hours in ART 610, Advanced Drawing.
5. Two hours in ART 625, Graduate Seminar.
6. Six hours in courses outside the Department of Art.
7. Reviews of all art work by a graduate committee before the end of the first and third semesters.
8. Minimum of one year residence on campus.
9. Two hours in ART 613, Graduation Presentation. This course includes a final exhibition and an oral presentation which must be approved by a graduate committee before the MFA degree is granted.

Biological Sciences

Adviser: Gyula Ficsor
Room 124, Wood Hall

The Master of Science in Biological Sciences is designed to develop the ability of the student to carry out research projects, including their design, application, and analysis. This experience is supported by substantive coursework. This degree may serve as a foundation for continued graduate work or may lead to positions in a variety of occupations in industry, health services, and teaching. The major areas of training are in Genetics, Immunology, Microbiology, Morphology, and Physiology.

Admission requirements
1. Application to the department and The Graduate College.
2. Three letters of recommendation.
3. Appropriate courses in biology.
5. Two courses in physics.
6. Two courses in mathematics, one of which is calculus, but excluding college algebra.
7. The Aptitude and Advanced test in Biology portions of the Graduate Record Examination.

A limited number of deficiencies in coursework may be completed after the student has been admitted to the program but before approval for candidacy.

Program requirements
Thesis and non-thesis options are available. Both programs are directed by the student’s major adviser and Advisory Committee.

1. Thesis Option
   a. At least twenty-four hours of graduate coursework in biology and approved related areas (no more than eight hours outside the Biology Department).
   b. BMED 700, Master’s Thesis (6 hours)

2. Non-thesis Option
   a. At least thirty hours of graduate coursework in Biology and related areas (no more than eight hours outside the Biology Department).
   b. BMED 710, Independent Research (6 hours)
   c. The student shall satisfy the Advisory Committee of his or her ability to gather, analyze, interpret, and present research data.

Masters Degree and Requirements

The thirty-hour Master of Arts in the Teaching of Art, in cooperation with the Department of Education and Professional Development, is specifically designed for the educational needs of public school art teachers and the course content provides advanced study in art and teaching.

Program requirements
1. Fifteen hours in art credits to include art education.
2. Nine hours selected from four courses in the Department of Education and Professional Development
   b. ED 602, School Curriculum
   c. ED 603, Social and Philosophical Foundations
   d. ED 604, Psychological Foundations of Education
3. Six hours of electives in major field of education.

Biology
Adviser: Richard Brewer
Room 201, Wood Hall

The Master of Arts in Biology is designed to enhance the student’s ability to conduct research, including the presentation of findings, in areas selected from the biology department. Students specialize in most areas of biology, but the areas of greatest strength in our department are Aquatic Biology, Botany, Ecology, Physiology (Plant and Environmental), and Zoology (especially Invertebrate, Ichthyology, and Ornithology). A minimum of thirty hours is required in the Master’s Thesis option and thirty-six hours in the non-thesis option.

Admission requirements
1. Application must be made to the Department, as well as to The Graduate College.
2. At least one course in each of the following: Botany, Zoology (or two semesters of general biology), Ecology, Genetics, and Physiology.
3. Two semesters of mathematics, including some calculus.
4. A course in organic chemistry.
5. Two semesters of physics.
6. All sections of the Graduate Record Examination.

A limited number of deficiencies in these areas may be completed after the student has been admitted to the program but before approval for candidacy.

Program requirements
Thesis and non-thesis options are available. Both programs are directed by the student’s major adviser and Advisory Committee.

1. Thesis Option
   a. At least twenty-four hours of graduate coursework in Biology and approved related areas (no more than eight hours outside the Biology Department).
   b. BMED 700, Master’s Thesis (6 hours)

2. Non-thesis Option
   a. At least thirty hours of graduate coursework in Biological Sciences and related areas (no more than eight hours outside the Biology Department).
   b. BMED 710, Independent Research (6 hours)
   c. The student shall satisfy the Advisory Committee of his or her ability to gather, analyze, interpret, and present research data.
   d. Pass a comprehensive oral exam.
Biostatistics

Adviser:
Michael R. Stoline
Room 3319, Everett Tower

The objective of this program, which leads to a Master of Science in Biostatistics is to prepare students for professional careers in biostatistics, primarily in pharmaceutically related industries and in medical or health related research facilities. This program is administered through the Department of Mathematics, with the assistance of faculty in the Departments of Biology and Biomedical Sciences. The program requirements contain an equivalent of thirty-six credit hours of graduate work, including a ten credit hour internship experience. A student may be credited for some of these courses (or equivalent) already completed as an undergraduate; however, a minimum of thirty-three credit hours of course work is required in the program, including the internship.

Admission requirements
For admission to this program a student should have completed successfully an undergraduate program with a major in mathematics or statistics and a minor in biology or biomedical sciences, or a major in biology or biomedical sciences and a minor in mathematics or statistics, or the equivalent. More specifically the undergraduate program should include the following (numbers refer to WMU courses that would be acceptable):

1. Biology or Biomedical Sciences:
   Courses in at least three of the following four areas—ecology (BIOI 301), genetics (BIOL 250 or BIOL 302), physiology (BIOED 350 or BIOL 317 or BIOL 527), microbiology (ME 312); or sufficient undergraduate course work so that three 500-level biology courses or three 500-level biomedical sciences courses can be taken in the graduate program.

2. Mathematics and Computer Science:
   Multivariate calculus (MATH 271), differential functions (MATH 274), elementary linear algebra (MATH 230), probability (MATH 460 or MATH 560), intro. FORTRAN programming (CS 306).

3. Chemistry:
   Organic chemistry (CHEM 360 or 365), biochemistry (CHEM 450).

4. Physics:
   General physics (PHYS 210 and 211).

Program requirements
1. Statistics Component (14 credit hours):
   - Math 562 (Statistical Analysis), Math 660 (Statistical Inference I), Math 662 (Applied Linear Models), Math 664 (Design of Experiments I).

2. Computer Science Component (3 credit hours):
   CS 506 (Scientific Programming).

3. Biology or Biomedical Science Component (6 credit hours):
   Two approved 500-level biology courses or two approved 500-level biomedical science courses. These courses are chosen to fit a student's individual interest.

4. Elective (3 credit hours):
   An approved 500-level course in Statistics, Biology, or Biomedical Science.

5. Internship Component (10 credit hours):
   A professional field experience internship with a health-related industry for a period spanning at least two adjacent terms (45 hours of intern work experience is required for each credit hour; normally this is taken as MATH 712). (Completion of MATH 664 is recommended before internship.)

6. Final Examination:
   Before beginning the internship each intern must have successfully passed a written comprehensive examination covering the material of Math 562, 660, and 662.

7. Final Report:
   At the completion of the internship each candidate must submit a final report on the internship project.

The Department of Mathematics offers opportunities for financial support of graduate students through Graduate Assistantships and Fellowships. During the internship phase of the Biostatistics program students normally receive a stipend contributed by the sponsoring agency. Individuals desiring further information about financial support, or about the graduate programs related to mathematics as a whole, should contact the Mathematics Department (Room 3319, Everett Tower) or the Program Adviser.

Blind Rehabilitation

Western Michigan University, in cooperation with the Special Education and Rehabilitation Services Department of Education, offers two graduate programs in challenging careers in the emerging field of Blind Rehabilitation.

All applicants must have completed their bachelor's degree at an accredited college or university.

One Orientation and Mobility specialist must possess the ability to monitor consistently the environment and the persons whom they are teaching to ensure their safety. Adequate distance is required so that the monitoring does not interfere the interaction of the learner with the public or the physical environment.

Students are introduced into the program at the beginning of the Fall, Winter, and Spring sessions.

Orientation and Mobility

Advisers:
Stanley Suterko,
Room 3402, Sangren Hall
Marvin Weessies,
Room 3410, Sangren Hall

An orientation and mobility specialist offers individualized instruction to blind and visually impaired persons to move about efficiently and safely in familiar and unfamiliar environments. The specialist is employed by public and private schools.

The professional preparation for the orientation and mobility specialist requires twelve months of study, which includes academic work, simulated experience, and practice. The equivalent of two semesters is spent in residence on campus, and the third semester is spent off-campus in a supervised clinical experience.

Rehabilitation Teaching

Adviser:
Ruth Kaariela,
Room 3406, Sangren Hall
Lyne Lutxton,
Room 3404, Sangren Hall

The rehabilitation teacher offers individualized instruction to blind and visually impaired persons in the following skills of independent living: communications, personnel management, home management, minor household repairs, and leisure time activities. The rehabilitation teacher is employed in public or private agencies.

The professional preparation for the rehabilitation teacher requires twelve months of study which includes academic work, simulated experience, and practice. The equivalent of two semesters is spent in residence on campus, and the third semester is spent off-campus in a supervised clinical experience.

Business

Master Of Business Administration

This professional degree program leading to the degree of Master of Business Administration is designed to prepare graduate students to function effectively in administrative positions. This preparation emphasizes the development of the student's ability to make and execute decisions. The program of study is designed to give the student with skills and knowledge in the areas of critical analysis, business operations, changing environments, professional development, and specialized professional interests.

The student is challenged to develop the judgment, discriminating capacity, knowledge, and understanding which will permit him/her to work efficiently in administrative and other leadership roles. Under the guidance of the staff of the College of Business, personal programming for the participant is provided.

Admissions requirements

MBA applicants must submit scores for the Graduate Management Admission Test (previously known as the Admission Test for Graduate Study in Business) prior to consideration for admission to the program. The Graduate College's English Qualifying Examination is required for all graduate students in the College of Business before admission to the program will be completed. Students admitted on the basis of taking Classes (PTC) status are not allowed to enroll in graduate business courses.
Program requirements
The MBA degree program requires, in addition to the prerequisites, a minimum of thirty hours of coursework, or twenty-four hours and a Master's Thesis (6 hrs.) in a program approved by the student's graduate adviser. A minimum of twenty-four hours must be taken in 600 or higher level courses. The program consists of prerequisites, MBA core courses, and an area of concentration. A 3.0 overall graduate grade point average is required for graduation. Additionally, a 3.0 average is required for all grades received in all courses required for the MBA degree.

1. Prerequisites: In order to provide students with the background of the common body of knowledge in business and administration required by the American Assembly of Collegiate Schools of Business, the following courses are required in Accountancy, Economics, Finance, Law, Management, Marketing, and Statistics. This requirement may be satisfied by waiver (in case of prior completion of appropriate undergraduate courses, the WPU BBA core courses, or the equivalent), by examination, or by taking Introduction to Information Processing 102, Principles of Accounting 210, 211, Principles of Economics 201, 202, Business Finance 320, Legal Environment 340, Management Fundamentals 350, Marketing 370, and Statistics 260. A minimum grade of "C" is required in all prerequisites.

2. MBA Core: The core consists of Applied Economics for Management 600, Legal Concepts 607, Accounting Control and Analysis 607, Financial Management 608, Marketing Management 607, and Policy Formulation and Administration 609. MBA students with undergraduate majors/minors in Business Administration areas will be advised about proper upper-level discipline substitutes for core courses with the prior approval of their area advisers.

3. MBA Concentration: An area of concentration may be selected from Economics, Finance, General Business, Management, Marketing, or Paper Science. Usually this consists of three to five courses in an area (in addition to the MBA core). However, at least fifteen hours must be taken outside the area of concentration.

Master Of Science In Business
The Master of Science program permits the student to specialize in a specific area of business such as Administrative Services, Finance, Management, or Marketing. The program is designed primarily to permit exceptional students to work on individualized programs, generally in preparation for further academic studies. It is a departmental program and specific admissions and course requirements are determined by the department.

Admission requirements
Applicants must submit scores for the Graduate Management Admission Test (formerly known as the AIGE) prior to consideration for admission to the program. Students must also meet undergraduate point-hour requirements specified by the department, which may be higher than the Graduate College's minimum requirements. Students admitted to the University on a Permission to Take Classes (PTC) status are not allowed to enroll in graduate business courses.

Program requirements
1. Prerequisites: These include coursework or the equivalent in Accounting, Economics, Finance, Law, Management, Marketing, and Statistics. Additional prerequisites may be specified by the department depending on the particular program, e.g. preparation in mathematics, behavioral sciences, computer programming, etc.

2. A departmental concentration of a minimum of twenty-one semester hours, including the satisfactory completion of a research methodology course, and a Master's Thesis (6 hrs.) or a major research project assigned by the department.

3. A 3.0 overall graduate grade point average is required for graduation. Additionally, a 3.0 average is required for all grades received in all courses required for the MSB program.

Chemistry
Adviser:
Don C. Iffland,
Room 5110, McCracken Hall

The Master of Arts in Chemistry is planned to provide a broad background in the various fields of chemistry with concentration in one. Entrance requirements include admission to The Graduate College and the passing of qualifying examinations covering the fields of Analytical, Organic, and Physical Chemistry. The qualifying examinations are scheduled during the week preceding each semester or session. New students, unless entering with an acknowledged deficiency, are required to take all three examinations before they begin their classes. Students who fail a qualifying examination must repeat it when next regularly scheduled and normally are required to attend the corresponding undergraduate course, if available. Enrollment in a 600-level Chemistry course is not permitted unless the appropriate qualifying examination has been passed.

The student is required to elect twenty to twenty-four hours in the field of Chemistry, including the Master's Thesis, and six to ten hours in a related field or fields and to pass a final oral examination administered by the student's graduate committee. The course sequence will include (if not previously elected):

1. Nine hours of 600-level courses from at least three of the following divisions, including one course in the division of the Master's Thesis: Analytical, Biochemistry, Inorganic, Organic, and Physical.

2. CHEM 505, Chemical Literature.

3. CHEM 506, Chemical Laboratory Safety.

4. CHEM 520, Instrumental Methods in Chemistry and either CHEM 510, Inorganic Chemistry or CHEM 550, Biochemistry I., or CHEM 552, Biochemistry II with Laboratory.

5. CHEM 601, Graduate Seminar, (Attendance required every semester)

6. CHEM 700, Master's Thesis (6 hrs.).

The requirement for any of the above 500-level courses is waived if the student has taken a corresponding course as an undergraduate.

The student is required to pass a final oral examination administered by the student's graduate committee. The student is also required, as part of his/her graduate training in chemistry, to attend departmental seminars, colloquia, and symposia, and to participate in research within the department.

Communication Arts And Sciences
Adviser:
Shirley A. Van Hoeven,
317 Sprague Tower

Master Of Arts In Communication Arts And Sciences
The Master of Arts in Communication Arts and Sciences has two options: Option A—General Communication and Option B—Organizational Communication. The option in General Communication provides for a highly flexible program designed to fit a wide variety of student needs in several areas of communication. The more specialized option in Organizational Communication is designed for those students whose vocational interests involve using communication in an organizational setting. Individual programs are designed in consultation with the graduate advisor based on a student's needs, interests, and vocational objectives.

Admission requirements
The primary criteria for admission are based upon answers to the following questions: Does the applicant have a clear understanding of his/her educational objectives? Will the graduate curriculum and staff provide a satisfactory educational experience for him/her? Undergraduate records, letters of recommendation, evidence of academic interest and ability, and a personal interview—when possible—are requested of each applicant. Undergraduate work in communication and other speech or allied disciplines is expected of all applicants. Academic deficiencies or reservations may be determined at the time of application.

OPTION A—GENERAL COMMUNICATION
The general degree option in Communication Arts and Sciences will be of interest to students desiring a terminal program or those contemplating post-graduate study. Students currently may choose to pursue interests in one or more of the following areas: communication education, mass communication, communication theory, interpersonal communication, and organizational communication.

Program requirements
1. A minimum of thirty semester hours must be completed in Communication and cognate course work. Selection is to be made in consultation with the Graduate Adviser.

2. Each semester the student is enrolled, he/she must consult with the Graduate Adviser.

3. A Master's Thesis (6 hrs.) is optional.
3. A minimum of SIX hours of cognate (or expecting to hold) positions in organizational communication and research in course work in communication and research. The SIX hour research project or internship, depending on the student's needs and objectives, (1) implementing and regulating the flow of messages to and from the organization in its relations with other organizations.

Course work combines communication theory and social scientific methods in the exploration of how information is exchanged and relationships are developed and maintained in effective organizations.

Program requirements

The option in organizational communication includes the following hours of academic work and six hours of an applied research project or internship. The thirty hours consist of a core of recommended courses in Communication and Organization Sciences which focus on specific organizational communication dimensions, selected cognate courses in other departments to provide greater depth and breadth in organizational theory, and additional selected courses in interpersonal, organizational or mass communication, depending on the student's interests and objectives. The six hour research project or internship is the application of the student's course work in communication and research in a specific organizational setting.

The program requirements are:

1. Completion of thirty-six semester hours of course work chosen in consultation with the student's Advisory Committee.

2. A recommended core of fifteen hours: CAS 547, Communication Use of Radio and Television [CAS 549, Public Relations and Organizations [CAS 581, Communication in Organizations [CAS 582, Group Communication Theory) [CAS 673, Conflict Management [Additional courses in CAS will be selected, based on student needs and vocational objectives.

3. A minimum of six hours of cognate coursework in organizational theory selected from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSCI 534</td>
<td>Administrative Theory</td>
</tr>
<tr>
<td>SOC 503</td>
<td>Social Systems Theory and Analysis</td>
</tr>
<tr>
<td>SOC 575</td>
<td>Industrial Sociology</td>
</tr>
<tr>
<td>SOC 576</td>
<td>Sociology of School Organization</td>
</tr>
</tbody>
</table>

SOC 673 Formal Organization
EDLD 661 Human Relations—Supervision
SWRK 630 Social Change Theory and Community Analysis
SWRK 632 Organizational Theory for Human Service Management
MGMT 651 Analysis of Administrative Behavior
MGMT 653 Behavioral Science Application for Managerial Effectiveness
MGMT 655 Organization Theory
MGMT 657 Behavior Analysis Application

4. Six semester hours of CAS 710, Independent Research, or CAS 712, Professional Field Experience for a research project or practicum in organizational communication.

Exceptions to these requirements may be made on the basis of professional experience and the needs of the individual.

## Computer Science

Advisers:
- John Herman, Dionysios Kountanis,
- Dalia Motzkin

The Master of Science in Computer Science is primarily a professional program that emphasizes computer software development. It is designed to prepare students for positions in computer organization and systems development in industrial corporations, in government service or in computer services companies. Graduates will also be well-prepared to teach computer courses in two-year colleges or to undertake more advanced training in Computer Science.

Students with a strong undergraduate background in Computer Science and Mathematics may be able to complete the program in eighteen months, but most students will probably require a longer period of time.

### Admission requirements

Candidates for admission to this curriculum must have satisfactorily completed an undergraduate program containing courses in both Mathematics and Computer Science. Candidates should have Mathematics courses including a calculus sequence and a course in abstract algebra or discrete structures. Students without this background will be asked to complete appropriate course work, such as Math 127, 222, 223, 225, and 310 as admission requirements. Candidates should have Computer Science course work including a thorough knowledge of a computer assembler language, computer organization, data structures, structured programming, and a course covering programming applications at the level of CS 506. Students without this background will be asked to complete course work which will be approximately the equivalent of an undergraduate Computer Science minor. Applicants are urged to submit Graduate Record Examination aptitude scores.

Students entering the M.S. program who are not familiar with the DEC System-10 should attend the non-credit workshops on system Monitor Commands and editing languages offered early each semester by the WMU Academic Computer Center.

### Program requirements

Each student must complete an approved program consisting of at least 31 hours of graduate work including the following:

1. CS 542, 544, 554, 625, 631, 680, and 681.
2. Two approved courses from CS 632, 643, 655, or 681.
3. Additional approved electives from CS 527, 600, 632, 643, 655, 681, 682, 710, 712, MATH 560, 567, 640, PHIL 520 or MGMT 564. Students who, with the approval of their advisor, elect the Thesis option will register for 6 credits of work in CS 710.

A final examination covering the six basic courses of the student's program is required of all students who do not elect the Thesis option.

Prospective students should realize that the general requirements for a Master's degree include the attainment of a satisfactory score on the English Qualifying Examination.

It is the intent of the Department that every graduate of this program, in addition to receiving a strong theoretical grounding, should also be a competent programmer and have practical experience in computer simulation and computer systems. This experience may be obtained as part of a work program, or through the election of CS 710, Research, or CS 712, Professional Field Experience, as part of requirement 3 above.

There are a variety of channels available for financial support of graduate students. Graduate Fellowships are available through The Graduate College. A number of Teaching Assistantships and Research Assistantships are provided through the Computer Science Department. Certain other academic departments, particularly the Department of Mathematics, provide Assistantships to Computer Science students. In addition, many students work part-time employment with private businesses, educational institutions, or other areas of WMU Individuals desiring further information on Fellowships or Assistantships should contact the Department Chairperson or a Program Advisor.

### Counseling And Personnel

Advisers:
- Beverly Belson, Robert L. Betz, Kenneth Bullmer, William A. Carlson, John S. Geisler, Paul L. Griffeth, Robert F. Hopkins, Neve Amsper, Gilbert E. Mazer, Robert M. Oswald, Avner Stern, Edward L. Trembley, Thelma Urbick. The Department office is located in Room 3109, Sangren Hall.

The Master of Arts in Counseling and Personnel programs are designed to prepare individuals for positions in counseling and personnel services in educational and non-educational settings. Three areas of concentration are offered:

1. Community Agency Counseling
   a. Counseling in Community Agency Settings
   b. Counseling in Clinical Mental Health Settings
2. Pupil Personnel Services, K-12
   a. Counseling in Elementary Education
   b. Counseling in Secondary Education
   c. Career Development Specialist
3. Student Personnel Services, Post-Secondary Education
   a. Administration of Student Personnel Services
   b. Counseling in Post-Secondary Education

All Master of Arts programs require a minimum of forty-eight semester hours of course work, except the option Counseling in Community Agency Settings. That option requires thirty-five semester hours. The Counseling in Community Agency Settings option is appropriate for persons who do not need a higher level of skills development for their present employment or for anticipated personal or work activities. Also, this option may serve as a base to which one may add courses from a specialty area. Possible areas of interest include, but are not limited to, the following: alcohol and drug abuse and gerontology.

Admission to a Master of Arts program in the Department is based upon undergraduate grade-point average, educational background, and counseling and personnel service-related experience. Prior to consideration by the M.A. Admissions Committee, applicants are required to complete and return a questionnaire indicating, among other things, the program option desired. Interview, letters of recommendation, test scores, and other material may be required also. Upon admission each student is assigned an advisor who will assist in preparing a Program of Study for submission to The Graduate College. The program of study should be completed during the first semester or session of enrollment.

The programs of study for the seven programs offered consist of core courses, three semester hours credit each. Listings of all course requirements for the seven options are available from advisers and the Department office. Students are expected to work closely with advisers to keep informed of changes in policies, changes in course offerings, course prerequisites, and availability of courses.

A student's performance and progress will be evaluated throughout the program. This process includes "check points," such as course assignments and examination. An "A" in any course, and final evaluation prior to graduation must be completed.

Development Administration

Adviser: Claude Phillips, Room 3007, Friedmann Hall

The graduate program in Development Administration is offered by the Department of Political Science and leads to the degree of Master of Development Administration (MDA). The program is designed for students who plan to pursue careers in public administration in Africa, Asia, the Middle East, Latin America, or other areas usually described as "developing." The objective of the program is to provide graduate students with professional training in public administration, with special attention given to the problems of countries attempting to
develop economically, politically, and socially. In this context, public administration bears the exceptional burden of translating public policy into successful sequences of change. Public administration becomes the bridge between modernizing elites in politics and traditional masses in their struggle to survive. A major strength of this program is the highly qualified faculty specialists who have devoted many years of research, residence, and travel in the developing areas and who apply their knowledge of these areas to the problems of public administration. By combining these faculty with appropriate courses, students will get a good grounding not only in public administration, but in techniques for analyzing and coping with the special problems of developing areas.

Admission requirements
Applicants must satisfy the requirements for admission to The Graduate College in order to be considered for admission to this program. Actual admission to the program requires, of graduates of U.S. universities a 3.0 average (on a 4.0 scale) in the social sciences. Graduates of foreign universities must show an overall grade level of "very good" and demonstrate English proficiency.

Program requirements
The Master of Development Administration degree requires at least thirty semester hours of study. Full-time students will ordinarily take sixteen (16) to twenty (20) calendar months to complete the program. The basic requirements are as follows:

1. Prerequisites (non-credit): The following courses or their equivalents: PSCI 200, National Government; PSCI 330, Introduction to Public Administration, and ECON 201 or 202, Principles of Economics.
2. Core requirements: The core consists of thirty-three (33) hours of required courses, or a total of eleven (11) courses. These are selected so as to provide (a) courses work in administrative theory, personnel management and budgeting, (b) selected courses in public administration, (c) research methods and statistics, (d) skills in computer usage, supervision and office management, and (e) a research paper.
3. Electives: Nine (9) hours that concentrate on some topic of relevance to public administration in developing areas will be selected by the student with the approval of the Graduate Adviser.

Earth Science

Adviser: Richard N. Passero, Room 1125, Rood Hall
W. Thomas Straw, Room 1129, Rood Hall

The Master of Science degree program in Earth Science is interdisciplinary with geology as a core. Two options are available:

Earth Science Teaching
The Master of Science in Earth Science (Teaching) is designed to provide students with a foundation in the fields of astronomy, geology, meteorology, and oceanography. Graduates of the program are employed in teaching in secondary schools and junior colleges.

Admission requirements
Students should have completed an undergraduate major in earth science or its equivalent and successfully completed college chemistry and physics. Deficiencies in undergraduate preparation must be completed before admission to candidacy (see general degree requirements). Students planning to teach in secondary schools should complete certification requirements.

Program requirements
A minimum of thirty hours is required for the degree, including:

2. All students are expected to attend Departmental seminars and are required to give one presentation in residence. Students may enroll for credit in GEOL 660 for seminar presentations.
3. Complete a general exploratory examination in earth sciences covering astronomy, oceanography, meteorology, and geology at the beginning of the first semester in residence.
4. Optional election of GEOL 700 (Thesis) or GEOL 710 (Independent Research)
5. Electives in earth science or related disciplines with consent of graduate adviser.
6. Oral defense of the thesis or independent research will substitute for the comprehensive exam.

Earth Science Environmental

The Master of Science in Earth Science (Environmental) permits students to design programs of study, in consultation with the program advisers, that are compatible with the individual's goals. Some remedial work may be necessary for students entering the program with a minimal background in environmentally related courses. The program may be adapted for students with backgrounds in biology, geography, agriculture, geology, junior college science teaching, chemistry, earth science, science education, journalism, landscape architecture, anthropology, and physics. Courses for the program will be drawn from: geography, biology, biogeography, botany, ecology, environmental economics, political science, communication arts and science, chemistry, physics, agriculture, and others.

Program requirements
A minimum of thirty hours is required for the degree, including:

1. Thirty semester hours of graduate credit in the earth and related sciences. Students must have completed two of the following four courses: Surficial Processes and Groundwater Geology. Glacial Geology. Environmental Geology. Remote Sensing of the Environment or must complete two of these courses as remedial work.
2. A core of fifteen semester hours in geology is required, including the remaining two courses from the above four.
3. Satisfactory completion and oral defense of GEOL 700 (Master's Thesis) or GEOL 710 (Independent Research).
4. Pass a comprehensive oral examination. Failure of the final oral comprehensive examination may be followed by a second oral or written examination.
Economics

Adviser:
Raymond E. Zelder,
Room 5075, Friedmann Hall

The Master of Arts in Economics is designed to provide students with a strong foundation in economic analysis combined with the ability to apply theory to contemporary problems. Graduates of the program are employed in industry, government, and teaching. Some graduates continue their formal training in economics, pursuing the Ph.D. degree at other universities. The M.A. degree program in Economics requires a minimum of thirty graduate hours of credit and provides the opportunity for concentration in the following fields: economic theory, banking and monetary theory, industrial organization and public policy, labor and industrial relations, international economics, economic systems, economic development, public finance, urban economics, econometrics and mathematical economics, managerial economics, and human resources.

Admission requirements
1. Satisfactory completion of a minimum of twelve undergraduate hours in economics or in equivalents approved by the graduate advisor.
2. Satisfactory completion of intermediate level courses in microeconomic and macroeconomic theory. Students not meeting this requirement will be admitted with reservation and required to complete satisfactorily ECON 303 and 306.

Program requirements
1. The satisfactory completion of either thirty hours including the Master's Thesis (6 hrs.) or thirty-three hours. If additional courses are submitted in lieu of the thesis, in a planned program made in consultation with the graduate advisor.
2. At least an overall "B" average in the Economics courses that the student takes in an adviser-approved program of study.
3. ECON 603, Advanced Price Theory, and ECON 662, National Income Analysis are required.
4. Pass written and oral comprehensive examination.

Education And Professional Development

Office of Certification, Orientation, and Advisement

As a service function to both students and faculty, the College of Education has established within the Department of Education and Professional Development, an Office of Certification, Orientation, and Advisement. This office is located in Room 2305; Sangren Hall. Many individuals have found this service to be a "beginning place" in terms of investigating possibilities, suggestions, and preliminary direction and help regarding the "next step" along the many paths of graduate education available at the University.

Early Childhood Education

Advisers:
Dorothy Blatt, Mary Cain,
Michael Howard, Rachel Inselberg,
Sangren Hall

The thirty-hour Master's degree program prepares professionals to work in early childhood education, parent education, and other programs involving the nurture and welfare of infants and young children from birth to nine years. Individualized programs help to prepare candidates for their personal career goals in public schools or other settings.

Admission requirements
1. Make application directly to the early childhood faculty of the Department, as well as to The Graduate College. (Application forms are provided upon inquiry to Dr. Cain, 2430 Sangren Hall.)
2. Arrange and hold a personal interview with faculty members. A limited number of candidates is admitted each April, to begin the program the following summer. Candidates wishing to begin their programs prior to the summer workshop may do so upon permission and advice of an early childhood adviser.
3. Hold an Elementary Teaching Certificate or present evidence that an approved program for the certificate will be completed at the time of graduation.
4. Present an acceptable rationale for securing the degree without the certificate, and agree to compensate for necessary deficiencies in ways required by the candidate's individual program.

Program requirements
1. Each candidate's program will include a core of courses (ED 600, 607, 638, and 639), to be taken with the candidate's entering group, and to provide common understandings regarding the growth and nurture of young children and the effects of public policy on young child development. For some candidates, experiences in program administration and evaluation will also be expected.
2. Each candidate's program beyond the core will be individually designed in consultation with an adviser to provide courses, independent and research studies, and field experiences leading toward the candidate's individual career goals. Flexibility is stressed in order to meet a variety of interests and objectives.

Reading

Advisers:
Jim Burns, Joe Chapel, Ron Crowell, Ted Kilty, Bruce Lloyd, Dorothy McGinnis, The Language in Education Center is located in Room 3514 Sangren Hall.

Graduate programs in reading at Western Michigan University prepare educators with further training and qualifications for advanced positions in education. The Master of Arts program provides a Master of Arts in Reading with a concentration in one of three types of preparation:

Elementary—designed to assist the elementary classroom teacher improve reading instruction for the classroom or to serve as an elementary school reading teacher.
Secondary—designed for secondary teachers, college instructors, and/or teachers of adults. The focus is to assist in the improvement of the reading abilities of secondary-aged, college, and adult readers.
Special Services—designed to help the prospective special reading teacher improve the reading achievement of students at all grade levels. The Special Services concentration particularly emphasizes diagnostic and therapeutic work.

Admission Requirements
In addition to meeting the regular admission standards of The Graduate College, students wishing to qualify for entrance into the master's program in reading must have completed at least one undergraduate course in the teaching of reading. Those desiring to teach in the field must have or seek appropriate elementary or secondary certification through College of Education programs.

The curriculum is planned to provide professional preparation for students who are interested in teaching, administration, and certain specialized positions in elementary and secondary schools and community colleges. With the exceptions noted below, students applying for candidacy in the programs within the College of Education are expected to have completed a minimum of fifteen hours of undergraduate work in professional education. In some instances, students may present equivalent preparation which meets the minimum requirements for teacher certification when such preparation is approved by the College of Education. The exceptions are:

1. The fifteen hours of undergraduate preparation in professional education are not required of those interested in leadership positions in higher education and those who enter the Program Leadership curriculum in the Department of Education and Leadership.
2. The fifteen hours of undergraduate preparation in professional education are not required in the Counseling and Personnel curriculum chosen by individuals interested in the ministry, business counseling, and counseling positions and social services occupations.
**Program Requirements**

Thirty-six hours of graduate work are required as a minimum for graduation. These may be selected from the following:

1. Nine hours selected from the following courses in the education core:
   b. ED 650. Seminar: Methods and Techniques in Teaching the Disadvantaged
   c. ED 603. Social and Philosophical Foundations of Education
   d. ED 604. Psychological Foundations of Education

2. The Reading Concentration—Twenty-one hours
   - Twenty-one hours in reading, fifteen to eighteen of which must be in the candidate's selected concentration: elementary, secondary, or special services.
   - Three to six hours may be selected from the various reading electives. All courses must be approved by the candidate's program adviser.

3. Related cognates—Six hours selected from courses outside the College of Education which have been approved by the adviser.

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**Teaching In The Community College**

**Advisers:**
Owen B. Middleton, Walliam H. Kanzler
Room 2305, Sangren Hall

The focus of this thirty-hour program, which leads to the Master of Arts degree, is the development of professional faculty for community colleges. The main concern of the program is that the academically-able person can also become instructionally efficient.

**Admission requirements**

1. An undergraduate major in an academic field or concentration.
2. Evidence of a real interest in working with community college students of a very broad age range.

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**Program requirements**

1. Seven hours made up of the following professional courses:
   - The choice to be made in consultation with the adviser.
   - ED 650. Characteristics of the College Student.
   - ED 690. The Community College.
2. A minimum of sixteen hours in the student's major.
3. A maximum of seven hours may be elected from the student's minor area for cognate courses related to the major field, or in courses in which a student has had little or no teaching experience. An internship may be substituted for one or more courses at the discretion of the adviser.

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**Teaching In The Elementary School**

**Advisers:**
Mary Cordier, George Miller

The Master of Arts in Teaching in the Elementary School, one of the Curricula in Teaching, is intended to prepare teachers for superior classroom performance. The program provides opportunities for candidates to explore their roles as teachers in a rapidly changing society and to continue to develop their skills in working with elementary school children. The program affords great flexibility and can be individualized, with the aid and consent of the candidate's adviser, to meet the needs and professional goals of each candidate. The degree requires a minimum of 30 graduate hours.

**Admission requirements**

Regular admission in The Graduate College.

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**Teaching The Economically And Educationally Disadvantaged**

**Advisers:**
Carol P. Smith, Room 2442, Sangren Hall
Jess M. Walker, Room 2437, Sangren Hall

The rapid urbanization of our population accompanied by profound changes in industrial technology has created a large group of economically underprivileged people living in environmental conditions and maintaining value systems significantly different from those of the traditional middle class. This disparity has created both a problem and a challenge for the education profession. This Master of Arts degree program is designed to prepare elementary and secondary teachers to work with economically and educationally disadvantaged children.

**Admission requirements**

Admission to The Graduate College. Demonstrated interest in teaching economically disadvantaged children.

**Program requirements**

1. Thirty hours of graduate credit including the required course of ED 535, Introduction to Teaching the Disadvantaged.
   - ED 659. Seminar: Methods and Techniques in Teaching the Disadvantaged.
   - ED 712. Professional Field Experience.
2. The remainder of the degree requirements may be satisfied by selecting courses in the student's major and minor fields of specialization, from related areas and from areas of special need, depending upon the background of the student, the educational level of children taught, and the vocational goal of the student. These courses are selected to provide depth and breadth in subject matter fields as well as to improve understanding of the social, cultural, and educational problems of the disadvantaged children.

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**Teaching In The Middle Or Junior High School**

**Adviser:**
William H. Kanzler, Room 2205, Sangren Hall

The thirty-hour Master of Arts in Teaching in the Middle or Junior High School is designed for teachers who teach (or plan to teach) in grades 6-9 and who wish to improve programs for children in these grades.

**Admission requirements**

Regular (not probationary or PFC status) admission to The Graduate College.

**Program requirements**

1. ED 622. Middle-Junior High School Curriculum
2. C-P 580. Principles and Philosophy of Guidance
3. At least 6 semester hours, selected from the following:
   - Either ED 600. Fundamentals of Measurement and Evaluation in Education
   - ED 601. Fundamentals of Educational Research
   - ED 603. Social and Philosophical Foundations of Education
   - ED 604. Psychological Foundations of Education
   - A graduate level course in "the teaching of reading".
4. At least 6 semester hours in the major and/or minor area(s) of "subject matter" concentration with the approval of the adviser.
5. At least 6 semester hours in addition to those being used by the student to satisfy Requirements #1, 2, 3, and 4 above in professional education and/or the major/minor areas of concentration with the approval of the adviser.
6. Electives, as necessary, to bring the total program credits to a minimum of thirty semester hours.

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**Curricula In Teaching**

The following teaching curricula all have the same general requirements for completion of the thirty graduate hours for the Master of Arts degree. These requirements include:

1. Nine hours selected from the following four courses in the education core:
   - ED 650. Seminar: Methods and Techniques in Teaching the Disadvantaged
   - ED 659. Seminar: Methods and Techniques in Teaching the Disadvantaged
   - ED 690. The Community College.
b. ED 602. School Curriculum

c. ED 603. Social and Philosophical Foundations

d. ED 604. Psychological Foundations of Education

2. Fifteen hours in the major or related academic fields.

3. Six hours of electives, some or all of which may be in professional education or the major field.

The Curricula in Teaching graduate advisers and the prerequisites for admission, in addition to the fifteen hours of undergraduate work in professional education or the equivalent, are listed below:

Teaching of Art
Adviser: Dale Roseboom
Prerequisite: Portfolio required; request criteria from Art Department (general level of competency now required is equivalent to a major in Art)

Teaching of English
Adviser: Arnold Johnston
Prerequisite: Minor in English

Teaching of Geography
Advisers: Joseph Stallman, George Vuchich
Prerequisite: None

Teaching of Mathematics
Adviser: Christian Hirsch
Prerequisite: Minor in Mathematics

Teaching of Music
Adviser: Robert G. Humiston
Prerequisite: Major in Music

Teaching of Science
Adviser: Robert H. Poel
Prerequisite: Minor in one of the Sciences

Educational Leadership
Advisers:
Carol F. Sheffer, Chairperson;
Harold W. Boles, Robert O. Brinkhoff,
Mary Anne Bunda, Sidney Dykstra, Richard E. Munsterman, James R. Sanders, Larry B. Slack, Uldis Slabons, Daniel L. Stufhebel, Charles C. Warfield, Donald C. Weaver. Department offices are located in Room 3102, Sangren Hall.

The Master of Arts is awarded in curricula intended to prepare personnel for positions as educational/organizational leaders, positions that are largely non-instructional in nature. In view of the fact that a student who earns this degree may wish later to work toward a further degree, a student who selects the major’s curriculum should consider the requirements of the advanced degree in making this selection.

Each student will be assigned an adviser when he or she applies to and is notified by the Graduate College of acceptance in a degree program. The adviser will be selected in terms of the student’s professional interests and will work with him/her in outlining an individualized and multi-disciplinary program of studies to pursue, constituted from departmental and other offerings in these focal areas.

8-13 hrs. in Administration
8-11 hrs. in Human Relations
6-9 hrs. in Concept Formation
At least 3 hrs. in Research
0-3 hrs. in Independent Study
30 hrs. minimum Total

At least eight hours of the thirty-hour minimum must be outside the College of Education.

Curricula available within this degree program include:

Line Administration—prepares the student for a position as a central office administrator of a school district, as a principal and/or director in a school district, as a central administrator in a post-high school educational agency, or as a chief executive officer, vice-president, or administrator in institutions of higher education, government agencies, or private industry.

Staff Administration—offers preparation for a position as a coordinator, director, or supervisor in public or private schools, colleges, universities, or service or business agencies in areas such as finance, personnel, or a special service (for example, research).

Program Leadership—prepares the student for a position as a director of training and management development in the armed forces, business, government, industry, a professional association, or a trade union, or as a director or coordinator of educational programs in a social welfare agency.

Certain career goals within the program may alter the number of hours required in these areas. Curricula available within this degree include, but are not limited to agriculture, community education, distributive education, early childhood education, evaluation, home economics, industrial and technical education, media, training and development, and vocational education.

Master Of Arts In Teaching Of English

The Master of Arts in the Teaching of English is jointly administered by the Department of English and the College of Education. The basic purpose of this degree program is to offer course work in English and teacher education to enhance the student's teaching abilities in general, and especially in the area of English. Those desiring to enter the program should present a minimum of an undergraduate English major (twenty semester hours) with a grade-point average of 3.0. Where appropriate, dependent upon the student's background and experience, the Department may require more than twenty undergraduate English credit hours before a student is admitted to the Teaching of English program. Minimal requirements for the Master of Arts degree in the Teaching of English include the completion of nine semester hours of course work in the Department of Education and Professional Development. Three English courses are required: ENGL 615. Literary Criticism, ENGL 630. Research and Writing, and ENGL 640. The Nature of Poetry. All other courses in the student's program of study are selected by the student and the graduate advisor to complete a coherent thirty semester hours program. Normally the student will take eighteen hours of course work in the Department of English. Other requirements are detailed in a general informational booklet titled "Graduate Programs Offered by the English Department at Western Michigan University," which is available from the Department of English or the English graduate adviser.

Master Of Arts In English With An Emphasis On Professional Writing

The Master of Arts in English with an Emphasis on Professional Writing is a degree program designed to meet the increasing demand for people with solid liberal arts education who have skill in the writing of non-fictional prose. Those entering the program should have had either an undergraduate major in English or a substantial number of undergraduate English courses.

The program requires that students take four writing courses—ENGL 630. Research and Writing, ENGL 631. Essay Writing, ENGL 632. Article Writing, and ENGL 633. Professional Writing—several courses in a field other than English (8-12 hours); and sufficient graduate-level courses in English to bring their total to 38 hours. Students should consult with the adviser at the earliest opportunity concerning their individual program of study.

For more detailed information about the Professional Writing program see the pamphlet titled "Graduate Programs Offered by the English Department at Western Michigan University," which is available from the Department of English or the English graduate adviser.

Master Of Fine Arts In Creative Writing

The Master of Fine Arts in Creative Writing is a 48-hour degree program for students who wish to become professional writers of
poetry, fiction, or drama; it qualifies them to
teach the craft of writing at the college or
university level. Those seeking to enter
the program must have had an undergraduate
major in English and must present a portfolio
of writing they have done in the form in
which they expect to specialize.

The program requires that the student
take 12—18 hours in writing workshops,
ENGL 640: The Nature of Poetry, either
ENGL 642: Studies in Drama, or ENGL 644:
Studies in the Novel. 6—8 hours in courses in
modern literature. ENGL 699: M.F.A. Project
and sufficient other courses in English and
cognate fields to bring the total to 48 hours.
Applicants already holding a Master of Arts
in English may expect that some but not all
of their credits from that degree will count
Towards the M.F.A. degree.

For more detail, information about the requirements
for the M.F.A. program and the forms needed to apply for admission to it, write to the department's graduate adviser.

Geography

Adviser: Charles F. Heller, Room 332, Wood Hall

Master Of Arts In Geography

The Master of Arts in Geography provides a
foundation in the subject and at the same
time permits a concentration in one of five areas listed below. The student may prepare
for a geographic career in government, business,
and industry, or for pursuit of a higher degree. Each student is encouraged
to develop proficiency in analytic, carto-
graphic, communication, and planning
skills through selection of courses. A
minimum of 30 graduate hours is required.

Admission requirements

Experience indicates that social, biological,
and physical science majors with some
geography normally can meet the program
requirements. But geography majors
and minors are usually best prepared to
pursue advanced work in geography. Before the
completion of ten graduate hours, all
graduate students must meet the following
requirements:

- completion or enrollment in Principles of
Cartography (GEOG 375) or approved
equivalent.
- the attainment of passing scores on the
  comprehensive qualifying exams in
  physical and human geography.

Program requirements

1. Completion of a minimum of three
courses in one of the five following areas
   of concentration
   a. Community Development and Plann-
   ing
   b. Economic and Urban Geography
   c. Environmental and Resource
      Analysis
   d. Physical Geography
   e. A Regional Concentration: Africa,
      Asia, Europe, or Latin America

2. Completion of at least 15 hours of approved
   graduate credits in areas other than
   Community Development and Plan-
   ning, where 12 hours are required; at
   least 20 hours to be completed in the
   Geography Department

3. Completion of GEOG 661 (Geography
   Research) and GEOG 568 (Quantitative
   Methodology). GEOG 556a (Urban Plann-
   ing and Zoning) also is required for the
   Community Development and Planning
   concentration.

4. Completion of 6 hours of GEOG 700
   (Master's Thesis) or to six hours of
   GEOG 710 (Independent Research). In
   addition, students may enroll in GEOG
   712 (Professional Field Experience), and
   students with the Community Develop-
   ment and Planning concentration must
   complete a six-hour internship (enrolling in
   GEOG 712).

Geology

Adviser: Ron B. Chase, Room 0039, Rood Hall

The Master of Science in Geology is design-
ed to prepare the student for professional
work in geology and for further graduate
study.

Admission requirements

Undergraduate major in geology. Considera-
tion of other preparation will be handled on
an individual basis.

Program requirements

1. Thirty semester hours (excluding defi-
cencies) of graduate credit in Geology
and related areas (in other sciences and
mathematics), with at least twenty-one
hours in Geology. Up to nine hours in
related areas may be chosen with the
consent of the graduate adviser. Areas
of specialization in the Geology Depart-
ment include Sedimentary Geology-
Paleontology, Structural Geology,
Petroleum Engineering, Environmental and
Surficial Geology, and Geophysics.

2. All students are expected to attend
Departmental seminars and are required
to give one presentation in residence.

3. A copy of the Graduate Record Examina-
tion score in Geology must be supplied
to the department before the end of the
first semester in residence.

4. Satisfactory completion of GEOL 660 for
the department.

5. Master's Thesis (6 hrs.)

6. Take an exploratory exam at the begin-
ing of the first semester in residence.

7. Successful completion of an approved
rock-oriented field course if not com-
pleted in the student's undergraduate
program.

   In the case of failure, one retake is
   possible.

History

Adviser: H. Nicholas Hammer, Room 4005, Friedmann Hall

The Master of Arts in History is designed to
amplify and augment the training of students
who completed concentrations in History at
the undergraduate level. The program
qualifies students for further graduate work
in History. It also helps prepare students for
such fields as teaching, government, and ad-
ministration of historic agencies.

Admission requirements

Undergraduate major in History, or exten-
sive preparation in the social sciences in-
cluding at least fifteen hours of History. In
the absence of such preparation, the depart-
mental graduate committee may require ap-
propriate remedial course work.

Program requirements

1. Earn thirty hours of graduate credit, of
   which a minimum of twenty hours must be
   in History. Course work outside the
department must be approved in ad-
   vance by the graduate adviser.
2. Choose two fields of History in consultation with the graduate adviser, one of which should be designated as the field of concentration. Complete satisfactorily written and oral comprehensive examinations in both fields. The department offers course work in most of the usual fields of European and United States History, as well as applied course work in a number of historical professions.

3. Choose one of the three options listed below:
   a. Complete two seminars, one of which must be in the designated area of concentration.
   b. Complete one seminar and write a Master's Essay (4 hrs.) in the designated area of concentration.
   c. Complete one seminar and write a Master's Thesis (6 hrs.) in the designated area of concentration.


5. The Department recommends that students planning to do graduate work in History acquire a reading knowledge of an appropriate foreign language.

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**Home Economics**

Adviser: Sue Coates, Room 3018, Kohrman Hall

Graduate programs in Home Economics are designed to provide either a comprehensive program of study in Home Economics or an in-depth program of studies for the person desiring to strengthen specialized interest areas. All master's programs include a minimum of 30 semester hours, fifteen of which must be of 600-level or higher; at least two hours of seminar credit, and at least two hours of HEC 710, Independent Research.

**Master Of Arts In Home Economics**

The Master of Arts in Home Economics is designed for the person with a Bachelor of Science or Arts in Home Economics or Home Economics-related program of studies. The degree may be used as a foundation for continued graduate work leading to a doctoral degree at another institution.

**Program requirements**

1. Complete a total of twenty hours in Home Economics in graduate level courses in two or more areas, planned in consultation with the department graduate adviser.
2. Complete a minimum of ten hours at the graduate level in allied areas, planned in consultation with the department graduate adviser.

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**Librarianship**

Advisers: Hardy Carroll, William K. Smith, Room 2080, Waldo Library

The major emphasis of the School of Librarianship is the first professional degree, the Master of Science in Librarianship. A quality program has been designed to serve the professional needs of current and future library and information specialists primarily in western Michigan and contiguous areas, to initiate research which advances the knowledge of library and information science and promotes the application of new ideas and knowledge to libraries and library problems, and to provide leadership in the continuous enhancement of the quality of library and information service.

The Master of Science in Librarianship degree program is accredited by the American Library Association until January 31, 1983. The School is a member of the Association of American Library Schools.

**Master Of Science in Librarianship**

The Master of Science in Librarianship (MSL) is awarded at the completion of thirty to thirty-six semester hours of graduate study. This program prepares students for careers in library and information professions. These careers are no longer only those in traditional institutional libraries, but also include various nontraditional information vocations. All instruction is designed with a multimedia approach and with emphasis on modern information technology.

Additional information and the School's application form are contained in the School of Librarianship's bulletin which may be requested from the School's office, 2080 Waldo Library.

**Admission requirements**

In addition to the general admission requirements of the Graduate College, admission to the School of Librarianship requires a bachelor's degree with a minimum grade point average of 3.0 (B average) for courses taken in the last two years of undergraduate study. However, a person who cannot meet this requirement and has compensating qualifications may be given special consideration.

Applicants must also complete the admission form of the School of Librarianship, available from the School's office in Waldo Library. This application must include the names and addresses of three persons who are able to give information concerning the verbal facility, intellectual capacity, personal and professional promise, and motivation of the applicant. Each applicant must also accompany his/her application with a statement of his/her reasons for desiring to enter the field of librarianship. A personal interview may be required.

**Program requirements**

1. Thirty to thirty-six hours of approved graduate courses, with a minimum of twenty hours in library science at the 600 level. A candidate without previous study in librarianship will be expected to elect LIB 510, 512, 530, 600, 622, and 629, unless he/she can pass comprehensive examinations in these courses. This student may elect courses in a field of special interest in librarianship to complete a program which will total thirty-six hours. A student with approved undergraduate work in librarianship may be permitted to complete a thirty-hour program and to elect courses from other departments for a total of six to eight semester hours.
2. Candidates preparing for school media center service must meet the teacher certification requirements of the state in which they wish to be employed.

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**Master Of Science in Information Science**

The Master of Science in Information Science has been planned for students who choose to pursue a graduate program of study more concentrated in computer and information science than would be possible in the Master of Science in Librarianship program. It is designed for librarians who wish to obtain competence in computer applications to library operations, or in library systems and design. Students who expect to continue their study beyond the master's degree program to the Ph D's; and foreign students who consider this degree more useful than the MSL in their native countries.

**Admission requirements**

Admission requirements for this degree are the same as those for the Master of Science in Librarianship.

**Program requirements**

Since the needs of each applicant will differ, a 30 hour interdisciplinary program of information science courses is planned individually for each student. Information science courses offered by the School of Librarianship include:

- Introduction to Information Science and Technology (LIB 535)
- Information Storage and Retrieval (LIB 634)
- Information Storage and Retrieval (LIB 635)
- Indexing, Abstracting and Automated Language Processing (LIB 621)
- On-Line Searching of Data Bases (LIB 637)

**Master Of Library Administration**

The Master of Library Administration (MLA) is a second master's degree, planned for the experienced student with a master's degree in librarianship from an ALA accredited program who desires additional management skills. This interdisciplinary degree is administered by the School of Librarianship, with involvement of the Department of Management in advising, admission, and teaching. Cognate courses from other departments of the University may be included.

**Admission requirements**

1. Master's degree from an ALA accredited library school program
2. Minimum of one graduate course in management or administration
3. Three years of library experience
4. Professional goals, educational objectives, and knowledge to libraries and library operations, or in library systems and design. Students who expect to continue their study beyond the master's degree program to the Ph D's; and foreign students who consider this degree more useful than the MSL in their native countries.

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**Program requirements**

1. 18 hours chosen from three core areas:
   - Managing the New Technology of Library Information Science, Management, and Research

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*May be waived for certain applicants.*
Mathematics

The Department of Mathematics offers graduate programs leading to the Master of Arts in Mathematics, the Master of Arts in the Teaching of Mathematics, the Master of Science in Applied Mathematics, the Master of Science in Biostatistics, the Master of Science in Statistics, the Master of Science in Operations Research, and the Doctor of Philosophy in Mathematics.

Master Of Arts In Mathematics
Philp Hsieh, Chairperson
Room 3319, Everett Tower

The Master of Arts in Mathematics extends the student's knowledge in the areas of algebra, real and complex analysis, applied mathematics, combinatorics, geometry, number theory, statistics, and topology. The program permits specialization in preparing for advanced study, and provides additional training for teachers of mathematics and students seeking employment in industry.

Admission requirements
To gain admission to the program, the student must have completed, with satisfactory grades, an undergraduate major in mathematics. This major must ordinarily include a course in modern algebra and a course in advanced calculus or real analysis. If the student's undergraduate program in mathematics does not meet approval standards, the student may be required to elect additional courses or otherwise satisfy the requirements of the department.

Program requirements
1. Complete a minimum of thirty hours of approved course work, with at least twenty-four hours in Mathematics, including:
   a. MATH 520. General Topology I, or have had the equivalent prior to entering the program.
   b. MATH 530. Linear Algebra, or have had the equivalent prior to entering the program.
   c. MATH 571. Foundations of analysis, or have had the equivalent prior to entering the program.
   d. MATH 630. Abstract Algebra I.
   e. One of the following: MATH 670. Measure and Integration, MATH 673. Real Analysis, or MATH 676. Complex Analysis
   f. An approved graduate level sequence
2. Pass the Departmental Graduate Examination, which will cover the basic material in topology, linear algebra, and analysis included in MATH 520, 530, and 571. This examination is to be taken as soon as possible after the student has covered the required material.
3. Pass the Final Master's Examination in the final term of his/her master's program. This examination will cover the 600-level material in the student's program.

Students with a strong undergraduate background in mathematics may be able to complete this program in a twelve month year. However, most students will require more than one year.

The specific requirements for an M.A. in Mathematics with concentration in Statistics are listed under the Master's degree program in Statistics. For students specializing in applications of Mathematics, the preceding requirements can be modified somewhat. Students interested in a M.S. program in Biostatistics, Statistics, Computer Science, or Operations Research, or the M.A. program in the Teaching of Mathematics should consult the requirements listed under those headings.

The Department of Mathematics offers opportunities for financial support of graduate students through Graduate Assistantships and Fellowships. Individuals desiring further information about such opportunities, or about the graduate program as a whole, should contact the Department Chairperson, or one of the Program Advisers.

Master Of Arts In Teaching Of Mathematics
Adviser: Christian Hirsch, Room 3319, Everett Tower

The Master of Arts in the Teaching of Mathematics is offered cooperatively by the Mathematics and Education and Professional Development departments. It is intended to provide secondary school mathematics teachers with opportunities to prepare themselves for superior classroom performance. They can do this by developing a broader and deeper understanding of mathematics, educational processes, and their role as teachers in American educational systems.

Admission requirements
In addition to the general admission requirements of The Graduate College, admission to this curriculum requires a bachelor's degree with at least a teaching minor in mathematics equivalent to the one offered at Western Michigan University and at least fifteen hours of undergraduate work in professional education or its equivalent.

Program requirements
1. At least fifteen approved semester hours in mathematics courses offered for graduate credit.
2. Nine semester hours by selecting three from the following courses:
   b. ED 602, School Curriculum
   c. ED 603, Social and Philosophical Foundations
   d. ED 604, Psychological Foundations of Education
3. Approval of the Teaching of Mathematics curriculum adviser

In meeting these program requirements an effort is made to select courses that deal with concepts and skills related to central themes in secondary school mathematics programs. These themes are given substance in courses that deal with topics enabling students to review and build on their previous course work, to explore new areas, to develop thorough understandings of concepts that are initiated in secondary school mathematics courses, and to achieve a high level of mastery of skills associated with these concepts.
The Department of Mathematics offers opportunities for financial support of graduate students through Graduate Assistantships and Fellowships. Individuals desiring further information about such opportunities, or about the graduate program as a whole, should contact the Mathematics Department Office (Room 3319, Everett Tower).

**Master of Science in Applied Mathematics**

**Advisers:**
Yousef Alavi, Alden Wright, Room 3119, Everett Tower

The Master of Science in Applied Mathematics emphasizes a broadly based study of the mathematical sciences, including statistics, differential equations, mathematical programming, computer science, and graph theory. The use of mathematical models to study practical problems will be heavily stressed. Students receive broad training for professional employment in industry or government. Those completing this program would also be prepared to teach in the area of mathematical applications.

**Admission requirements**
The entering student will be expected to have two years of calculus, including multivariate calculus and differential equations, a course in linear algebra, a course in probability, a knowledge of basic FORTRAN programming, and a course in Assembly Language.

**Program requirements**
Program requirements include MATH 510, Multivariate Mathematical Methods; MATH 506, Scientific Programming; MATH 562, Statistical Analysis I; MATH 662, Applied Linear Models; CS 510, Computer Science Fundamentals; MATH 608, Linear Programming, or IEGM 610, Linear Programming for Engineers; IEGM 611, Operations Research for Engineers, a two course sequence in mathematical modeling; a course in applied differential equations and an approved elective and a final examination over the program or an approved project on an applied problem.

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**Music**

**Advisers:**
Robert G. Humiston, Room 2146, Music
Brian Wilson, Room 2113, Music

**Master Of Music** The Master of Music is designed to enhance the student's teaching, performing, research, and creative abilities in music. The School of Music offers course work leading to a Master of Music degree in seven different areas of concentration: Applied Music, Composition, Conducting, Music Education, Musicology, Music Theory, and Music Therapy. Western's School of Music is accredited by the National Association of Schools of Music and all areas of concentration carry curriculum approval from that accreditation association. The Music Therapy program is certified by the National Association of Music Therapists.

**Admission requirements** A Bachelor of Music degree, or its equivalent, including sixty (60) semester hours of acceptable work in music, is required for admission. Students are admitted to graduate study in music on the basis of transcripts. Exceptions to admission requirements may be granted if competency can be demonstrated through Preliminary Examinations. Admission to the graduate program does not imply that the student will be permitted to pursue a specific area of concentration (applied music, composition, etc.). Program of study will not be determined until Preliminary Examinations are taken and the student has completed 6-10 semester hours of course work. Until that time the right is reserved to withhold the recommendation for degree candidacy if the student has not demonstrated sufficient maturation and musicianship.

Preliminary Examinations are administered upon completion of the graduate music program. Areas of examination include performance, music history, music theory, music therapy, functional piano, and conducting (including aurioal skills and instrument techniques). The areas in which the student will be tested are determined by the choice of area of concentration. Composition students must submit an original composition in one of the major forms for review by the faculty.

**Program requirements** The graduate student advises in the School of Music works closely with each student in planning and implementing a degree program which will accommodate the student's professional needs and interests and, at the same time, will realize the full value and depth of the University's graduate offerings. The student's needs are determined by an evaluation of the Preliminary Examinations and a review of the first 6-10 semester hours of course work taken. After this evaluation and review the graduate advisor provides information to the student regarding probable success in the degree program and any time limitation that may apply to the student's completion of degree requirements. Program of study in each of the seven areas of concentration are as follows:

**Applied Music** (Minimum of 30 hrs)

1. **Required courses**:
   - MUS 610. Introduction to Research in Music (3)
   - MUS 691. Applied Music (6)
   - MUS 699. Graduate Recital (3) (includes oral exam)

2. **Compositional studies**: composition, music education, history, theory (9-12)

3. **Electives**

**Composition** (Minimum of 30 hrs)

1. **Required courses**:
   - MUS 610. Introduction to Research in Music (3)
   - MUS 562, 563, 662 (6)
   - MUS 700. Master's Thesis in Composition (including oral exam)

2. **Compositional studies**: applied music, music education, history, theory (9-12)

3. **Electives** (not necessarily limited to music)

**Special information**: Regular and frequent experiences in conducting are a requirement in this program. These experiences will include conducting an approved public school ensemble (at the student's own school) or an apprenticeship with a major University ensemble. Students who are selected as apprentices with a University ensemble must be full-time graduate students and participate in a major ensemble while in residence. Off-campus, 600 Conducting students must schedule frequent meetings on campus with the supervising teacher in addition to the sole visits by the instructor. The Graduate Recital (600) requires presentation of a complete public program, either with an approved public school ensemble or with an ensemble of University students. At the direction of the student's committee piano study may be required in the program of study.

**Music Education** (Minimum of 30 hrs)

1. **Required courses**:
   - MUS 610. Introduction to Research in Music (3)
   - MUS 642. Philosophy of Music Education (3)

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**Medieval Studies**

**Adviser:**
Otto Gründler, The Medieval Institute Hillside West

The Master of Arts in Medieval Studies is designed to provide preparation in medieval and Renaissance history, languages, literatures, philosophy, religion, and the arts. This flexible course of studies presents, in one year, opportunities for broad preparation in medieval studies as background for intensive work on the doctoral level.

**Program requirements**
The requirements for the degree are as follows:

1. The course work includes a minimum of (a) three courses in medieval history, (b) three courses in medieval philosophy, and (c) two courses in medieval literature, and (d) course work in methodology. Courses taken as an undergraduate can be counted toward these area requirements.
2. The student must complete a minimum of thirty semester hours of graduate work.
3. Demonstration of the ability to read Latin and either German or French.
4. Pass the comprehensive examination given by a committee appointed by the Director of the Medieval Institute in consultation with the student's thesis advisory committee.

**The Medieval Institute**

Room 2113, Music

This flexible course of studies presents, in one year, opportunities for broad preparation in medieval literatures, philosophy, religion, and the arts. The requirements for the degree are as follows:

1. The course work includes a minimum of ten credits in medieval history, two credits in medieval philosophy, and three credits in medieval literature; at least two of the credits in medieval literature must be in medieval philosophy.

2. Demonstrations of the ability to read Latin and either German or French.

3. Pass the comprehensive examination given by a committee appointed by the Director of the Medieval Institute in consultation with the student's thesis advisory committee.
MUS 650, Seminar in Music Education (2)

MUS 691, Special Project in Music Education or *

MUS 681, Research in Musical Behavior, or *

MUS 700, Master's Thesis *

2. Electives in music education (5-8)

3. Cognate music studies: applied music, composition, theory, history (9-12)

4. Electives

(* Every student is required to register for one of these culminating projects, each of which includes an oral exam.)

MUSIC THEORY (Minimum of 30 hrs.)

1. Required courses:
   MUS 610, Introduction to Research in Music (3)
   Music 600-level courses in Counterpoint, Form, Orchestration, and the Teaching of Theory (6-8)
   MUS 700, Master's Thesis (6) (includes oral exam)

2. Cognate music studies: applied music, composition, music education, history

3. Electives

4. Proficiency in keyboard must be demonstrated but course work may not apply to degree.

MUSICOLOGY (minimum of 30 hrs.)

1. Required courses:
   MUS 610, Introduction to Research in Music (3)
   MUS 670-671, Seminar in Musicology (2)
   Electives in Music Literature, Medieval or Renaissance Music and/or Collegium Musicum (3-6)
   MUS 700, Master's Thesis (6) (includes oral exam)

2. Cognate music studies: applied music, composition, non-music humanities area (9-12)

3. Electives

4. Proficiency in keyboard and in German must be demonstrated but course work may not apply to degree.

MUSIC THERAPY (Minimum of 30 hrs.)

1. Required courses:
   MUS 610, Introduction to Research in Music (3)
   MUS 680, Seminar in Music Therapy (2)
   MUS 681, Research in Musical Behavior (2)
   MUS 700, Master's Thesis (includes oral exam) (6)*
   MUS 712, Professional Field Experience (2)*

2. Elective music courses (6-9)

3. Non-music electives—selected from one of the following departments and including at least one course in statistics: Anthropology, Blind Rehabilitation and Mobility, Counseling and Personnel, Mathematics, Occupational Therapy, Psychology, Sociology, Special Education, Speech Pathology and Audiology, Education and Professional Development (6-9)

(* The student must have completed the six-month internship required for R.M.T. certification prior to enrolling in MUS 700, Master's Thesis, and MUS 712, Professional Field Experience.)

Students who have a Bachelor of Music degree but do not have a major in music therapy may complete R.M.T. certification requirements while the graduate program is in progress, but the equivalency requirements may not satisfy graduate program requirements. Equivalency requirements may be obtained from the Director of Music Therapy, Western Michigan University.

Master Of Arts In Teaching Of Music

The School of Music and the Department of Education and Professional Development offer a Master of Arts degree program in the Teaching of Music. The purpose of the degree program is to offer course work in music and teacher education which will enhance the student's teaching abilities in general, and more especially in the area of music. This degree program is accredited by the National Association of Schools of Music. A minimum of thirty semester hours of credit are required to complete this degree.

Admission requirements

A Bachelor of Arts or Science degree, or equivalent, with a major in music and a teaching certificate, is required for admission. Students are admitted on the basis of transcripts, which must include at least forty semester hours of acceptable work in music. Exceptions to admission requirements may be granted if competency can be demonstrated through Preliminary Examinations. Program of study will not be determined until Preliminary Examinations are taken and the student has completed 6-10 semester hours of course work. Until that time the right is reserved to withhold the recommendation for degree candidacy if the student has not demonstrated sufficient maturation and musicianship. Preliminary Examinations will be administered in the areas of music history and music theory.

Program requirements

The graduate student advisor in the School of Music works closely with each student in planning and implementing a degree program which will accommodate the student's professional needs and interests and, at the same time, realize the full value and depth of the University's graduate offerings. The student's needs are determined by an evaluation of the results of Preliminary Examinations and a review of the first 6-10 semester hours of course work taken. After this evaluation and review the graduate advisor provides information to the student regarding probable success in the degree program and any time limitation that may apply to the student's completion of degree requirements. Program requirements include:

1. Nine hours from the Education core courses:
   ED 602, School Curriculum (3)
   ED 603, Sociological and Philosophical Foundations (3)
   ED 604, Psychological Foundations of Education (3)

2. Eleven hours of Music Education courses:
   MUS 610, Introduction to Research in Music (3)
   MUS 642, Philosophy of Music Education (2)
   MUS 650, Seminar in Music Education (2)
   Electives in Music Education (2)
   MUS 691, Special Project in Music Education (2), including oral exam or MUS 681, Research in Musical Behavior (2), including oral exam

3. Four hours in Applied Music, Music Theory, or Music History/Literature

4. Six hours of electives, selected in consultation with the graduate advisor.

OCCUPATIONAL THERAPY

Adviser: Richard Cooper, Room 102, West Hall

The Occupational Therapy Department provides two graduate programs which lead to the Master of Science. The graduate professional program for non-therapists and the graduate program for certified therapists.

The Graduate Professional Program

This program is designed to prepare the student for the profession of Occupational Therapy while also earning the Master of Science. This two and one-half year program of combined academic and field education (approximately eighty semester hours) is required for the student who has a baccalaureate degree in a curriculum other than Occupational Therapy. This is an accredited program and graduates are qualified to take the American Occupational Therapy Certification Exam.

Admission requirements

To be eligible for the program the applicant must:

1. Be accepted by The Graduate College for degree status.
2. Obtain a combined score of at least 1000 on the Aptitude section of the Graduate Record Examination.
3. Have completed a course in statistics/research design.

To apply, the applicant must complete both The Graduate College application and the departmental application.

Program requirements

1. Completion of approximately eighty semester hours in the following areas:
   a. Forty-seven hours of professional occupational therapy education
   b. Thirty hours of graduate courses which include the following:
      1. Occupational Therapy (21 hours) OT 610, Professional Issues OT 633, Administration in Occupational Therapy OT 640, Theory in Occupational Therapy OT 660, Research in Occupational Therapy OT 686, Integration Seminar OR 700 or OT 710 or OT 712 (6 hours)
   2. Electives (5 hours)
   2. The student must manifest emotional and behavioral characteristics which in the judgment of the departmental staff, will not jeopardize his/her professional competence.
3. All professional and graduate occupational therapy courses are sequentially scheduled which necessitates initial enrollment in the summer session or fall session only.
The Graduate Program

The graduate program is designed for the certified therapist who desires growth in professional skills while developing leadership potential. The graduate program represents a journey in which the student received his or her undergraduate degree. An approved program must meet the following requirements:

1. A minimum total of thirty semester hours for eligibility for the program, the applicant:
   1. Be accepted by The Graduate College for degree status
   2. Obtain a combined score of at least 1000 on the Aptitude Section of the Graduate Record Examination.
   3. Have completed a course in Human Development.

Program requirements

Completion of thirty semester hours of graduate courses which include the following:

A. Occupational Therapy (21 hours)
   - OT 610: Professional Issues
   - OT 633: Administration of Occupational Therapy
   - OT 640: Theory in Occupational Therapy
   - OT 660: Research in Occupational Therapy
   - OT 686: Integration Seminar
   - OT 700 or OT 710 or OT 712 (6 hours)

B. Cognates in related fields or areas of specific interest selected with the advice and consent of the graduate advisor (6 hours)

C. Electives (3 hours)

2. MATH 560 and 562 are required.
3. A minimum of twelve semester hours from courses on the approved list of operations research related courses.
4. A maximum of eight semester hours of courses cognate to the student’s undergraduate degree.
5. A three-semester-hour project.

Certification for graduation shall include the preparation of an oral presentation of his or her project and an examination covering the basic areas in which he or she has studied.

Paper Science And Engineering

Adviser:
Richard B. Valley,
Room 2650, McCracken Hall

The Master of Science degree program in Paper Science and Engineering is designed to provide theoretical, laboratory, and pilot-plant experiences which are basic to the development of professional competence in pulp and paper science and engineering. The department is internationally recognized in the fields of paper coating and fiber recycling, for its outstanding seminars, commercial-sized papermaking and coating machines, and for a complete recycled fiber pilot plant installation. Its laboratories and equipment are the most complete of any similar academic institution.

Admission requirements

Applicants with diversified science and engineering backgrounds may qualify for admission based upon demonstrated competence in an accredited college or university degree program. In all cases the applicant’s academic credentials and professional experience will be reviewed by the graduate adviser to determine whether any background courses are necessary. These may be taken concurrently with the graduate courses.

Applicants are encouraged to submit results of the graduate record examination as a supplemental credential for admission. The following gives the general guidelines of prerequisites for four classes of applicants:

1. Graduates from four year pulp and paper science programs will generally have the necessary prerequisites in Pulp and Paper Technology but may need one or two background courses in Process Engineering, Mathematics, or Chemistry.
2. Chemical Engineering graduates will generally satisfy the Science, Engineering, and Mathematics requirements but will be required to take three pulp and paper systems graduate level courses in addition to the normal graduate program.
3. Chemistry degree graduates will generally be required to complete two background undergraduate courses in process engineering and three pulp and paper system graduate courses in addition to the normal graduate program.
4. Graduates of other science, engineering, or technology programs may be required to take background undergraduate courses in Process Engineering and Chemistry, Mathematics, or Physics, depending on the particular credentials of the applicant. Also, three graduate courses in pulp and paper systems will be required in addition to the normal graduate program.

In some instances, it may be recommended that the applicant register for one or more semesters of undergraduate course work in order to satisfy particular academic areas prior to applying for graduate school admission. Many students have found it desirable to obtain a second bachelor’s degree in a different field. This approach is useful to those applicants having non-conventional academic backgrounds and who desire to establish their credentials for graduate study.

Program requirements

1. A minimum of fifteen hours of paper science selected from these twenty-three hours of other courses: Polymer Chemistry 550, Pulp and Paper Engineering 560, Surface and Colloid Chemistry 661, Paper Printing, and Inks 650, Coating Rheology and Film Formation 640, Mechanics and Optics of Paper and Fibers 660, High Polymer Topics 661, or Paper Industry Control Systems 666. Applicants without previous pulp and paper background must take in addition to the normal graduate program.
2. A satisfactory completion of a Master’s Thesis (6 hours) based on either an experimental or theoretical topic, under the guidance of a Committee selected by the department.
3. A minimum of nine additional hours of graduate courses from the chemistry, physics, or mathematics departments, selected with the consent of the graduate adviser. Suggested courses include Chemistry 520, 530, 550, 560, 562, 570, 610, 624, 626, 630, 691, Physics 520, 550, 563, Mathematics 500, 507, 510, 530, 560, 562, 567, 568, 570, 574, Mechanical Engineering 560.

Operations Research

Program Director:
Franklin K. Wolf,
Room 2007, Kohrman Hall

The Master of Science in Operations Research is an interdisciplinary program permitting the student to build a flexible plan of study emphasizing the relationship between operations research and his or her professional field. Participating are the Departments of Economics, Industrial Engineering, Management, and Mathematics. The purpose of the program is to provide the student who has an undergraduate degree in one of the involved disciplines with a basic knowledge of the philosophy and techniques of operations research and the ability to apply such to his or her particular discipline.

The entering student is assumed to have an undergraduate degree in Economics, Industrial Engineering, Management, or Mathematics, but students with degrees in other areas will be considered. A student’s program will be designed with consideration of his or her other experience, both formal and practical, and his or her career goals, and must be approved by the Program Director and the adviser for the Operations Research program in the department from which the student received his or her undergraduate degree. An approved program must meet the following requirements:

1. A minimum total of thirty semester hours

Physical Education

Advisers:
George G. Dales,
Room B-321, Ellsworth Hall
Ruth M. Davis, Room B-320, Ellsworth Hall
Jack Jones, Room B-317, Ellsworth Hall
Rog Zabik, Room 204, Gary Center
Harold Ray, Room B 320, Ellsworth Hall
Mary Dawson, 3220 Health Center

The Department of Health, Physical Education, and Recreation offers a Master of Arts degree program which prepares teachers, coaches, superintendents, and administrators to assume leadership roles in the following areas of emphasis: Administration, Coaching and Sports Studies, Exercise Science, Motor Development, Athletic Training, and Physical Education.

Admission requirements

To be admitted to the master’s degree program in this department, the Graduate College admission standards must be met and the graduate student must have successfully completed an undergraduate major or minor or equivalent in Physical Education, Health Recreation, Athletic Training, or Coaching.
Program requirements
Each graduate student is expected to show competence in at least three professional areas including research curriculum, socio-cultural, or psychological foundations. Such competence will normally be provided through seven to nine graduate semester hours of coursework in at least three professional areas. The Master of Arts degree in the Department of Physics, Electrical Engineering, and Recreations requires the successful completion of a minimum of thirty graduate credit hours beyond the bachelor's degree in one of the following areas of emphasis: Administration, Coaching and Sports Studies, Exercise Science, Motor Development, Physical Education, or Athletic Training.

Master's degree candidates are required to complete a comprehensive integrated capstone experience which can be met through (1) a Thesis; (2) Advanced Seminar electives in Physics courses, (3) PGR 710, Independent Research, or (4) PGR 712, Professional Field Experience. Graduate students in the Athletic Training emphasis area seeking certification must meet the National Athletic Trainers' Association standards.

Physics
Adviser: L. D. Oppliger, Room 1131, Everett Tower

The Department of Physics offers a graduate program leading to the Master of Arts degree in Physics. Thirty semester hours of graduate credit are required. The objective of the program is to enable students to acquire the knowledge and technical skills needed in physics-related occupations and in graduate study at the doctoral level. Participation in research is an important part of the program and occurs in any of three major fields:

1. Theoretical physics—e.g. classical liquids, nuclear structure, nuclear reactions, classical fields, and solid state

2. Experimental physics—e.g. atomic physics, optics, optical spectroscopy, nuclear physics, and materials analysis with accelerated ions. Equipment available for experimental research includes a vacuum ultraviolet spectrometer, and the only 12 MeV tandem Van de Graaff accelerator in Michigan.

3. Computer and instrumentation physics, including the use of PDP-10, 11 and 15 computers, and microprocessor-based microcomputers.

4. Or any combination of these, or some interdisciplinary areas.

Admission requirements
Students entering this program are expected to have acquired a Bachelor's degree in Physics or at least an equivalent amount of physics experience and training (including training in mathematics at the appropriate level). The departmental graduate adviser will provide assistance to students seeking admission to this program and will recommend ways of eliminating any deficiencies in course work.

Program requirements
The thirty semester hours of graduate credit must include the following:

1. Thirteen hours of required courses in physics, namely Research Seminar 610, Quantum Mechanics I 622, Statistical Mechanics 624, Classical Mechanics 630, and Electricity and Magnetism 662. Substitutions for these courses may be made only with the approval of the graduate adviser.

2. Eleven additional hours from Physics, Mathematics, or other departments chosen with the consent of the graduate adviser.

3. Satisfactory completion of a Master's Thesis (6 hrs. of PHYS 700). The thesis may be either theoretical or experimental in nature and is accomplished under the guidance of a committee of the graduate faculty in physics. The topic of the thesis may be based on one of the research areas noted above or it may be based on some other area of physics chosen by the student and approved by the thesis committee. The committee may require an oral defense of the thesis before approving it for submission to the Graduate College.

Graduate students are required to attend the Physics Research Lectures, which constitute a program for graduate students and Physics staff members. Presented by members of the WMU Physics staff and visitors from other institutions on topics related to their research specialties. Graduate students are also expected to attend the Physics Public Lectures, a series of talks on topics of general interest in Physics and related fields.

The Physics courses available for graduate study are listed elsewhere in this catalog.

Requirements in the two options may not overlap. Substitutions for these courses may be made only with the approval of the graduate adviser. A student may substitute up to two courses with a maximum of eight hours of cognate work appropriate to his/her program.

1. Thirty hours of graduate credit in Political Science. With the written approval of the graduate adviser, a student may substitute one course with a maximum of eight hours of cognate work appropriate to his/her program.

2. PSCI 610 American Political Institutions, PSCI 645 National Political Systems and International Politics, and PSCI 661 Principles of Politics.

3. PSCI 700 Master's Thesis (six hours).

4. Pass an oral examination on the thesis and on the student's preparation in his/her political science program.

Requirements for the non-thesis option
1. Thirty hours of graduate credit in Political Science. With the written approval of the graduate adviser, a student may substitute up to two courses with a maximum of eight hours of cognate work appropriate to his/her program.

2. PSCI 610 American Political Institutions, PSCI 645 National Political Systems and International Politics, and PSCI 661 Principles of Politics.

3. Pass written and oral field examinations covering the student's political science program.

Psychology

Adviser: Claude Phillips, Room 3007, Friedmann Hall

The Master of Arts degree program in Political Science seeks to prepare the student to function effectively as a citizen and to provide the student a variety of options to prepare himself for various career goals: (1) positions in business, government, or quasi-public agencies; (2) further professional training in Political Science and related professions, such as Law; (3) teaching positions in high schools and community colleges; and (4) general positions in the business world.

Admission requirements
In addition to meeting the general admission requirements of the Graduate College, a student must have completed at least twenty-four hours of work in the Social Sciences with a 3.0 record (or a 4.0 scale) or have acquired an equivalent set of deficiencies acceptable to the department. The department may require the student to make up deficiencies in undergraduate preparation and/or the Graduate Record Examination.

Program requirements
In order to qualify for the Master of Arts degree in Political Science, the student in addition to satisfying the general requirements of the Graduate College, may choose between the thesis and non-thesis options.

Requirements in the two options may not be interchanged.

Requirements for the thesis option
1. Thirty hours of graduate credit in Political Science. With the written approval of the graduate adviser, a student may substitute up to two courses with a minimum of eight hours of cognate work appropriate to his/her program.

2. PSCI 610, American Political Institutions, PSCI 645 National Political Systems and International Politics, and PSCI 661 Principles of Politics.

3. PSCI 700 Master's Thesis (six hours).

4. Pass an oral examination on the thesis and on the student's preparation in his/her political science program.

Requirements for the non-thesis option
1. Thirty hours of graduate credit in Political Science. With the written approval of the graduate adviser, a student may substitute up to two courses with a minimum of eight hours of cognate work appropriate to his/her program.

2. PSCI 610 American Political Institutions, PSCI 645 National Political Systems and International Politics, and PSCI 661 Principles of Politics.

3. Pass written and oral field examinations covering the student's political science program.
analysis, must have completed a minimum of eight hours of basic experimental laboratory courses including experimental analysis and experimental design. Equivalent courses at Western Michigan University are PSY 252/258 and PSY 362/368.

Applicants to the master's degree program in applied behavior analysis are expected to have some professional experience. Applicants without any experience may be required to complete an additional three hours of practicum following matriculation.

The application procedure includes submission of:
1. Completion of a major or minor in psychology
2. Graduate Record Examination (verbal and quantitative aptitude test) or Miller Analogies test score
3. Three letters of recommendation
4. An autobiography describing academic interests and professional goals.

Individuals applying for Fall admission and requesting financial assistance should apply by February 15. Applicants should apply directly to the Graduate College and the Department of Psychology.

Advisers:
M. K. Malott—Experimental
Wayne Fuqua—Applied
Behavior Analysis
Malcolm Robertson—Clinical
Dale Brethower—Industrial
Galen Alessi—School
Psychology

Program requirements
Experimental Psychology: The experimental program requires a minimum of thirty hours of credit including PSY 700. Masters Thesis (6 hrs.), six hours of electives selected from one or more fields related to psychology and eighteen credit hours in basic behavioral processes, laboratory techniques, and data analysis including PSY 634, Advanced Statistics. Research areas may include animal learning, operant behavior, physiological psychology and perceptual processes. This program is designed to prepare students for doctoral training in experimental psychology.

Applied Behavior Analysis: The applied behavior analysis program requires a minimum of thirty-two hours of credit including PSY 700. Masters Thesis (6 hrs.), six hours of cognates from one or more fields related to psychology, and twenty-four credit hours of Psychology. These twenty-four hours include one hour of PSY 601, Introduction to Issues in Behavioral Assessment, one hour of PSY 602, An Introduction to the Theoretical Analysis of Behavior, and one hour of PSY 603, An Introduction to Professional Issues in Applied Behavior Analysis. Three hours of PSY 634, Advanced Statistics; three hours of PSY 608, Current Research in Applied Behavior Analysis; three hours of PSY 572, Behavioral Systems Analysis, six hours of Practicum, and six hours of credit in Applied Behavior Analysis from selected courses in behavioral theory, technology, and applications. This program is designed to prepare the student for doctoral study or a professional position in one or more areas of psychological service.

Clinical Psychology: The clinical program requires a minimum of forty-eight hours including twelve hours of PSY 712, Professional Field Experience, six hours of electives from one or more fields related to Psychology, and thirty hours of training in Psychology. These thirty hours consist of courses from selected courses of study which include professional problems (3 hrs.), behavior assessment and diagnosis (6 hrs.), methods of behavior change (6 hrs.), statistics and research methods (9 hrs.), and elective (9 hrs.) selected in conference with an adviser. The areas of specialization may encompass a broad spectrum of clinical theory and application, or the theory and techniques of behavior modification. An appropriate substitute for the thesis included in the research methods may be arranged with the adviser. The clinical program is designed to prepare the student to pursue doctoral study or to obtain a professional position in mental health services. Applicants are encouraged to review the Michigan Licensing Law for Psychologists in preparing an application to this program.

Industrial Psychology: This program requires a minimum of thirty-six credit hours, including twelve credit hours in personnel selection, statistical analysis, human motivation in industry, and statistical analysis. Nine additional hours of psychology and six to nine hours outside the Department may be directed toward a specialization in personnel training, counseling, consumer or organizational psychology. A Master's Thesis (6 hrs.) is required of persons planning to pursue a Ph.D. in industrial psychology, while those with a professional orientation may write a thesis or complete a three to six hour individual research project. The selection of elective courses outside the core, including the thesis option, will be established after consultation with the adviser for the industrial psychology program.

School Psychology: Applicants are admitted to the School Psychology Specialist degree program and receive the Master of Arts degree within that sequence. The master's degree program requires a minimum of thirty-five credit hours, including six hours of electives from one or more fields related to School Psychology, as well as written validation of the required School Psychology competencies, or coursework including PSY 517, 519, 601, 602, 603, 608, 634, 655, 683, 686, and 668, Behavior Assessment and Counseling. Multiple practicum and other school setting experiences are required within the apprenticeship training program of the program. Apprentices at this degree level master basic educational, behavior analysis and research skills, and the methods for applying them directly with clients within educational settings. Study is focused on learning characteristics of mainstream and exceptional children, as well as careful analyses of the educational environments in which these children are required to perform. Educational and behavioral techniques focus on constructing educational environments to maximize each child's personal set of learning characteristics. The master's program is considered to be an integral part of the Specialist in School Psychology, and basic preparation for doctoral training in School Psychology.

Admissions requirements
Anyone who possesses the minimum qualifications for degree status admission to The Graduate College (a 26 grade point average during the last two years of undergraduate study) is eligible to be considered for admission to the MPA degree program regardless of the academic discipline in which previous graduate study has been undertaken. Actual acceptance into the program, however, is competitive, previous academic accomplishments, a history of professional success, and relevant work experience will be considered when those to be admitted are selected from among those who have applied for admission.

Program requirements
The Master of Public Administration degree requires between thirty-nine (39) and forty-five (45) semester hours of study for completion. This credit hour requirement can be reduced in certain cases by the Graduate Adviser when, though previous academic study, the degree candidate has acquired skills deemed essential to the professional administrator. For all graduate students, the degree candidate should find it possible to complete MPA requirements in four semesters while part-time and mid-career degree candidates should find it possible to complete requirements for the MPA in approximately 24-36 months. Ordinarily, pre-career candidates (recent college graduates) will be required to complete all of the following program components while mid-career candidates (those with some previous professional experience) will...
be required to complete only the first three components listed below:

1. A professional core consisting of five courses: PSCI 631 (3). The Foundations of Public Administration; PSCI 633 (3). The Political Environment of Public Administration; PSCI 634 (3). Seminar. Professional Issues in Public Administration: PSCI 635 (3). Pro-Seminar in Agency Administration; and a course in organization theory

2. A technical core providing skills in fund accounting, budgeting, public finance, statistics, administrative law, public personnel administration, and electronic data processing

3. An area of specialization or concentration which provides each candidate an opportunity to develop an in-depth understanding of some particular type of government activity, such as land use planning, natural resource management, delivery of social services, personnel administration, budgeting or urban administration

4. Professional practice, consisting of a three-month internship experience for pre-career students with some agency of city, county, regional, state, or federal government

### Science Education

Adviser: Robert Poel, Room 313, Moore Hall

The science departments (Biology. Biomedical Sciences, Chemistry, Geology, Physics, and selected courses from Geography and Psychology) of the College of Arts and Sciences and the Department of Education and Professional Development offer a graduate program leading to the Master of Arts in Science Education. The program is designed for both elementary and secondary school science teachers who wish to expand their preparation in the sciences and to enhance their teaching abilities. In addition, the program can meet the needs of teachers for a "planned program" necessary for continuing certification to teach in Michigan schools. It is possible to specialize in any of the above science areas or to take courses from more than one of the sciences, providing the proper prerequisites have been met.

### Admission requirements

The minimum admission requirements to this degree are (1) an undergraduate minor in one of the science departments listed above, and (2) fifteen hours of undergraduate work in professional education. These requirements are in addition to the general admission requirements of The Graduate College.

### Program requirements

Each student's program is planned in consultation with the adviser and consists of the following:

1. Nine hours from the following Teacher Education core courses:
   b. ED 602, School Curriculum
   c. ED 603, Social and Philosophical Foundations
   d. ED 604, Psychological Foundations of Education

2. Fifteen hours of graduate work selected from the regular course offerings of one or more of the science departments.

3. Six hours from either professional education or the sciences or both.

### Social Work

**Director of Admissions** Room 402, Moore Hall

A two-year M.S.W. degree program in professional Social Work is designed to prepare students for direct service and leadership positions in the field of social welfare. The curriculum is structured as an integrated and sequential set of conceptual and practical type educational experiences. These are focused around alternative approaches to the solutions and design of contemporary social problems. Social Work practice is examined as a problem-solving response to emerging and extant social conditions which have negative consequences for individuals, the family, special groups, the local community, and the society at large.

In conjunction with their basic M.S.W. program, students may pursue areas of individual special interest such as Community Organization, Criminal Justice-Corrections, Social Work Licensing and Regulation, Social Work in Health Care, Family and Child Welfare, Rural Mental Health, Minority Issues, Women's Issues, and School Social Work. Advisers will assist students with selection of appropriate courses within the School and University which relate to the area of interest being pursued. In addition, the School offers opportunity for participation in an interdisciplinary Specialty Program in Alcohol and Drug Abuse (SPADA) and a multidisciplinary Graduate Specialization in Gerontology. Students may select courses in these areas along with a concentration in either of the areas of Social Treatment or Social Policy, Planning and Administration. Career opportunities for professional practice are excellent in all of these fields.

There are five major content areas in the curriculum:

- Social Policy: Social and Behavioral Theory, Social Welfare Research and Technology, Social Work Practice (Social Treatment Concentration, and Social Welfare Policy, Planning and Administration Concentration), and Field Education

### Admission requirements

Applications for graduate study in social work must complete two applications—one for The Graduate College and one for the School of Social Work. Both applications can be obtained from the School of Social Work. Admission is granted for the Fall Semester only. Deadline for filing applications is April 1st of each year. In addition to The Graduate College's requirements for admission to a master's degree program, the following criteria will be considered:

1. Evidence of adequate academic preparation for graduate study in social work. This includes consideration of both undergraduate performance and area of study. Undergraduate preparation in the social and behavioral sciences and social work/social welfare is given particular attention.

2. Evidence of professional qualifications considered desirable for successful social work practice. These include motivation for a human service profession, personal maturity, and leadership ability.

### Program requirements

1. The successful completion of sixty hours of credit, with School courses graded on a credit/no-credit basis, is required for the master's degree in Social Work. This will include the following course credits:

   Semester Courses in the School of Social Work (33-36 hours)

   Semester Courses in other university departments (6-9 hours)

   Field Education (12 hours)

   Field Studies in Research and Practice (6 hours)

2. Proficiency exams are available in SWRK 610, 630, 631, and 640. Students have the option of receiving full credit or a waiver with no credit for those courses in which proficiency exams are passed.

3. Waiver of up to twelve semester hours of required courses, except field work courses, may be arranged upon verification of successful completion of course work covering the same content. Credit hours for all courses thus waived must be substituted for with an equal number of graduate credit hours from transfer credit and/or enrollment in courses. (While undergraduate course work may be used for waiver, approved graduate courses must be completed to achieve the M.S.W. degree requirement of 60 hours.) Waivers are arranged on a course-by-course basis through advisers. Students who have successfully completed the first year of an M.S.W. program from an accredited school of social work may enter the second year of W.M.U.'s M.S.W. program.

4. One academic year of residence is required for all students who are candidates for the two-year M.S.W. degree. An academic year will be considered the equivalent of two semesters of full-time work. Nine semester hours, including field education, will be considered full-time work.

In addition to the regular, full-time program, the School offers a planned part-time program on campus and a part-time, off-campus degree program located in Grand Rapids in cooperation with the Division of Continuing Education. Persons interested in part-time programming should contact the Director of Admissions.

Financial aid is available to a limited number of qualified full-time students. Information regarding the various types of available assistance may be obtained by writing to the Director of Admissions, School of Social Work, Room 402 Moore Hall.
Sociology

**Director, Graduate Studies:**
Robert F. Waite, 2512E, Sangren Hall

**Advisers:**
- Gerald E. Markle, 2512D, Sangren Hall
- Ronald C. Kramer, 2402 Sangren Hall

The Master of Arts in Sociology is designed to give students an advanced understanding of the significant factors and processes of human societies, with preparation for teaching in secondary or higher education, to prepare students for doctoral study in sociology, and to provide professional training for a variety of occupational opportunities in government, industry, education, research organizations, social agencies, and correctional systems. Each student's program is prepared individually in consultation with a graduate adviser.

**Admission requirements**

1. Twenty-four semester hours in undergraduate social sciences, with at least fifteen semester hours in sociology, including courses in theory and research methods.
2. A grade point average of 3.0 or better in undergraduate sociology courses.
3. If these requirements have not been met, the student may be required to complete additional course work as a condition of admission.
4. Applicants must request three letters of recommendation from academic and/or professional sources to be sent to Graduate Admissions Committee, Department of Sociology.

**Program requirements**

1. Complete at least thirty graduate credit hours, selected in consultation with the departmental master's adviser.
2. Maintain a grade-point average at least 3.0 in all course work.
3. Complete the following requirements:
   - A minimum of one year of successful teaching experience for the Master Clinical Teacher and the leadership personnel designation.
   - A point-hour ratio of at least 3.26 during the last sixty semester hours of undergraduate study and 3.0 in the special education major.

The Master of Arts in Special Education is designed for the following:

1. Certified regular classroom teachers interested in obtaining approval to teach mentally handicapped, emotionally disturbed, or crippled or homebound persons who qualify for a Michigan endorsement in Special Education and are desirous of acquiring advanced knowledge, skills, and experience in working with exceptional persons. Prerequisite course equivalents to be completed prior to admission to this degree program.
2. The Master Clinical Teacher program is specifically designed to accommodate experienced special education personnel who qualify for a Michigan endorsement in Special Education and are desirous of acquiring advanced knowledge, skills, and experience in working with exceptional persons. Prerequisite course equivalents to be completed prior to admission to this degree program include the following:
   - ED 312 Teaching of Reading
   - SPED 530 Diagnostic and Prescriptive Techniques of Exceptional Persons
   - SPED 533 Curricular and Instructional Provisions for Exceptional Children
   - SPED 534 Psychology and Administration of School-Aged Learners
   - SPED 588 Behavior Disorders in Exceptional Persons

The Master of Arts in Special Education is awarded in three programs provided by the Department of Special Education. These programs are individually designed to prepare graduates to work effectively with certain types of atypical children and/or quality for supervisory or leadership roles in special education.

**Prerequisites**

1. Michigan Teaching Certificate or equivalent.
2. A minimum of one year of successful teaching experience for the Master Clinical Teacher and the leadership personnel designation.
3. A point-hour ratio of at least 3.26 during the last sixty semester hours of undergraduate study and 3.0 in the special education major.

**Speech Pathology and Audiology**

**Advisers:**
- Harold L. Bate, Room 203, Speech and Hearing Center
- Michael J. Clark, Room 205, Speech and Hearing Center
- Robert L. Erickson, Room 235, Speech and Hearing Center
- Gary D. Lawson, Room 240, Speech and Hearing Center

The Master of Arts in Speech Pathology and Audiology, which is accredited by the Board of Examiners in Speech Pathology and Audiology, provides academic and practical experiences basic to the development of clinical competence in the management of language, speech, and hearing disorders. Students may emphasize Speech Language Pathology or Audiology or both during graduate study, and, in any case, are expected to complete the academic and practical requirements for certification of clinical competence by the American Speech-Language-Hearing Association. The master's degree program consists of a minimum of fifty-five academic credit hours and 150 hours of supervised clinical practice. Supervised clinical practice is required during every term of registration. It includes regular participation in initial client evaluations and regular case work responsibilities in the Language, Speech, and Hearing Clinic, as well as an assignment, for one term, to an off-campus practicum site.

**Admission requirements**

All eligible applicants for the master's degree program will be considered, but admission will be granted only to those who most satisfactorily meet the requirements described below. The number of new admissions for each term will be governed by the number of available openings in the program. Students will be admitted for full-time study beginning only in the Fall or Winter term of each year. Admission decisions for the Fall term will be announced on April 15, and July 15. Admission decisions for the Winter term will be announced on November 15. Applicants are advised to complete the application process as early as possible. Specific admission requirements are outlined below.
1. A point-hour ratio of at least 2.6 during the last sixty hours of undergraduate study.

2. Completion of an undergraduate major or equivalent undergraduate course sequence, in Speech Pathology and Audiology. The student who has not completed these requirements as an undergraduate will need to do so prior to enrollment in departmental graduate courses.
   a. Undergraduate preparation must include at least ten hours in courses that provide fundamental information on the normal development and use of speech, hearing, and language. Among these ten hours should be at least one course in phonetics, one course in anatomy and physiology of the speech and hearing mechanisms, one course in speech and language development, and one course dealing with the science of speech and hearing. Coursework in linguistics, biology, mathematics, and physics is highly recommended.
   b. Undergraduate preparation also must include a minimum of twelve semester hours in courses which provide basic information on the diagnosis and treatment of language problems, articulation disorders, stuttering, and impaired hearing.
   c. A point-hour ratio of at least 3.00 in all undergraduate speech pathology and audiology coursework.
   d. Submission of scores on the Aptitude Section of the Graduate Record Examination.
   e. Evidence of personal and professional qualifications considered necessary for successful professional practice as reflected in:
      a. Three letters of recommendation from individuals able to judge the applicant's academic and practicum achievements and potential for successful completion of graduate work.
      b. Responses to a detailed departmental questionnaire.

Program requirements

Two options are available in the degree program. The student who elects to complete a Master's Thesis (6 hrs.) must complete at least twenty-nine hours of course work plus the thesis. The student who elects the non-thesis option must complete at least thirty-five hours of course work. Students who desire Michigan Teaching Certification should contact the Certification Office, College of Education, Sangren Hall. Specific program requirements are as follows:

1. Completion of a core of departmental graduate speech and language pathology and audiology courses specified by the department.
2. Completion of at least one departmental graduate topical seminar registration.
3. Completion of at least thirty hours of supervised clinical practicum, at least 150 of them at the graduate level. This experience must include work with a variety of specified disorders in children and adults. The student who enters graduate work with fewer than half of the required 300 hours of practicum in areas required for ASHA clinical certification may anticipate proportionate extension in the duration of the degree program.
4. Evidence of emotional and behavioral characteristics which, in the judgment of the departmental staff, will not preclude the student's professional competence.

A Master's Thesis (6 hrs.) or one or more independent research registrations may be applied toward degree requirements by students who demonstrate research aptitude and interest. Students who anticipate further study toward a doctoral degree are expected to evidence the ability to formulate and conduct a research project.

The academic requirements can usually be satisfied in one calendar year (four terms of enrollment), if the student begins the program in the Fall semester, or in one calendar year plus one semester. If the student begins in the Winter semester, Practicum requirements can usually be satisfied in one calendar year, if the student received considerable practicum experiences as an undergraduate.

Information regarding the various forms of financial assistance available to graduate students may be obtained by writing to the Department.

Statistics

Advisers:
Janice Dubien, Joseph McKean,
Room 3319, Everett Tower

The master's program in Statistics is offered through the Department of Mathematics. Two types of programs are available in this area.

Option I (Theoretical)

This option combines a regular Master of Arts in Mathematics with substantial work in statistics. A graduate from this option is well prepared to proceed into a doctoral program in statistics, to teach basic statistics at the college level, or to use statistics professionally. A minimum of thirty hours is required, and the resulting degree is a Master of Arts in Mathematics with concentration in Statistics.

Admission requirements

Requirements are the same as for the Master of Arts in Mathematics.

Program requirements

In this option the student must complete the requirements of the Master of Arts in Mathematics with a program including the following courses: MATH 690, 695, and three of the following: 661, 662, 663, 664, 667, 669.

Option II (Applied)

This option will give students a combination of knowledge of statistical techniques, experience with using these techniques in applied situations, and understanding of the theoretical principles behind these techniques. Students receive excellent training for professional employment in industry or government, and at the same time obtain sufficient theoretical background to qualify them to teach elementary statistics or to continue into more advanced degree programs. This program includes an internship experience where it is expected that students will collaborate with professional statisticians in an actual work environment with real problems. The internship placement will be with an area industry or with the statistical laboratory in the department.
The following Graduate Specialty Programs are offered by Western Michigan University. Students interested should consult the adviser about the complete admission and program requirements.

**Alcohol And Drug Abuse**

**Adviser:**
Dennis Simpson,
Room B-311, Ellsworth Hall

Western Michigan University offers a program for the training of substance abuse specialists through the Graduate Specialty Program in Alcohol and Drug Abuse (SPADA). The departments of Biology, Counseling and Personnel, Psychology, Sociology, and the School of Social Work provide the multidisciplinary and interdisciplinary bases to the Specialty. Courses are planned and taught by faculty from the contributing disciplines.

Students receive training for dealing with varied 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.

**Admission requirements**

Students must be accepted by The Graduate College and admitted to a master's, specialist, or doctoral degree program. Persons who have previously completed a graduate degree or an acceptable equivalent (e.g., B.D. or L.L.B. from an accredited institution) may apply for admission to the SPADA Program.

**Program requirements**

In addition to satisfactory completion of the requirements of the individual department or school, each student will satisfactorily complete a program consisting of nine semester hours of courses related to substance abuse, three hours from a list of approved electives outside the participant's discipline, and a six hour field placement in one or more agencies dealing with some phase of substance abuse. Credit for the field placement will be elected from the courses designed for such activities in the department or school in which the student earns his or her graduate degree. The hours taken for the academic and seminar components of the Graduate Specialty Program are in addition to the degree requirements of the department or school in which the student is enrolled. In some of these units the required SPADA courses may be integrated with the regular degree requirements. Specific requirements of this integration vary and can be determined for each department or school. In addition to the six semester hour field training experience, the following courses are required in the Graduate Specialty Program in Alcohol and Drug Abuse:

- **BIOL 507** — The Biology of Addictive Drugs (3 hrs.)
- **SOC 617** — The Etologies of Substance Abuse (3 hrs.)
- **PSY 663** — Seminar in Substance Abuse (3 hrs.)

*These courses are cross-listed in the departments and school indicated and graded on a Credit/No Credit basis.

SPADA participants must elect one of the following courses outside their department or discipline:

- **SOC 507** — Evaluation Research (3 hrs.)
- **PSY 663** — Behavior Change/Therapy Methods (3 hrs.)
- **SOC 632** — Family and/or Small Group Theory (2 hrs.)
- **SOC 504 and 635** — Social Welfare Policy Planning and Administration (2 hrs.)
- **SWRK 667** — Seminar in Social Planning (1 hr.)
- **ED 555** — Alcohol Education (2 hrs.)
- **HHS 530** — Clinical Theory in Health and Human Services (3 hrs.).

**Electron Microscopy**

**Adviser:**
Gyula Ficsor,
Room 124, Wood Hall

The Graduate Specialty Program certificate will be awarded to those candidates who have completed a minimum of 16 credit hours of prescribed course and laboratory work beyond a Master's of Science degree. The candidate must demonstrate to the satisfaction of a committee composed of three members (2 of which must be Biomedical Sciences Faculty), competence in preparation of specimens, operation and maintenance (reasonable and required) of equipment, and photographic processing and printing. The evaluation of competence will be by an oral or written examination and practical demonstration of skills. The purpose of the program is to allow the interested student to acquire skills beyond the Master's degree but short of the requirements for a Ph.D. degree. The program will be balanced between theoretical, practical preparations, interpretation and scope operation and maintenance. It will equip the candidate to be a productive member of an operating electron microscopy laboratory.

**Requirements for entry**

1. Completed Master's degree in a biologically related area.
2. A degree of competence in electron microscopy, i.e. the Master's Thesis or project area required use of an electron microscope laboratory.
3. Chemistry background through two courses in biochemistry.

**General Course requirements**

The candidate must complete 362, 710, 712 and a course in histology.

**List of required courses:**

- **BMED 632** Advanced Techniques in Electron Microscopy
- **BMED 710** Independent Research
- **BMED 712** Professional Field Experience
- **BMED 537** Histology
- **BMED 554** Histological Techniques
- **BMED 574** Embryology

*To be arranged as projects between W.M.U. and a commercial Electron Microscope Laboratory.

**To be arranged between W.M.U. and the Argonne National Laboratories Electron Microscope Laboratories.** The student will work for one semester at Argonne National Laboratory full time on projects mutually directed by Argonne and Western Michigan University faculty. The progress of the student will be monitored by frequent site visits by the W.M.U. participant. (Details of the appointment must be arranged on an individual basis between Argonne and W.M.U. personnel at least 5 months prior to actual work.

Appointments can be made for only 1 candidate for each of the Fall or Winter terms.)

**Gerontology**

**Adviser:**
Ellen K. Page-Robin,
B108 Henry Hall

Western Michigan University offers a multidisciplinary Graduate Specialty Program
in Gerontology. This program, designed for graduate students in master's or doctoral programs who wish to add Gerontology to their degree programs, consists of 20 hours of course work, field experience, and/or thesis/dissertation credit. Ordinarily the specialization will require some work beyond that required for most master's or doctoral degrees. A certificate of completion of the Graduate Specialty Program in Gerontology will be awarded at the completion of the course study.

Admission requirements
Students must be admitted to The Graduate College and to a regular master's, specialist, or doctoral degree program in the University and must apply for admission to the Graduate Specialty Program through the Gerontology Program Office and to The Graduate College.

Program requirements
In addition to completing the requirements of the degree program pursued by the student, persons seeking the Graduate Specialty Program in Gerontology must complete a course of study totaling 20 semester hours. Some required courses for the specialization may be integrated with regular degree requirements. Three courses are required:
- Blind Rehabilitation 599, Gerontology, 2 credit hours
- Health and Human Services 680, Multidisciplinary Seminar in Gerontology, 3 credit hours
- Health and Human Services 662, Program Planning and Development in Gerontology, 3 credit hours
Up to six hours of thesis/dissertation or field experience from the student's graduate department may also be counted, provided the thesis/dissertation topic or the field placement is certified as relevant to gerontology by the Gerontology Adviser.

The remainder of the 20-hour requirement will be acquired through elective courses chosen from a list of approved courses available through the Gerontology Program Office.
The program for the Specialist in Education degree normally includes fourteen hours of core courses, twenty hours of cognate courses, fourteen hours in a major field of study, six hours in a Specialist Project, and six hours or more of electives.

**General Requirements For A Specialist Degree**

**Admission**

See Calendar of Events for application deadline.

- a. See specific program description to determine the minimal entrance requirements. The requirements range from a bachelor's degree to a master's degree.
- b. Official transcripts of all courses taken beyond high school showing the degrees earned.
- c. A point-hour ratio of at least 2.6 (A = 4.0) in the last two years of undergraduate work for all programs permitting entrance with a bachelor's degree. A point-hour ratio of at least 3.25 for all graduate work undertaken beyond the bachelor's degree.
- d. ATTAINMENT OF SATISFACTORY SCORES ON STANDARDIZED TESTS APPROVED FOR EACH PROGRAM BY THE GRADUATE STUDIES COUNCIL.
- e. Acceptance by The Graduate College and a unit for a definite program of study.

**Candidacy**

- a. A Graduate Student Permanent Program which will constitute an application for admission to candidacy must be submitted during the first semester or session of enrollment.
- b. Reservations indicated on the Certificate of Admission and/or the Graduate Student Permanent Program must be removed before candidacy will be approved.
- c. A point-hour ratio of at least 3.25 must be secured in all graduate work taken.

**Graduation**

See Calendar of Events for application deadline.

- a. Diploma Application: A diploma application must be submitted by October 1 for the December Commencement, by February 1 for the April Commencement, and by June 1 for the August Commencement.
- b. Minimum Credit Hours: Completion of a minimum of sixty hours of accepted graduate credit in a program of study approved by an adviser.
- c. Residence Requirement: 1) One semester (Fall, Winter, or Spring-Summer) of full-time enrollment at Western Michigan University, or 2) enrollment in two sessions in consecutive years and the intervening semesters.
- d. Point-Hour Ratio: A point-hour ratio of at least 3.25 is required for all work taken for the degree.
- e. Hours After Candidacy: The election and completion of at least six hours is required after being approved for candidacy.
- f. Transfer Credit: A student with a master's degree from another university who completes the remaining credits for a specialist degree at Western Michigan University may transfer up to thirty-six credits. A student without a master's degree who completes the credits for a specialist degree at Western Michigan University may transfer up to twelve credits.
- g. Time Limit: A student who has a master's degree is required to complete a specialist degree program in five years; a student admitted without a master's degree is required to complete the specialist degree program in six years.
- h. Specialist Project: A student who intends to register for the Specialist Project (6 hrs.) is required to meet with the Administrative Assistant for Graduate Programs in The Graduate College before registering for the class in order that the student is informed about the regulations pertaining to the preparation of the manuscript.

**Specialist In Education Programs**

**Educational Leadership**

Advisors:
Carol F. Shaffer, Chairperson;
Harold W. Boles, Robert O. Brinkerhoff;
Mary Anne Bunda, Richard E. Munsterman;
James R. Sanders, Larry B. Slack, Uldis Smidchens, Charles C. Warfield, Donald C. Weaver. Department office is located in Room 3102, Sangren Hall.

The degree of Specialist in Education is awarded in curricula intended to prepare personnel for positions as educational/organizational leaders, positions that are largely non-instructional in nature. The degree is intended to be terminal, and a student choosing it should be fairly definite as to his/her professional goals and aspirations.

Admission to the Specialist degree program is contingent upon application and admission to The Graduate College, completion of the Graduate Record Examination, and an interview with a department admission committee. Each student admitted will work with the Chairperson of the Department until a permanent adviser is identified. The adviser will work with the student in outlining an individualized and multidisciplinary program of studies to pursue, constituted from departmental and other offerings in these local areas:

- 11 hrs. * in Administration
- 12 hrs. * in Human Relations
- 12 hrs. * in Concept Formation
- 3 hrs. * in Research
- 6 hrs. * in Independent Study (Internship or Field Project)
- 16 hrs. of electives
- 60 hrs. minimum Total

*Certain career goals within the program may alter the number of hours required in these areas. Among the areas of faculty expertise available to students are: community education, early childhood education, evaluation, higher education, media and technology, and training and development.

At least twelve hours of the sixty hour minimum must be taken outside the College of Education. Whether credits earned in another degree program will be allowed will be determined by the adviser on an individual basis.

Curricula available within this degree program include:

- Line Administration — prepares the student for a position as a central office administrator of a school district, as a principal and/or director in a school district, as a central administrator in a post-high school educational agency, or as a chief executive officer, vice-president, or administrator in institutions of higher education, government agencies, or private industry.
Staff Administration — offers preparation for a position as a coordinator, director, or supervisor in public or private schools, colleges, universities, or public or business agencies in areas such as finance, personnel, or in a special service (for example, research).

Program Leadership — prepares the student for a position as a director of training and management development in the armed forces, business, government, industry, a professional association, or as a director, or coordinator of programs in a social welfare agency.

Certified career goals within the degree program may alter the number of hours required in these areas. Curricula available within this degree include, but are not limited to, agriculture, community education, distributive education, early childhood education, home economics, industrial and technical education, media and technology, training and development, and vocational education.

School Psychology

Galen J. Alessi, Program Coordinator
Julie Voss, Program Secretary
Room 258, Wood Hall

The Specialist in Education in School Psychology is a competency based program designed to train persons for careers in School Psychology. Both the Master of Arts and Specialist degree programs are accredited by the National Council for Accreditation of Teacher Education (NCATE). Applicants are admitted to the specialist program and receive the master's degree in the process of completing the specialist sequence.

The program has adopted an apprenticeship training model in which the applicant receives a personal appointment to one faculty adviser and two faculty sponsors. These faculty members form the training committee for that person. Apprentices are encouraged to participate in the daily conduct of the Department's various training and research activities.

At the Master's level focus is on learning basic psycho-educational, behavior analysis and research skills, and the methods for applying these directly with clients within school settings. At the specialist level, apprentices develop the consultation and system analyses skills needed to implement the basic skills through other professionals and parents.

Study emphasizes the learning characteristics of mainstream and exceptional children as well as careful analyses of the various educational environments in which these children are required to perform. Educational and behavioral techniques are mastered which focus on constructing educational environments to maximize each child's personal set of learning characteristics.

Completion of the specialist degree is required for recommendation for temporary approval. After one year of successful practice as a school psychologist, the graduate would be eligible to be recommended for full approval as a Michigan School Psychologist. Applicants must apply directly to both the Graduate College and the Department of Psychology. Those applying for Fall admission should have all materials in by February 15, while those applying for Winter admission (January) should have materials in by October 15.

Admission requirements
1. Completion of a major or broad minor in Psychology (or the equivalent).
2. Graduate Record Examination: Verbal and Quantitative Aptitude Test Scores.
3. Miller's Analogies Test Scores.
4. Three letters of recommendation.
5. Vita and/or Biographical Experience with children and educational staff in school settings. Course work in education or teaching certificate are considered but not required for admission.

Program requirements
Upon successful completion of a program of 56 graduate semester credit hours, both the Master of Arts in Psychology and a Specialist in Education in School Psychology are awarded. This is a competency based program approved by the Michigan State Board of Education. Degree requirements may be satisfied by written validation of a specified set of skill competencies or by completion of designated courses, or both. Responsibility to ensure proper experiences for competency validation or course work completion is placed on the apprentice and the faculty training committee. The training sequence will include:

1. Up to nine credit hours of prerequisite course work may be required of an entering student who does not have sufficient undergraduate training in behavior analysis or who fails to pass an exam in basic applied behavior analysis concepts. The need for such prerequisites and the specific courses will be decided by the major advisor.
2. Compentcy validation and/or course work in Psychology 517, 519, 601, 602, 603, 608, 634, 655, 668, 683, and 686. PSY 570 is recommended but not required.
3. Practicum experiences in at least two settings.
4. Six hours of course work outside of Psychology.
5. Completion of a 600 clock hour (12 credit hour) internship, the majority of which must be in a school setting under supervision of a fully approved school psychologist or consultant and a WMU faculty member.
6. Specialization in one or more topical areas, which may include:
   (a) educational assessment and planning, (b) educational technology, (c) behavior analysis and modification, (d) curriculum design and programming and coordination, (e) teacher consultation techniques, (f) parent and child counseling, (g) work with deaf, blind, speech, or orthopedically impaired, (h) American sign language and braille, (i) work with general and/or specific social and academic behavior adjustment problems, (j) mainstreaming procedures and models, (k) research methods, (l) administration and program management, (m) interdisciplinary teaching approaches, (n) criterion referenced behavioral assessment techniques, (o) professional ethics and legal issues, and (p) educational system analysis, synthesis, and evaluation.
7. Completion of a six-hour Specialist Project.

In addition to preparation for full approval as a Michigan School Psychologist, the Specialist degree program is considered also to be basic preparation for doctoral training in School Psychology.
Section IV
Doctoral Degree
Programs and Requirements

Western Michigan University offers doctoral programs in eight areas. The Doctor of Education is offered in Educational Leadership, Counseling and Personnel, and Special Education; the Doctor of Philosophy is offered in Mathematics, Sociology, Science Education, and Psychology. The Doctor of Public Administration is also offered. Each program involves approximately three calendar years of study of which at least an academic year of two consecutive semesters must be spent in full-time study. Each student’s program will be planned by a committee selected in consultation between the student and the graduate adviser of the program in which the student wishes to study. A student will be expected to register for at least ninety hours of graduate level work while completing his or her program. The exact distribution of the ninety hours among courses, seminars, and research will depend upon the program and will vary from one student to another. Each program, however, will contain a significant amount of research, and each student will be required to register for and prepare a dissertation for fifteen hours of graduate credit.

A student will be expected to select two appropriate research tools. The decision regarding the specific research tools must be made by the student’s doctoral committee. If the committee wishes to recommend research tools other than languages, computer programming, or statistics, the recommendation and standard of proficiency expected must be approved by the Graduate Studies Council. Appropriate competency in language, statistics, and computer programming has been established for each program and approved by the Graduate Studies Council.

A student will be allowed a period of seven years from the date of admission to complete all the requirements for the degree. Under extenuating circumstances, additional time may be granted by the Graduate College. A student will be expected to pass those examinations established by the unit in which he or she is studying. In all cases, these examinations will include comprehensive examinations of the subject matter areas included in the student’s program of study and a final oral examination.

General Requirements
For A Doctoral Degree

Admission
See Calendar Events for application deadline.

a. See specific program description to determine the minimal entrance requirements.
b. Official transcripts of all courses taken beyond high school showing the degrees earned
c. For students who have completed at least twenty hours of graduate work, a point-hour ratio of at least 3.25 for all graduate work undertaken beyond the bachelor’s degree. The student who has a bachelor’s degree and less than twenty-hour hours of completed graduate work needs at least an overall 3.0 point-hour ratio in undergraduate work and at least a 3.25 for all completed graduate work.
d. Names and addresses of three references who may be consulted
e. Evidence of appropriate background, objectives, and communication skills demonstrated in an autobiographical statement
f. Attainment of satisfactory scores on standardized tests approved for each program by the Graduate Studies Council. Graduate Record Examination scores on the Aptitude Test are required for each doctoral program except the program in Special Education which requires the Miller Analogies Test. The Miller Analogies Test is also required for the doctoral program in Psychology. A satisfactory score usually is considered to be one that is at the fiftieth percentile or better.
g. Attainment of a satisfactory score on the English Qualifying Examination. A non-credit English course must be passed by students failing the English Qualifying Examination. This requirement is waived for a student with an advanced degree.
h. Admission by both the Graduate College and the unit offering the doctoral program

Applicancy

a. A student admitted with less than twenty hours of graduate study must request status as an applicant after completing two full semesters of graduate work at Western Michigan University or twenty semester hours of graduate work beyond those accumulated at the time of admission, whichever comes first. A student should present this request to the adviser who will submit a recommendation to the Graduate College.
b. A student admitted with more than twenty hours of graduate study must request status as an applicant after completing one full semester of graduate work at Western Michigan University or forty semester hours of graduate work, whichever comes first.
c. Criteria for being awarded status as an applicant include
   1) An overall point-hour ratio of 3.25 in all graduate work completed
   2) Commitment to a specific degree program
   3) Appointment of a doctoral committee
   4) A decision by the unit that the student should be permitted to continue study toward a doctoral degree.

Candidacy
A student who is an official applicant for a doctoral degree must seek candidacy no later than the end of the second calendar year or its equivalent and meet the following requirements.

a. An overall point-hour ratio of 3.25 in all graduate work completed
b. Completion of all basic course requirements
c. Completion of the research tool and/or language requirements
d. Successful completion of the comprehensive examinations established for the program.
e. Endorsement by the Doctoral Advisory Committee of the plan for the student’s dissertation

Graduation
See Calendar of Events for Application deadline.

a. Completion of a minimum of ninety hours of courses, seminars, research, and other requirements including fifteen hours of dissertation with an overall point-hour ratio of 3.25
b. Three years of study of which at least an academic year of two consecutive semesters must be spent in full-time study
c. Students will be allowed a period of seven years from the date of admission to complete all the requirements for the degree. Under extenuating circumstances, additional time may be allowed by the Graduate College.
d. Consulation with the Administrative Assistant for Graduate Programs in the Graduate College before registering for Doctoral Dissertation (15 hrs) in order to be informed about the regulations pertaining to the preparation of the manuscript.
e. Approval of the dissertation by the Doctoral Advisory Committee, composed of at least two representatives of the Graduate Faculty from within the major department or unit and one representative of the Graduate Faculty from outside the major department or unit. The dissertation must be in a form acceptable to the unit and the Graduate College.
f. Satisfactory performance on the doctoral examination.
Counseling and Personnel

Advisers:
Beverly Belson, Robert L. Betz, Kenneth Bullmer, William A. Carlson, John S. Geisler, Paul L. Griffith, Robert F. Hopkins, Gilbert E. Mazer, Robert M. Oswald, Avner Stern, Edward L. Trembley, Thelma M. Urbick. The Department office is located in Room 3109, Sangren Hall.

Counseling and Personnel is offered in five program options:
1. Community Agency Counseling
2. Counseling Psychology
3. Counselor Education and Supervision
4. Student Personnel Services in Schools
5. Student Personnel Services in Higher Education

These program options are designed to educate individuals for responsible positions as counselors, counseling psychologists, counselor educators, and counseling personnel services administrators.

Graduates are employed in these positions in a variety of settings, including community-based mental health agencies, government-sponsored mental health operations, substance abuse centers, hospitals and other health care facilities, private counseling and psychological services, public school systems, community colleges, colleges, and universities.

The Department is committed to the belief that its resources, materials, and efforts should be invested in the preparation of leadership personnel equipped with a high level of practitioner skills.

Courses, seminars, professional field experiences, research projects, and independent study are arranged to provide the technical, conceptual, and human relationship skills necessary for professional leadership.

Therefore, the doctoral program options foster a close relation between the doctoral student and the faculty.

Application for admission to doctoral program in Counseling and Personnel must be made to The Graduate College. Admission is considered to a specific program option and is contingent upon satisfactory scores in the Graduate Record Examination, work experience, academic record, letters of recommendation, professional and personal commitment, and the recommendations of a Department faculty member representing the doctoral program option.

Generally, a personal interview is required. Because policies, procedures, and program requirements may differ for the various doctoral program options, interested persons are urged to request current information and material from the Department.

When a student is admitted to a doctoral program in Counseling and Personnel, a temporary adviser is assigned. At the appropriate time, in accordance with the policies of The Graduate College and the policies of the Department relating to the program option, a student must select and request appointment of a doctoral committee chairperson and members. Doctoral students are expected to maintain a close working relationship with the doctoral committee, particularly with the chairperson, in regard to development and approval of a planned program of studies, course selection, application, candidacy, professional field experiences, internships, comprehensive examinations, research projects, dissertation topics, dissertation writing, and doctoral oral examinations.

A student admitted to a specific doctoral program option is expected to follow the policies, procedures, and course requirements for that option. One may not change to another option without formal approval. A person desiring to select a different option should petition the Department chairperson. Whether or not credits will be allowed for any graduate course work, wherever taken, will be determined by the student's chairperson and The Graduate College, keeping in mind doctoral program option policies.

Educational Leadership

Advisers:
Carol F. Sheffer, Chairperson;
Harold W. Boles, Robert O. Brinkerhoff, Mary Anne Bunda, Richard E. Munsterman, James R. Sanders, Ulidis Smidchens, Charles C. Warfield, Donald C. Weaver. The Department office is located in Room 3102, Sangren Hall.

The College of Education offers, through the Department of Educational Leadership, and with the cooperation of numerous other departments, a doctorate in Educational Leadership which has some unique features.

This Doctor of Education is designed to prepare leaders of personal and professional stature who are knowledgeable and competent to exercise leadership in organizations.

A variety of educational experiences are arranged to educate qualified students in the technical, conceptual, and human skills required of all educational/organizational leaders and administrators, without regard for their particular assignments. In this program, educational leadership is conceived as a cognitive professional activity which demands an appropriate knowledge of the leadership process in agencies of our society, and a high degree of competence in human relations.

The doctoral program is an integrated program of courses, seminars, internship experience, and dissertation production designed to meet the developing needs and career goals of each student.

Admission to the doctoral degree program is contingent upon application and admission to The Graduate College, completion of the Graduate Record Examination, an interview with a Department admission committee, and approval of the faculty of the Department of Educational Leadership. Each student accepted will work with the Department chair until a doctoral advisor can be identified. An individualized and multidisciplinary program of studies will be developed cooperatively with the student from Department and other offerings in these focal areas:

- 14 hrs. in Administration
- 15 hrs. in Human Relations
- 20 hrs. in Concept Formation
- 27 hrs. in Research
- 9 hrs. in Independent Study (internships)
- 5 hrs. of electives
- 90 hrs. minimum Total

At least fifteen hours of the ninety hours minimum must be taken outside the College of Education. Whether credits earned in another degree program will be allowed will be determined by the adviser on an individual basis.

Curricula available within this degree program include:
- Line Administration — prepares the student for a position as a central office administrator of a school district, as a principal and director in a school district, as a central administrator in a post-high school educational agency, or as a chief executive officer, vice-president, or administrator in institutions of higher education, government agencies, or private industry.
- Staff Administration — offers preparation for a position as a coordinator, director, or supervisor in public or private schools, colleges, universities, or service or business agencies in areas such as finance, personnel, or a special service (for example, research).
- Program Leadership — prepares the student for a position as a director of training and/or management development in the armed forces, business, government, industry, a professional association, or a trade union, or as a director or coordinator of educational programs in a social welfare agency.

*Certain career goals within the program may alter the number of hours required in-
these areas. Curricula available within this degree include, but are not limited to agricultural, community education, distributed education, early childhood evaluation, home economics, industrial and technical education, media and technology, training and development, and vocational education.

Mathematics

Yousef Aliavi, Chairperson of Advisers
Room 3319, Everett Tower

The Doctor of Philosophy in Mathematics is designed to give the student a broad but intensive background in a variety of fields of mathematics, with special emphasis on some selected area in which the student will be carrying on mathematical research. In this Department, doctoral work in mathematics can be in pure mathematics, applied mathematics, statistics or mathematics education. For students wishing to pursue the Ph.D. degree in Mathematics with Concentration in Statistics, see the several paragraphs at the conclusion of this section. More specifically, the area of specialization may be chosen from among algebra, college mathematics teaching, complex analysis, differential equations, functional analysis, group theory, optimization theory, topological graph theory, and topology. A minimum of ninety hours is required in the program.

Admission requirements

A student may enter this program with a master’s degree or directly upon completion of a bachelor’s program. In addition to satisfying the general admissions requirements of The Graduate College, the student must have acquired a sufficient level of mathematical training with satisfactory grades as determined by the Department Doctoral Committee. Upon entrance to the program, the student is assigned an adviser who assists him/her in planning his/her program. The student is assigned a Dissertation Adviser, who supervises her/his final research and dissertation. In accordance with the requirements of The Graduate College, each student is required to attain competency in two research tools. Normally these will consist of two foreign languages selected from French, German, and Russian. One of these may be replaced by demonstrating competence in computer usage. The Department requires that the student meet the Preliminary Examination more than twice. A second failure in any area results in dismissal from the doctoral program. After successfully completing this examination the student is assigned a Dissertation Adviser and a Dissertation Committee. Students in mathematics education may meet the research tools requirement by demonstrating competence in computer usage and statistics.

Many mathematics Ph.D.s will eventually take a position which involves some teaching commitment. Thus, as part of his/her training, each applicant will instruct a sophomore or junior level college mathematics course (under the guidance of a faculty member), and will participate in faculty discussions on college mathematics teaching and curricula.

A student who completes both basic course requirements, the Preliminary Examination, and who otherwise satisfies the requirements of The Graduate College is designated as a candidate for the doctoral degree. Shortly after attaining this status of candidate, the student, with the approval of the Doctoral Committee, is expected to select and be accepted by a Dissertation Adviser.

With the approval of the Doctoral Committee, the candidate and Dissertation Adviser select a Dissertation Committee for the candidate. The Dissertation Committee consists of at least five members, with the Dissertation Adviser serving as Chairperson. At the time of selection, one member (not the Dissertation Adviser) is appointed as Second Reader. Each Dissertation Committee must also contain an individual who is not a member of the Mathematics Department of Western Michigan University. The individual is designated as the Outside Member.

At least seven days prior to the final dissertation defense, the Doctoral Committee is to receive written reports (including recommendations) on the candidate’s dissertation from each of the Dissertation Adviser, the Second Reader, and the Outside Member. Each member of the Dissertation Committee is to receive copies of all these reports prior to the dissertation defense.

Under the direction of the Dissertation Adviser, the candidate is required to do creative research and, in general, further his/her knowledge in some area of mathematics. The findings of the candidate must be compiled in a scholarly form in a dissertation, which will be examined and judged by the Dissertation Committee. The candidate’s dissertation oral defense, chaired by the Dissertation Adviser, normally consists of a colloquium talk presented to the Department of Mathematics, after which an oral examination on the candidate’s dissertation is conducted by the Dissertation Committee. Immediately following the defense and examination, the Dissertation Committee meets to consider whether the dissertation should be approved and whether the candidate has passed the examination. These two recommendations are made to the Doctoral Committee.

Concentration in Statistics

Advisers:
Gerald Sievers, Joseph McKean,
Room 3319 Everett Tower

Admissions requirements

Students in the doctoral program, Statistics Option, will be those who have been admitted to the doctoral program of the Department and who have been designated “Statistics Option” at the time of admission. A student in the regular doctoral program can request a change of status to the Statistics Option. Admissions and change of status requests for the doctoral program, Statistics Option, will be considered by the Statistics Doctoral Subcommittee and final decisions will be made by the Department Doctoral Committee. The usual admission requirements of The Graduate College and the Mathematics Department must be met. In addition, applicants should have completed (or be completing) a master’s degree in statistics or a closely related field. Applications must include three letters of recommendation.

Advising

The Statistics Doctoral Subcommittee will be responsible for the advising of students in the doctoral program. Statistics Option.

Upon entrance to the doctoral program, Statistics Option, the student will be assigned an adviser by the Statistics Doctoral Subcommittee and the Department Doctoral Committee for planning the student’s program until (s)he reaches the status of candidate. During the semester in which the student attains the status of candidacy, the approval of the Department Doctoral Committee and the Statistics Department must be obtained before (s)he is assigned a dissertation adviser. The candidate and dissertation adviser will select with the approval of the Statistics Doctoral Subcommittee for the candidate. In each of the above situations final approval is subject to the approval of the Chairperson of the Department and The Graduate College.

During the first semester, the student must have a plan of study approved by the Statistics Doctoral Subcommittee and approved by the Department Doctoral Committee. The selection of preliminary exams shall be included.

Program requirements

1. Departmental Doctoral Examinations

As early as possible, a student must pass the Departmental Preliminary Examination. For a student concentrating in Algebra, Analysis, or Topology, the Preliminary Examination will consist of a three-hour written examination in each of these three areas. For a student concentrating in some other area, the Preliminary Examination will consist of three-hour examinations in his/her specialty. In Algebra and in neither Algebra or Topology (the choice being subject to the approval of the Department Doctoral Committee), for a student concentrating in mathematics education, the Preliminary Examination will consist of a three-hour examination in mathematics education, and two three-hour examinations in mathematics to be selected from Algebra, Analysis, and Topology. A student must take each Preliminary Examination at a time designated by the Committee. A student may not take any part of the Preliminary Examination more than twice. A second failure in any area results in dismissal from the doctoral program. After successfully completing this examination the student is assigned a Dissertation Adviser and a Dissertation Committee.

Concentration in Statistics

Admissions requirements

Students in the doctoral program, Statistics Option, will be those who have been admitted to the doctoral program of the Department and who have been designated "Statistics Option" at the time of admission. A student in the regular doctoral program can request a change of status to the Statistics Option. Admission and change of status requests for the doctoral program, Statistics Option, will be considered by the Statistics Doctoral Subcommittee and final decisions will be made by the Department Doctoral Committee. The usual admission requirements of The Graduate College and the Mathematics Department must be met. In addition, applicants should have completed (or be completing) a master’s degree in statistics or a closely related field. Applications must include three letters of recommendation.

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During the first semester, the student must have a plan of study approved by the Statistics Doctoral Subcommittee and approved by the Department Doctoral Committee. The selection of preliminary exams shall be included.

Program requirements

1. Departmental Doctoral Examinations

As early as possible, a student must pass Departmental Doctoral Examinations in:

a. Linear Algebra (530).

b. Foundations of Analysis (571).

c. Statistics

The Statistics DGE shall consist of three, two-hour examinations in the areas of probability, theoretical statistics, and applied statistics. The material covered will be from the
Psychology

Howard Farris, Program Committee Chairperson
Arlene Lewis, Program Secretary
Room 258, Wood Hall

The Doctor of Philosophy in Psychology is designed to provide intensive training in Experimental Analysis of Behavior. Applied Behavior Analysis, Clinical Psychology, and School Psychology. The Ph.D. degree is a research degree for persons intending to assume leadership roles in teaching, research, and services in a variety of professional and academic institutions.

In addition to meeting the entrance requirements of the Graduate College, applicants are expected to show evidence of interest in and aptitude for conducting research.

Graduate students receive a personal appointment to a doctoral chairperson and one faculty sponsor(s) in an apprenticeship role to facilitate the full development of the student's academic interests within the research programs of the Department and the University. The program is arranged to encourage active participation in the daily conduct of the Department's academic program and research activities.

The credit hour requirements of the Ph.D. program are arranged in terms of areas of concentration and the preparation of a fifteen credit hour dissertation. The coursework includes:

**Applied Behavior Analysis (90 hrs.)**
1. Experimental analysis of behavior (6 hrs.)
2. Statistics and experimental design (6 hrs.)
3. Behavior modification: Areas of research and application (15-18 hrs.)
4. Systems analysis (6 hrs.)
5. Practicum in applied behavior analysis (12 hrs.)
6. College teaching experience (6 hrs.)
7. Professional problems and ethics (3 hrs.)
8. Electives and cognate courses (12-15 hrs.)

**Experimental Analysis (90 hrs.)**
1. Experimental analysis of behavior (6 hrs.)
2. Statistics and experimental design (6 hrs.)
3. Experimental Analysis: Areas of research and application (15 hrs.)
4. History and systems (9 hrs.)
5. Practicum research (6 hrs.)
6. College teaching (6 hrs.)
7. Professional problems (3 hrs.)
8. Electives and cognate courses (18 hrs.)

**School Psychology (95 hrs.)**
1. School Psychology Foundations (19-20 hrs.)
2. Learning Applications (22 hrs.)
3. Behavior and Systems Analysis (6 hrs.)
4. Research Methods (6 hrs.)
5. College Teaching (6 hrs.)
6. Professional Problems (3 hrs.)
7. Practicum (4-6 hrs.)
8. Internship (12 hrs.)
9. Specialist Project (6 hrs.)
10. Doctoral Dissertation (15 hrs.)

The research activity of the doctoral student is continuous and is encouraged through participation in the apprentice research program, completion of a six credit hour Master's Thesis, the completion of approved practicum and completion of a fifteen credit hour dissertation. In addition to the required hours of formal coursework, research activity, and professional experience, the student is required to demonstrate competence in two research tools selected from foreign language, American sign language, computer usage, or advanced statistics. The doctoral candidate will also show evidence of an ability to interpret, integrate, and discuss research data by the satisfactory completion of comprehensive examinations in two areas of concentration and the preparation of a review paper of publishable quality.

The program is arranged to provide formal evaluations of the student and the apprentice program and to doctoral applicants with the completion of the Master's Thesis and to doctoral candidates with the completion of the comprehensive examinations and the review paper. The award of the Ph.D. degree is made following the satisfactory completion of the required hours of approved course credit, demonstration of competence in two research tools, submission of an approved review paper and two area examinations, the oral defense of the dissertation before the student's doctoral committee at a public colloquium.

The Department of Psychology offers financial assistance through Department assistantships and program fellowships. Additional information concerning financial awards and program requirements may be obtained from the Department office.
Public Administration

Adviser: Peter Poltrak

Center for Public Administration Programs
B-1, Hillside Building-East

The Doctoral program in Public Administration is designed for those who have several years of experience in administrative or staff positions and wish to develop managerial and analytic skills which will enable them to assume positions of greater responsibility and authority. Courses in the DPA program focus on the analysis, evaluation, and implementation of public policy. The program is structured to provide decision-makers with a more sophisticated understanding of the total governing process. Completion of the DPA will provide candidates the background to analyze a wider range of alternative policies and to weigh competing choices in the decision-making process.

Courses will be taught by graduate faculty members drawn from several departments and colleges at Western Michigan University. The program is offered in Lansing and is administered by the Center for Public Administration Programs through the WMU Lansing Study Center. Although the program is primarily intended for upper level state employees, others are welcome to apply.

Admissions requirements
1. A master's degree in Public Administration or related area. Prerequisites in several areas of course work are also required.
2. At least four years of experience in a supervisory or administrative staff position.
3. Two letters of recommendation from persons acquainted with applicant's professional work.
4. Two departments of recommendation from persons acquainted with applicant's academic work.
5. A career resume.

Program requirements
1. Sixty semester hours of course work beyond the master's.
2. Two courses at the graduate level in Policy Analysis, Policy Formulation and Policy Implementation.
3. The sixty hours of course work are divided into four modules which contain the following courses.

<table>
<thead>
<tr>
<th>Module</th>
<th>Course Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy Analysis Module</td>
<td>PADM 673</td>
<td>Quantitative Public Policy Analysis</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PADM 678</td>
<td>Program Evaluation</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PADM 681</td>
<td>Designing Policy and Policy Systems</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PADM 691</td>
<td>Statistics for Public Administrators</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PADM 693</td>
<td>Action Research Project</td>
<td>(to be elected twice) 3</td>
</tr>
<tr>
<td>Policy Formulation Module</td>
<td>PADM 671</td>
<td>The Public Good</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PADM 672</td>
<td>Historical and Comparative Analysis of Public Policy</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PADM 675</td>
<td>Advanced Administrative Theory</td>
<td>3</td>
</tr>
<tr>
<td>Policy Implementation Module</td>
<td>PADM 674</td>
<td>Human Behavior in Public Organizations</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PADM 676</td>
<td>Cases in Public Policy Implementation</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PADM 677</td>
<td>The Public Administrator</td>
<td>3</td>
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<tr>
<td></td>
<td>PADM 682</td>
<td>Administrative Decision Making</td>
<td>3</td>
</tr>
<tr>
<td>Dissertation Module</td>
<td>PADM 698</td>
<td>Studies in Selected Policy Areas</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PADM 725</td>
<td>Doctoral Research Seminar</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>PADM 730</td>
<td>Doctoral Dissertation</td>
<td>15</td>
</tr>
</tbody>
</table>

A second option is available which provides an emphasis in environmental science. Option II requires graduate work in two sciences and additional work in appropriate courses dealing with environmental issues offered in such departments as Geography, Economics, Political Science, and Sociology. This option is designed to prepare graduates to be, in addition to those career possibilities stated above, (1) developers, teachers, and/or administrators of academic and environmental science programs or (2) consultants in environmental education or (3) advisers to developing nature centers and other environmental education centers or (4) supervisors of student teaching in conservation and environmental science courses or (5) supervisors of elementary and secondary school environmental science education, including individuals with expertise in the areas of management of energy and material resources.

Admission requirements
The minimum admission requirements to this degree program are an undergraduate major in the sciences (Biology, Chemistry, Earth Science, Geology, or Physics) and an undergraduate minor in a second science. Students electing Option I should have a minor in a third science and a minimum of one year of undergraduate work in a fourth science. It is expected that all students in the program who have some undergraduate preparation in each of the four sciences. Biology, Chemistry, Geology, and Physics. Students entering with less than these requirements will be expected to complete them at the undergraduate level. Undergraduate deficiencies may be made up after admission to the doctoral program. In addition, all students are expected to meet the regular admission requirements established by The Graduate College.

Science Education

Adviser: Robert H. Poel, Room 313, Moore Hall

The Doctor of Philosophy in Science Education is a broad science program requiring graduate work in more than one science for a total of ninety hours of graduate work. In Option I of this program, graduate work is divided into three sciences, selected from Biology, Biomedical Sciences, Chemistry, Geology, and Physics. The two research tools generally elected are in the sciences and breadth in other science areas in order to prepare graduates of the program to be (1) science supervisors, directors of science instruction, or heads of science departments in large school systems or in state departments of education or (2) college instructors who are likely to teach science education methods courses, science courses for science teachers who need remedial or refresher courses in the sciences, and general education interdisciplinary science courses or (3) college teachers of science methods courses and supervisors of student teachers of science or (4) teachers of college science courses, (5) researchers in the area of Science Education. They are, of course, other career opportunities which consist of combinations of some of the above, such as, a college teacher of science methods courses and a researcher in Science Education.

The Doctor of Philosophy in Science Education is a broad science program requiring graduate work in more than one science for a total of ninety hours of graduate work. In Option I of this program, graduate work in three sciences, selected from Biology, Biomedical Sciences, Chemistry, Geology, and Physics is required. This option is designed to provide more depth in one science area and a breadth in other science areas in order to prepare graduates of the program to be (1) science supervisors, directors of science instruction, or heads of science departments in large school systems or in state departments of education or (2) college instructors who are likely to teach science education methods courses, science courses for science teachers who need remedial or refresher courses in the sciences, and general education interdisciplinary science courses or (3) college teachers of science methods courses and supervisors of student teachers of science or (4) teachers of college science courses, (5) researchers in the area of Science Education. They are, of course, other career opportunities which consist of combinations of some of the above, such as, a college teacher of science methods courses and a researcher in Science Education.
6. Electives: Fifteen hours to make a total of ninety hours and to include additional courses from science, education, research, or other appropriate areas.

At approximately the end of the second year of full-time graduate study or at the time most of the course work is completed, the student will take the Comprehensive Examination. The examination consists of two parts, one of which is written and the other oral. The written part of the examination consists of two sections, one over the science areas studied and the other over the area of Science Education. Each of these is a six-hour examination; they are given approximately one week apart. The oral examination consists of the presentation and defense of an original research proposal other than the dissertation research.

The research and dissertation are completed under the direction of a major adviser and a committee. The major adviser is selected by the student and the committee members are selected by the student in consultation with the major adviser. About one-third of the program is devoted to research, and students are encouraged to begin their research as early in their program as possible. The research problem generally is formulated by the student and is in an area of Science Education, Environmental Science, or a science topic approved by the student's Doctoral Advising Committee.

The residency requirement for this degree program is one calendar year of full-time study on the campus. To be admitted to candidacy for the doctoral degree, the student will be expected to have completed the course work, the research tools, the comprehensive examination, and also two years of successful teaching at the elementary or secondary level in addition to the other requirements of all doctoral degree programs. Exceptions to the teaching requirement may be made for students in Option II on an individual basis.

Sociology

Director, Graduate Studies: Robert F. Wait,
2512-E Sangren Hall
Advisers: Stanley Robin,
2512-A, Sangren Hall
Robert Wait,
2512-E, Sangren Hall

The Ph.D. program in Sociology is designed to prepare students for careers in sociological research and teaching. Broad training in sociology is provided through a wide variety of courses and research experiences, with each student's program individually tailored to include additional areas of concentration.

A basic feature is the core training in general sociology, theory, research methods, and social psychology. Specialization is required in three areas of sociology. Two are selected by the student from the departmental areas of concentration and in one individual area of specialization.

The areas of concentration provided students with valuable specialties and augment the doctoral training in the discipline as a whole.

Admission requirements
1. Master's degree in sociology.
2. Grade-point average of 3.25 in all graduate work.
3. Applicants who hold a master's degree in a related field may be admitted to the program but will be required to make up deficiencies as a condition of admission.
4. Applicants must request three letters of recommendation from academic and professional sources.

Graduate Admissions Committee, Department of Sociology

Program requirements
1. Complete, beyond the master's degree, at least sixty hours of course and dissertation credits; courses in addition to the core requirements are selected in consultation with the student's doctoral committee.
2. Demonstrate competence in two research tools selected from: a foreign language other than English, research methodology, statistics, and computer programming.
3. Pass examinations in two departmental areas of concentration and in one individual area of specialization.
4. Write and successfully defend an original dissertation to the satisfaction of the doctoral committee and The Graduate College. Fifteen credit hours are required for the dissertation.
5. Criteria and procedures for meeting these requirements are described in detail in the department's Graduate Manual.

Financial support
A number of departmental, University, and governmental assistantships, fellowships, and associateships are available to qualified students. Training opportunities and part-time employment may be available through the facilities of the Center for Social Research. Faculty associated with the Center have conducted studies of education, mental illness, marital roles, race relations, group dynamics, deviant behavior, comparative institutions, and numerous other topics. Graduate students frequently participate in these studies. Additional information and application forms may be obtained from the department chair.

Special Education

Advisers: Joseph J. Eisenbach, Alonzo E. Hannaford, Donald F. Sellin, Morvin A. Wirtz
Office: 3506 Sangren Hall

The Doctor of Education in Special Education is designed to prepare an individual to serve as a college teacher in a Department of Special Education and as an administrator of educational programs for the handicapped.

Application for admission to the Ed.D. program must be made to The Graduate College. Prospective students are expected to satisfy all requirements for admission to doctoral programs specified by The Graduate College. They must also have acquired a minimum of two years of successful professional experience in serving the handicapped. Admission to the program is contingent upon a satisfactory score on the Miller's Analogies Test and the successful completion of a personal interview. Personal interview will begin before graduation of the student's formal program in special education. In addition to the prescribed coursework, the student will complete an internship in college teaching and an internship in administration of programs in special education. During the last semester of coursework, the student will be required to complete successfully a written comprehensive examination.

All students in the program will be required to successfully complete a scholarly dissertation. Following the guidelines established by The Graduate College, the student will select a dissertation adviser and a dissertation committee who will guide the student in the development of a dissertation. Following the completion of the dissertation, the student will be required to complete successfully an oral defense of the dissertation to be conducted by the dissertation adviser, the dissertation committee, and an additional reader selected by the student and the dissertation adviser from the graduate faculty outside the Department of Special Education.
Section V
Description of Graduate Courses

COLLEGE OF ARTS AND SCIENCES

A. Bruce Clarke, Dean
Susan B. Hannah, Associate Dean

Graduate Offerings:
Anthropology
Arts and Sciences
Biology
Biomedical Sciences
Black Americana Studies
Chemistry
Communication Arts and Sciences
Computer Science
Economics
English
Geography
Geology
History
Languages and Linguistics
Mathematics
Medieval Studies
Philosophy
Physics
Political Science
Psychology
Public Administration
Religion
Science Division
Social Science Division
Sociology

The College of Arts and Sciences offers a variety of subjects that familiarize the graduate student with the world of ideas and deepen his/her understanding of man's cultural heritage. Graduate programs are offered in Anthropology, Biology, Biomedical Sciences, Biostatistics, Chemistry, Communication Arts and Sciences, Computer Science, Earth Science, Economics, English, Geography, Geology, History, Mathematics, Medieval Studies, Physics, Political Science, Psychology, Public Administration, Religion, Science Division, Social Science Division, and Sociology.

The College of Arts and Sciences cooperates with the College of Education in offering the following teaching education programs. Teaching of English, Teaching of Geography, Teaching of Mathematics, and Teaching of Science.

Anthropology (ANTH)
R. J. Smith, Chairperson; Professors E. Garland, W. Garland, Greenberg, Jacobs, R. Loeffler, Maher, Associate Professors Cremin, E. Loeffler, Sundick, Assistant Professor Kennedy.

Open to Underclass and Graduate Students
500 Topics in Archeology 3 hrs.
A consideration of the prehistory of a particular geographic area (e.g., the southwestern United States, the Circum-polar) 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.

501 The Rise of Civilization 3 hrs.
The archeological science 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, or it may give equal emphasis to two or more areas in a comparative framework. The specific area or areas to be studied will be announced each semester. May be repeated. Prerequisite: ANTH 210, or consent of instructor.

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 covered include: both archeological 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 foundation of plant domestication. Prerequisite: ANTH 210 or consent of instructor.

510 Field Methods in Archeology I 3 hrs.
Instruction in the archeology 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.

511 Field Methods in Archeology II 3 hrs.
Implementation of the field research strategy. Instruction in the basic skills of site excavation, mapping, and data recording, and laboratory, 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 sampling techniques, and paleoenvironmental reconstruction. To be taken concurrently with ANTH 510. May be repeated for credit. Prerequisite: Consent of instructor.

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 220, 240, or consent of instructor.

522 Methodology in Ethnographic Research 3 hrs.
Emphasis is on qualitative and quantitative 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.

523 Ethnographic Field Session 3-6 hrs.
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 six hours total credit. Prerequisites: ANTH 522 or equivalent, and consent of instructor.

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 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 patient's rights in this age of extraordinary medical technology. Prerequisites: ANTH 220, 240, or consent of instructor.

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 220, 240, or consent of instructor.

534 Peasant Societies in the Developing World 3 hrs.
A cross-cultural study of peasants as a cultural type, with emphasis on the contemporary world. Includes discussion of the history and development of peasant societies, but theoretical and substantive
535 The Anthropology of Religion 3 hrs.
An examination of anthropological theories and findings relating to the origin, nature, and function of religion as a universal category of culture. A scientific, cross-cultural consideration of religious beliefs and practices and their relation to concepts of the nature of the universe. The role of religion in revitallstic reactions to culture contact. Prerequisite: ANTH 220, 240, or consent of instructor.

536 Cultural Evolution 3 hrs.
An inquiry into the dynamics of culture through a study of selected theories of cultural 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 220, 240, or consent of instructor.

537 Political Anthropology 3 hrs.
Theoretical and descriptive analysis of the political aspect of social organization, ranging from primitive to complex societies; the relationship of politics to technological development, habitat, symbolic systems, and other aspects of social organization. Prerequisite: ANTH 220, 240, or consent of instructor.

538 Legal Anthropology 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 revealed in the comparative study of societies ranging from simple to complex. Prerequisite: ANTH 220, 240, or consent of instructor.

539 Economic Anthropology 3 hrs.
A thorough examination of the relationship between economic and anthropological theory with a strong emphasis on its applicability and usefulness for explaining the nature of specific economic relationships existing in selected primitive societies. Prerequisites: ANTH 220, 240, ECON 201 and 202, or consent of instructor.

540 Social Impact Assessment 3 hrs.
The application of anthropological knowledge to assess and evaluate the sociocultural 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.

545 Topics in Ethnology 3 hrs.
An intensive study of the cultures of an area of the world (e.g., Japan, Philippines, Caribbean, East Africa) or of selected problems (e.g., kinship systems, millenarian movements). Topic will be announced each semester. May be repeated for credit when topics vary. Prerequisite: Consent of instructor.

549 Anthropology of Education 3 hrs.
Insights into the formal and informal educative processes in cultural and cross-cultural perspectives. Conceptualization of education as a replicative and innovative aspect of all individual and group development.

550 The Primates 3 hrs.
A study of the Order Primates with emphasis on the similarities and differences in the physical features of man, the apes, the monkeys, and the Lower Primates. Field studies on the behavior and social organizations of monkeys and apes will be reviewed to gain insight into the early behavior and social organization of man. Prerequisite: ANTH 250 or consent of instructor.

551 Human Osteology 3 hrs.
A study of the human skeleton. Emphasis will be on morphological and metric variation, odontology, palaeopathology, and reconstruction of the individual and the population. Prerequisite: ANTH 250 or consent of instructor.

555 Topics in Physical Anthropology 3 hrs.
A consideration of the biological relationships of specific population groups of general problems in human biology (e.g., human genetics, human growth and constitution, palaeopathology, dental anthropology). Topic will be announced each semester. May be repeated for credit with different topics. Prerequisite: ANTH 250.

598 Readings in Anthropology 1-4 hrs.
Independent study arranged in consultation with an instructor. Intended for advanced students with good academic records. One to two hours credit per semester, cumulative to four hours. Prerequisite: Consent of instructor.

Open to Graduate Students Only

601 Seminar in Cultural Anthropology 3-4 hrs.
Intensive study of the contemporary issues in sociocultural theory. May be elected as a graduate cognate course by students in other disciplines. May be repeated for credit when topics vary. Prerequisite: Consent of instructor.

602 Seminar in Archeology 3-4 hrs.
Advanced study in the major problem areas of prehistoric research. May be elected as a graduate cognate course by students in other disciplines. May be repeated for credit when topics vary. Prerequisite: Consent of instructor.

603 Seminar in Physical Anthropology 3-4 hrs.
Advanced instruction and research in the principal problem areas in physical anthropology. May be elected as a graduate cognate course by students in other disciplines. May be repeated for credit when topics vary. Prerequisite: Consent of instructor.

Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

700 Master's Thesis 6 hrs.
710 Independent Research 2-6 hrs.
with regard to its botanical characteristics, its distribution, the special aspects of its composition responsible for its economic prominence, and some of its cultural practices and problem. The course is enriched with demonstrations. Prerequisites: BIOI 102, CHEM 101, or consent of instructor.

517 Advanced 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: BIOI 317 or consent of instructor.

520 Systematic Botany 3 hrs.
Principles and techniques of plant classification, nomenclature, and biosystematics are presented in lectures and 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: BIOI 102 or equivalent.

521 Phycology 3 hrs.
Studies in the classification, structure, physiology, ecology, and economic importance of the fresh-water algae. Prerequisite: BIOI 201.

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: Eight hours of Biology.

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: Twelve hours of Biology and one year of Chemistry or consent of instructor.

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 terms of general biological concepts. Prerequisite: Eight hours of Biology.

528 Biology of Non-Vascular Plants 3 hrs.
A detailed comparative study of the structure, reproductive cycles, and ecology of the various groups of algae, fungi, and bryophytes. Laboratory study will be complemented by field investigations. An independent project may be required. Prerequisite: BIOI 102.

529 Biology of Vascular Plants 3 hrs.
A detailed comparative study of the structure, reproductive cycles, and phylogeny of vascular plants. Laboratory study will be complemented by field trips. An independent project may be required. Prerequisite: BIOI 102.

530 Environmental Education 3 hrs.
A review of ecological principles basic to understanding environmental problems. A survey of environmental problems through readings, discussions, and field experiences. The goal of this survey is to define problems and consider paths to solutions. Students are expected to plan and, if possible, to initiate environmental education programs in their own professional areas.

533 Neuroendocrinology 3 hrs.
Neuroendocrinology is designed to acquaint the student with the interrelationships of the environment and the organism, 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. Regulation of cellular chemistry by the neuroendocrine products will be emphasized. Prerequisites: A course in physiology, organic chemistry, or consent of instructor.

535 Plant Nutrition 3 hrs.
The elements essential for plant growth and development and their primary functions in the metabolism of the plant are examined. The uptake of ions and their translocation are studied, while maintaining a balance between theory and application. The cycling of elements in nature provides perspectives into ecological aspects of plant nutrition. The course is enriched with demonstrations. Prerequisites: BIOI 102, CHEM 101, or consent of instructor.

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. Prerequisite: At least twelve hours of Biology or consent of instructor.

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: Eight hours of Biology or consent of instructor.

541 Invertebrate Zoology 3 hrs.
A study of the anatomy, physiology, embryology, and life history of representatives of the major groups of invertebrate animals. Prerequisite: Twelve hours of Biology, including BIOI 101.

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: Eight hours of Biology, including BIOI 101.

543 Protozoology 3 hrs.
Field and laboratory studies of both free-living and parasitic protozoans, including taxonomy, morphology, life histories, and ecology. Prerequisite: BIOI 101.

547 Ornithology 3 hrs.
A broad course that explores both scientific and popular aspects of bird study. Life
history, anatomy and physiology, behavior, ecology, and evolution are considered characteristics of animal populations. Their interactions with other populations, and their role in the functioning of ecosystems. Prerequisite: A course in ecology and a course in statistics, or consent of instructor.

548 Animal Ecology 3 hrs.
Characteristics of animal populations, their interactions with other populations, and their role in the functioning of ecosystems. Prerequisite: A course in ecology and a course in statistics, or consent of instructor.

549 Ecology of Southwestern Michigan 3 hrs.
Surveys and analyses of major and minor ecosystems of the region as to their physical environment, composition, structure, and function. Prerequisite: A course in ecology and some course work in taxonomic biology, geography, or botany.

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.

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 man. Prerequisite: Twelve hours of Biology including BIOL 101.

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. Prerequisite: BIOL 101 and 102, CHEN 101 recommended.

554 Water Pollution Biology 3 hrs.
A comparison of organisms which live in clean waters as contrasted to 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.

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.

559 Radiation Biology 3 hrs.
A study of the fundamentals of radiobiology, including radioactive decay, radiation measurements, isotope technology, as well as radiation and interaction in living matter, health and safety regulations in the laboratory. Prerequisites: Twelve hours of chemistry and consent of instructor.

560 Ichthyology 3 hrs.
A general survey of fishes that considers their anatomy, physiology, ecology, behavior and phylogeny. Field and laboratory work emphasizes the methods of collection, preservation and identification of Michigan fishes. A paper may be required. Prerequisite: Eight hours of Biology, including Biology 101.

562 Vertebrate Zoology 3 hrs.
A comprehensive, phylogenetic survey of vertebrate life that emphasizes the structural, physiological, and ecological adaptations that characterize each vertebrate class. Vertebrate paleontology and the paleoecology of the time periods when major vertebrate groups arose are included. A paper is required. Prerequisites: 12 hours of biology, including Biology 101, or consent of instructor.

598 Readings in Biology 1-3 hrs.
For students who wish to carry on advanced work in special fields. Prerequisite: Consent of instructor.

Open to Graduate Students Only

601 Special Investigations (various areas) 2-6 hrs.
An independent study in one of the various specialties represented by members of the department. The field in which work is offered will be indicated on the student record. May be repeated for credit. Prerequisite: Consent of instructor.

603 Seminar in Substance Abuse I 1-3 hrs.
An interdisciplinary seminar designed to reflect broadly conceived intervention strategies ranging from primary prevention to rehabilitation of the addict. The basic training in the principles of intervention and clinical practice will continue to be taught within the student's basic professional discipline. In part, the seminar will be used to elaborate upon the applications of these principles to the problems of substance abuse. This course is cross-listed with Counseling-Personnel, Psychology, Social Work, and Sociology. Prerequisite: Admission to Speciality Program in Alcohol and Drug Abuse, or consent of instructor. Graded on a Credit/No Credit basis.

604 Seminar in Substance Abuse II 1-3 hrs.
Continuation of BIOL 603. This course is cross-listed with Counseling-Personnel, Psychology, Social Work, and Sociology. Prerequisite: Admission to Specialty Program in Alcohol and Drug Abuse, or consent of instructor. Graded on a Credit/No Credit basis.

612 Seminar in Animal Biology 3 hrs.
Courses in which a selected area of biology is studied in depth. Possible topics will reflect the areas of expertise of the biology faculty. The specific topics dealt with in a given semester will be indicated in the Schedule of Classes and on the student's record. Students may take one or all topics offered for credit. Prerequisite: Consent of instructor.

621 Topics in Animal Biology 3 hrs.
Topics in Biology 3 hrs.
Courses in which a selected area of biology is studied in depth. Possible topics will reflect the areas of expertise of the biology faculty. The specific topics dealt with in a given semester will be indicated in the Schedule of Classes and on the student’s record. Students may take one or all topics offered for credit. Prerequisite: Consent of instructor.

622 Topics in Plant Biology 3 hrs.
Topics in Ecology 3 hrs.
Topics in Genetics/Evolution 3 hrs.

Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

700 Master’s Thesis 6 hrs.
710 Independent Research 2-6 hrs.
712 Professional Field Experience 2-12 hrs.

Biomedical Sciences (BMED)

Buthala, Chairperson. Professors Eisenberg, Ficior, Friedman, Wood, Associate Professors Beuvling, McIntire, Assistant Professor Ginsberg.

Open to Upperclass and Graduate Students

518 Endocrinology 3 hrs.
A survey of the endocrine system, 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 studied. Prerequisite: BIOL 350, biochemistry recommended.

519 Endocrinology Laboratory 3 hrs.
Laboratory experience in endocrinological concepts involved in endocrine research and clinical testing. Prerequisite: Permission of instructor.

520 Human Genetics 3 hrs.
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. Prerequisites: BMED 250, BMED 209, or consent of instructor; biochemistry recommended.

522 Cytogenetics 3 hrs.
The molecular, morphological, and dynamic aspects of chromosomes, nucleus, and
are considered. The chromosomal basis of allied structures in the nucleate organisms Winter '82 and '84, 3 hrs. of biomedical research. Prerequisites: BMED 250 and BMED 312 or consent of instructor. biochemistry recommended.

525 Genetics Laboratory Winter '82 and '84, 3 hrs.
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 Cytogenetic, biochemical genetic, genetic toxicology and genetic counseling techniques which are currently used in medical, industrial biomedical research areas. In addition time will be provided for in-depth experimentation. Prerequisites: BMED 250 and a biochemistry course.

531 Biology of Aging Fall '82 and '83, 3 hrs.
The course is designed to provide nonmajors 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.

532 Bacterial Physiology Winter '82 and '83, 3 hrs.
Lectures on bacterial cytology, physiology, and metabolism with an emphasis on biochemical aspects. The course is designed for advanced undergraduates and beginning graduate students. No general textbook is required and considerable reference is made to the scientific literature. Prerequisite: BMED 312 and a course in biochemistry.

534 Virology Winter '82 and '83, 3 hrs.
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 recommended.

536 Immunology Fall '82 and '83, 3 hrs.
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. Prerequisites: BMED 350; biochemistry recommended.

537 Histology Fall '82 and '83, 3 hrs.
A study of the function and microscopic anatomy of mammalian tissues.

540 Cell and Organ Culture Fall '82 and '83, 3 hrs.
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 biomedical research problems. Prerequisite: Consent of instructor.

554 Histological Techniques Winter '82 and '83, 2-3 hrs.
A variety of techniques, including cellodin, paraffin, decalification, and special stains, will be used to prepare mammalian tissues for histological examination. Prerequisite: BMED 537 or consent of instructor.

555 Human Environmental Physiology 3 hrs.
A study of the physiological and behavioral adaptation and responses of organisms to external environmental factors. Some attention is given to artificial environments and the problems involved. Prerequisite: BMED 350.

560 Reproductive Physiology 3 hrs.
An introduction to the physiological events associated with reproduction in higher animals. Emphasis is placed upon reproduction in mammals with constant comparison among mammals and between these and other animal groups. This course also introduces the subject of contraception and population control, artificial insemination, and birth defects. Prerequisite: BMED 350.

572 Biology of Neoplasia Fall '82, 3 hrs.
A comprehensive examination of the biological basis of cancer, using animal models as examples with application to its expression in humans. This multidisciplinary subject will utilize information from the areas of immunology, biochemistry, histology, virology, and cell biology to give a current view of this disease. Prerequisite: BMED 350; biochemistry recommended.

574 Embryology Winter '83, 4 hrs.
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 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. Prerequisites: BMED 113, 250, or equivalent.

579 Medical Service Representative Seminar 2 hrs.
Seminars will be presented on various topics relevant to Medical Service representatives. Prerequisite: Permission of instructor.

597 Readings in Biomedical Sciences 1-3 hrs.
Open to Graduate Students Only—Please refer to The Graduate College section for course description.

602 Seminar: Variable Topics 2-6 hrs.
Several seminars in various areas of Biomedical Sciences will be offered. The student's record will indicate the seminars in which he/she has participated. May be repeated for credit. Prerequisite: Consent of instructor.

610 Biomedical Science for Secondary Education 3 hrs.
Instructional laboratory techniques suitable for secondary education programs in health and human biology. This course is directed towards graduates with science degrees receiving secondary education units in health and human biology. Course content is variable to take advantage of new techniques, available instruction, and the interests of the students. Prerequisite: Consent of instructor.

621 Genetic Toxicology Fall '83, 3 hrs.
Genetic toxicology, as a sub-discipline of toxicology, is concerned with the nature of harm that may be done to the genetic material and search methods for ways by which such damage can be prevented. Through reading of current literature, lectures and presentations, the mechanism of action, modifying factors, as well as practical aspects of detection of mutagenic agents are examined. Prerequisites: one course in genetics and one course in biochemistry.

630 Electron Microscopic Techniques Spring '83, 3 hrs.
A technique oriented laboratory stressing the various preparatory procedures employed for viewing biological materials. Prerequisite: Consent of instructor.

631 Experimental Microbial Physiology 3 hrs.
An experimental approach to microbial physiology, biochemistry, and molecular biology with major emphasis on laboratory techniques. Prerequisite: Consent of instructor.

632 Advanced Techniques in Electron Microscopy Spring '84, 4 hrs.
A laboratory course emphasizing currently developing technology. This course is designed for graduate students who have a working knowledge of electron microscopy and its application to biological problems. The course will be personalized in instructions in techniques of autoradiography, protein tracer, such as peroxidase, ferritin, lanthanum, etc.; special tissue preparations, such as in vivo perfusion, varied fixatives, varied embedding material, etc.; and particulate materials preparation. The student will conduct detailed examinations of higher preparations and prepare critical critiques.

Open to Graduate Students Only—Please refer to The Graduate College section for course description.

700 Master's Thesis 6 hrs.

710 Independent Research 2-6 hrs.

712 Professional Field Experience 2-12 hrs.
Black Americana Studies (BAS)

LeRoi R. Hay, Jr., Director, Associate Professors Jones, Wilson

500 Black Humanities

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. This 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 lifestyles of Black Communities and individuals and the viability of the Black Presence and Experience. What universal elements can be identified in "soul"? What would American life and culture be like without this elusive quality?

510 Multietnic Education

3 hrs.

This course is designed to prepare teachers and administrators who will work in a multietnic 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 multietnic courses and for evaluating materials prepared.

598 Individual Study

2-4 hrs.

Independent research or investigation of a specific topic related to the Black experience. May be repeated for credit.

Open to Graduate Students Only

600 Black Americana Studies—Seminar

4 hrs.

In-depth study of specific areas of Black American life and culture. Since Black Americans have been involved in the total life of the nation, special study is called for. There are at least two dimensions which lend themselves to special study. The first and most obvious is that of unusual achievement by persons of known and identifiable African ancestry. A second and more elusive dimension is Black "influence"—positively and negatively—in American life and culture.

Chemistry (CHEM)


Open to Upperclass and Graduate Students

505 Chemical Literature

1 hr.

An introduction to the use of the various types of chemical literature such as journals, handbooks, abstracts, monographs, government and institutional publications, and patents. Problems in the course require literature searches in analytical, inorganic, biological, organic, and physical chemistry fields. Prerequisite: Twenty-four hours of chemistry.

506 Chemical Laboratory Safety

1 hr.

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: Twenty-four hours of chemistry.

509 Topics in Chemistry

3 hrs.

A topic is presented in greater depth or from a perspective different from that of a typical undergraduate course. Representative topics, such as pesticides and drugs, industrial chemistry, chemical pollution, etc., according to student interests and requests. Prerequisite: Sixteen hours of chemistry or consent of instructor.

510 Inorganic Chemistry

4 hrs.

The course includes descriptive and theoretical inorganic chemistry as well as preparation of different types of inorganic compounds. Prerequisite or concurrent enrollment: CHEM 431.

520 Instrumental Methods in Chemistry

3 hrs.

An introduction to the theory and application of modern instrumental instrumentation is presented. General topics covered are elementary electronics, electrochemistry, spectroscopy, and other instrumental techniques. Four hours of laboratory per week. Prerequisites or concurrent enrollment: CHEM 431, 436.

530 Introduction to Spectroscopy and Molecular Structure

3 hrs.

Introduction to the basic principles of atomic and molecular spectroscopy with emphasis on quantum concepts; interpretation of spectra in relation to changes in atomic and molecular energies; elucidation of molecular structure from interactions with electromagnetic radiation in the ultraviolet, visible, infrared, and u-wave regions and with magnetic fields as applied to nuclear resonance and electron spin resonance. Prerequisite: CHEM 431.

535 Introduction to Physical Chemistry

3 hrs.

Theory and applications of chemical structure, energetics, and rates and mechanisms of processes as a basis for understanding the principles of chemistry. This course may not be applied to the requirements for a major in chemistry or for a graduate curriculum in chemistry. Prerequisites: Sixteen hours of chemistry; MATH 123, PHYS 111, or 211. 550 Biochemistry I

3 hrs.

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 555.

552 Biochemistry I with Laboratory

4 hrs.

This course consists of 550 plus lab. Experiments involve more advanced techniques and instrumentation than in 456 laboratory. Emphasis will be on purification and properties of proteins and nucleic acids. Prerequisites: CHEM 361 and 430 or 535.

554 Biochemistry II

3 hrs.

Continuation of 550. Chemistry and metabolism of carbohydrates, and lipids. Metabolism of amino acids and photosynthesis. Prerequisite: CHEM 550 or 552.

556 Biochemistry II with Laboratory

4 hrs.

This course consists of 554 plus laboratory. Experiments involve more advanced techniques than in 456 laboratory. Emphasis will be on metabolism of carbohydrates, lipids, proteins, and nucleic acids. Prerequisites: CHEM 550 or 552.

560 Qualitative and Spectroscopic Analysis of Organic Compounds

4 hrs.

A course in the 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 twenty-four hours of chemistry.

564 Drugs and Pesticides

3 hrs.

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: 361 or 365.

570 Polymer Chemistry

3 hrs.

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. Prerequisites: CHEM 361 or 365, and CHEM 431 or 535.

580 History of Chemistry

3 hrs.

This course is taught from the point of view of the history of chemical theory in which the evidence for the theories is critically presented. Prerequisite: Sixteen hours of chemistry, including at least one semester organic.

590 Special Problems in Chemistry

2 hrs.

Research work on a problem in chemistry in association with a faculty member. May be repeated for credit. Prerequisites: Twenty-four hours of chemistry, which includes CHEM 436, and approval of the department chairperson and a faculty director. Graded on a Credit/No Credit basis.

Open to Graduate Students Only

601 Graduate Seminar

1 hr.

Graduate seminar in chemistry. Required of all candidates for advanced degrees in chemistry. Graded on a Credit/No Credit basis. (Two semesters: 1 hr. credit.)
605 Advanced Chemistry Laboratory Technique 1 hr.
Content of course will vary depending on needs and interest of the students. Topics may include: glassblowing, laboratory electronics, vacuum line, manipulations under controlled atmosphere, separation and purification, and radio-chemical techniques. May be repeated for credit. Prerequisite: Approval of instructor.

610 Advanced Inorganic Chemistry 3 hrs.
Covers the principles in inorganic chemistry and the chemical elements. Such topics as extranuclear structure of the atoms, periodic classification of the elements, valency and the chemical bond, complex ions and coordination compounds, acids and bases, and nonaqueous solvents are included in the study of chemical principles. The remainder of the course concerns the chemical elements and their compounds. Prerequisite: CHEM 510.

611 Advanced Inorganic Chemistry 3 hrs.
The chemistry of the transition elements. Consideration of the electronic and magnetic states of the transition metals and their compounds, the symmetry, stability, and reaction mechanisms of coordination compounds, application of bonding theories, systematic chemistry of the transition and inner transition elements. Prerequisite: CHEM 510.

612 Topics in Inorganic Chemistry 3 hrs.
A cooperative investigation of one or more topics of major consequence in contemporary inorganic chemistry. Aspects of the topic will be developed from primary sources and presented by the students. Prerequisite: CHEM 610 or 611.

622 Theory of Analytical Chemistry 3 hrs.
A course in the fundamental principles underlying chemical methods of analysis. Special emphasis is placed on equilibria, kinetics, and mechanisms of the important types of chemical reactions (acid-base, precipitation, complex formation, and redox) involved in chemical analysis; on methods of separation (precipitation, electrodeposition, and distillation techniques); and on the application of statistical methods of testing, experiment design, and interpretation of results. Prerequisite: CHEM 431.

624 Analytical Spectroscopy 3 hrs.
A comprehensive treatment of those instrumental techniques which are based upon either the emission or absorption of energy by matter. Emission spectroscopy, Raman spectroscopy, mass spectrometry, ultraviolet, visible, and infrared absorption spectroscopy, fluorometry, and other selected topics. Prerequisite: CHEM 520.

625 Electroanalytical Chemistry 3 hrs.
The theory and application of electrochemical measurements are discussed with particular emphasis on the theoretical aspects of polarography, potentiometry, amperometry, conductometric titrations, and other selected topics. Prerequisite: CHEM 520.

626 Chemical Instrumentation 3 hrs.
Principles and characteristics of construction and design for chemical and optical instruments. Prerequisite: CHEM 520.

629 Topics in Analytical Chemistry 3 hrs.
Subject for a given semester will be determined by student needs and interests. Among the subjects anticipated are: (1) Functional Group Analysis; (2) Complexation in Analytical Chemistry; (3) Analytical Separations Techniques; (4) Non-aqueous Solvents in Analytical Chemistry. Prerequisite: A 600-level analytical course.

630 Advanced Physical Chemistry 3 hrs.
A study of the fundamentals of quantum mechanics and some of its applications to chemistry. Included are the exactly solvable systems, some approximation methods used for chemical bonds and in more complicated molecules, and introduction to group theory representations and character tables. Some prepared computer programs will be used. Prerequisite: CHEM 431.

633 Chemical Thermodynamics 3 hrs.
Includes a review of the three laws of thermodynamics, state functions, activities, partial molar qualities, thermodynamics of solutions, equilibrium, and statistical thermodynamics. Prerequisite: CHEM 431.

635 Chemical Kinetics 3 hrs.
Measurement of reaction rates, reaction rate theory, mechanisms of elementary processes, reactions in solution and on surfaces, complex reactions, application of kinetics to mechanisms, and photochemistry. Prerequisite: CHEM 431.

639 Topics in Advanced Physical Chemistry 3 hrs.
This is a lecture course, the content of which may vary from year to year depending on the lecturer. Anticipated topics are: (a) high temperature chemistry, (b) electrochemistry, (c) colloids and surface chemistry. Prerequisite: CHEM 431.

650 Proteins and Nucleic Acids 3 hrs.

652 Lipids 3 hrs.
The chemistry, metabolism, and methods of isolation and analysis of the major classes of lipids are discussed. Specific topics include fatty acids, fats, phospholipids, glycolipids, and chromatography. Prerequisite: CHEM 554 or consent of instructor.

653 Enzymes 3 hrs.
A study of enzyme catalysis, kinetics, structure and mechanism, and a survey of experimental methods for determining these aspects of enzyme function. Prerequisite: CHEM 550.

659 Topics in Biochemistry 3 hrs.
Content of the course will vary depending upon student interest and availability of staff. Contemplated topics include advanced intermediary metabolism, viruses, cancer biochemistry, physical techniques. Prerequisite: CHEM 554 or consent of instructor.

661 Organic Reactions 3 hrs.
An intensive study of organic reactions with emphasis on preparative scope and utility. The following types are considered: aliphatic substitution, oxidation, reduction, condensation, etc. Prerequisite: CHEM 361.

662 Stereochemistry 3 hrs.
A consideration of shapes of molecules and the isomeric consequences. Atomic and molecular orbital and resonance interpretation of molecular shape. The stereochemical relationships in substitution and addition reactions will be considered. Prerequisite: CHEM 361.

663 Mechanisms in Organic Chemistry 3 hrs.
Free radical, ionic, and multicenter reaction types are considered. The influence of structure and media on reactivity is included. Prerequisites: CHEM 361 and 431.

669 Topics in Organic Chemistry 3 hrs.
The course content will vary with needs of students and special competency of instructor. Prerequisite: CHEM 661 or 662 or 663 or consent of instructor.

Open to Graduate Students Only—Please refer to the Graduate College section for course descriptions.

700 Master's Thesis 6 hrs.

730 Doctoral Dissertation 15 hrs.

735 Doctoral Research 2-10 hrs.

Communication Arts and Sciences (CAS)


Open to Upperclass and Graduate Students

505 Special Topics in Communication 1-3 hrs.
Advanced 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 or teachers 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. 300 Sprau Tower.

605 Special Topics in Communication 1-3 hrs.
Advanced 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. 300 Sprau Tower.

510 Studies in Oral Interpretation: Variable Topics 3 hrs.
Projects in reading and analysis of literature to intensify the student's application of the theory and principles of oral interpretation. Topics will vary each semester and students...
may take one or all topics for credit. Possible topics include:

- Oral Interpretation of Shakespeare
- Oral Interpretation of the Bible
- Oral Interpretation of Selected Long Literary Forms

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. A student may take any one of the offerings listed under CAS 530. In addition to the topics listed, additional topics are offered from time to time, and will be listed in the Schedule of Classes.

- Ethics and Freedom of Speech
- Historical Basis of Rhetoric
- Presentational Speaking
- Political Communication

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:

- Teaching Mass Media in Secondary Schools
- Television and Politics

541 Mass Communication Law
3 hrs.
The laws, principles, and issues of mass communication regulation include media ownership and licensing, programming, political broadcasting, controversy, defamation, obscenity, advertising, and the role of the FCC, FTC, and other regulatory agencies.

542 Mass Media and the Child
3 hrs.
Assesses the impact that mass media have on radio, television, films, comics, and other media and how these media may be having on the minds and behaviors of children.

543 Mass Communication and Social Change
3 hrs.
The course examines the role of the mass media in analyzing 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 perspective and viewpoint of the practitioner and the consumer.

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.

545 Television Criticism
3 hrs.
Examines the various functions and writings of contemporary television critics. Establishes criteria for evaluating television programs and program criticism. Students will view and analyze various television program types, including documentary, drama, visual essays, and other entertaining and educational programs.

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.

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, development, and instruction. In addition to required text materials, students must provide supplies averaging about $10.00 per student.

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.

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.

551 Methods of Film Analysis
3 hrs.
An investigation of the approaches to film analysis (autorealist, intentionalist, sociological, structural, historical, ideological, psychological) by intensive "reading" and shot sequence examination and evaluation of widely divergent works.

552 Communication Education: Variable Topics
3 hrs.
Selected studies in background, methods, materials, and procedures in any one of the following 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.

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 CAS or obtain consent of instructor.

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 as it now exists, innovative 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, guests, visits, and special projects. The student must have completed at least fifteen hours of work in CAS and, ideally, take the course immediately prior to student teaching. Prerequisite: ED 301. Offered Winter semesters only.

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.

570 Studies in Communication: Variable Topics
3 hrs.
Selected areas of study within the total range of communication. Each course carries separate credit, and a student may take any one of the offerings listed under CAS 570. In addition to the topics listed, additional topics are offered from time to time, and will be listed in the Schedule of Classes.

- Group Training, Theory, and Practice
- Family Communication
- Male/Female Communication
- Communication Audit
- Interviewing

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.

572 Non-Verbal Communication
3 hrs.
The course examines theories 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; extensions of a person such as space, clothing, possessions; and specific messages related to the face and body.

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.

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 ethno-centrism, cultural perceptions, values and beliefs, language and meaning, and nonverbal factors. Communication systems of selected countries are described and analyzed.

561 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.

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.

591 Introduction to Communication Research 3 hrs.
In this introductory course, students will acquire skills and knowledge of basic research design, data collection, data analysis, computer usage, and report writing needed for the completion of a research project.

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 Chairperson of the Department.

Open to Graduate Students Only

600 Listening 3 hrs.
Explores the role of listening in learning. Research in the field is examined and appraised. Listening tests are taken and discussed. Class members design listening projects or research projects. Focus increases sensitivity to the impact of speech.

605 Special Topics in Communication 1-3 hrs.
Intensive 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 CAS Department, Third Floor, Sprague Tower. Six hours of CAS 505 and 605 may be accumulated as credit toward a Master's degree in CAS.

610 Seminar in Oral Interpretation: Variable Topics 3 hrs.
Oral interpretation as related to techniques and materials of individual and group readings. Provides opportunity to explore problems of various forms and practices in oral interpretation.

630 Seminar in Attitude Change: Variable Topics 3 hrs.
Explorations into selected topics in contemporary rhetoric. Possible topics, each of which may be taken for credit, include the following:
  a. Rhetoric of Confrontation
  b. Philosophy of Dialogue

640 Seminar in Mass Communication: Variable Topics 3 hrs.
Exploration of topics related to mass communication theory, process, and application. Topics vary from semester to semester, and students may take one or all topics offered for credit.

660 Seminar in Communication Education: Variable Topics 3 hrs.
Each student selects an area of interest which he/she pursues independently during the term and reports his/her findings periodically to his/her class and instructor. In addition, the history of the profession, ethics and professional practices, research in psychology and speech related to teaching speech are studied. Students may take one or all topics for credit.

664 Seminar in Creative Dramatics: Variable Topics 3 hrs.
Considers relationships of theory, materials, and techniques of creative dramatics to child development and creative teaching in the elementary school. Students may take one or all topics for credit.

670 Seminar in Communication: Variable Topics 3 hrs.
Exploration into selected topics in communication. Possible topics, each of which may be taken for credit, include:
  a. Current Issues in Communication
  b. Conference Leadership
  c. Communication and the Future
  d. Advanced Communication Theory
  e. Power/Leadership in Organizational Communication

671 Cognition and Emotion 3 hrs.
Examination of cognitive, affective, and psychomotor aspects of communication. Emphasis is on current research and theory pertaining to the information processing of the individual, particularly in the areas of self-discovery, self-control, the creative self, the thinking self, the relating self, and the mediating self.

672 Seminar in General Semantics 3 hrs.
A seminar which explores the differences between language and behavior. Indepth study of differences between symbol and signal behavior, intensional and extensional languages, role of language in developing brain systems, a consideration of the Korayskian analogy of "map and territory," among other subjects.

673 Conflict Management 3 hrs.
Based on the assumption that conflict pervades human life, the course explores the strategies of productive and nonproductive interpersonal and social conflict within the organizational setting. Theories of conflict are examined, and an explanation of the sources that stimulate conflict in humans is made.

681 Group Communication Processes 3 hrs.
A study of small group communication as it affects problem solving and decision making procedures. Emphasis will be on developing an understanding of how participants in problem solving groups work together and how they can be made more effective through leader facilitation. The student will have practical experience in studying problem solving and decision making methods.

691 Practicum in Communication Research 3 hrs.
Selecting, formulating, designing, conducting, and reporting communication research. Prerequisite: Admission only by consent of instructor.

Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

700 Master's Thesis 2-6 hrs.
710 Independent Research 2-6 hrs.
712 Professional Field Experience 2-12 hrs.

Computer Science (CS)

Williams, Chairperson. Professors Meagher, Targowski; Associate Professors Herman, Kountaris, Moltzen; Assistant Professors Johnson, Kapenga, Kasletter.

Open to Upperclass and Graduate Students

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.

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 or minors. Prerequisite: Math 150 or equivalent.

503 Programming the Microcomputer for Teachers 3 hrs.
A course in programming at an intermediate level for teachers. Languages used will be PASCAL, FORTRAN or other high level languages available on microcomputers. 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 program

504 Advanced Microcomputer Concepts for Teachers
3 hrs.
A course which 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: 503.

506 Scientific Programming
3 hrs.
Designed to give preparation in the use of numerical methods on digital computers for scientific and engineering applications. The FORTRAN language will be used. Problems such as series evaluation, multiplication and inversion of matrices, numerical integration and pointwise differentiation, as well as general numerical approximation will be prepared for the computer. Prerequisites: (MATH 230 or 374) and (CS 112 or 306). (Cross-listed with MATH 506.)

508 MACRO-10 Programming
3 hrs.
A study of MACRO-10, the assembly language of the PDP-10 computer. This course may not be used for credit in a Computer Science graduate program. Prerequisites: 306 or equivalent.

510 Computer Science Fundamentals
4 hrs.
For incoming graduate students who have not had a course in computer organization and a course in data structures. Topics covered include computer organization, data structures, structured programming techniques, algorithmic approaches to problem solving and an introduction to automata and formal languages. The course stresses good programming skills. Languages used will be FORTRAN, PASCAL and MACRO-10. This course may not be used towards a Computer Science major or minor. Prerequisites: 224 or equivalent. Concurrent or previous enrollment in CS 506 is required.

527 Theory of Computer Graphics
3 hrs.
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 or CS 331) or CS 510.

542 Data Base Management Systems (DBMS)
3 hrs.
Topics covered include searching and sorting methods, file organization and access, definition of DBMS, design approaches to DBMS and features of current DBMS. Prerequisites: 342 or 510.

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. Prerequisites: 331 or 510.

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. Prerequisites: 331 or 510.

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.

Open to Graduate Students Only
603 Studies in Computer Science
3 hrs.
Advanced work organized around topics related to the field of study indicated in the above title. Students may take this course more than once.

625 Computer Structures
3 hrs.
Provides the principles of design of modern digital computers. Circuit implementations of switching networks and of sequential machines are investigated. Recent computer developments such as microprocessors, disk memories, integrated circuits and microprogramming are included. Designs of various CPU circuits and memory organizations are considered. Prerequisite: 510.

631 Advanced Data Structures
3 hrs.
Stresses the representation and implementation of various data structures. The effect of data structures on program complexity is investigated. Uses of data structures in a variety of application areas are covered. Introduces complex data structures. Prerequisite: 510.

632 Analysis of Computer Algorithms
3 hrs.
Computing time and space requirements of algorithms are analyzed with emphasis given to the effect of data structure choice on program complexity. Various abstract models of computation are considered. Methods for proving program correctness and the related problems are identified. Students implement a number of algorithms on a computer and discuss aspects of the complexity and correctness of their programs. Prerequisites: 631 and 680.

643 Advanced Data Base Management Systems
3 hrs.
Topics covered include DBMS Languages, study and usage of present DBMS and data base administration. A major part of the course will be the implementation of a DBMS. Prerequisite: 542.

655 Advanced Operating Systems
3 hrs.
Advanced and current topics in operating systems research will be discussed. Analysis of competing techniques will be undertaken to present a better understanding of tradeoffs in design decisions. Modeling and performance evaluation will also be presented. A detailed and theoretical view of the basic operating system concepts will be emphasized. Programming assignments involving simulation and performance evaluation will be required. Prerequisite: 554.

680 Mathematical Theory of Formal Languages
3 hrs.
Definition of grammars and languages, recursive and recursively enumerable sets, decidability and undecidability, the Chomsky hierarchy of languages and their relation to models of automata. Prerequisite: 510.

681 Compiling Theory and Practice
3 hrs.
A study of theoretical and applied strategies for designing compilers and other types of language translation systems. Students will be assigned a programming project on compiling. Prerequisite: 680.

682 Artificial Intelligence
3 hrs.
Computer intelligence, computer learning, information representation, heuristics, problem solving, pattern recognition, natural language processing, computer vision and searching techniques. Applications in chemistry, medicine, game-playing and psychology. The LISP language will be used for programming. Prerequisite: 510.

691 Seminar in Computer Science
1-3 hrs.
Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

700 Master’s Thesis
6 hrs.

710 Independent Research
24 hrs.

712 Professional Field Experience
1-12 hrs.

Economics (ECON)

Professors Copps, Gardner, Ho, Kripalani, Ross, Sichei, Zeider; Associate Professor Caruso; Assistant Professors Asela, B. Hark, S. Hark, Payne.

Open to Upperclass and Graduate Students
500 Continuing Education in Economics: Variable Topics
1-3 hrs.
Application of economic principles and analysis to selected topics of interest to students in Continuing Education courses and workshops. Topics will vary and course may be repeated twice. May not be counted in fulfilling economics major, minor, or M.A. requirements.

501 Studies in Economic Problems: Variable Topics
3 hrs.
An examination of a selected area of concern not intensively covered in other courses. The focus of the course will be substantive as well as analytical. Topics may include such areas as poverty, the war in-
502 Studies in Quantitative Economics
4 hrs.
The course deals with statistical and mathematical techniques and concepts useful in economic analysis and their application to various areas in economics. Subject matter of the course will vary from semester to semester and may be chosen from such diverse topics as linear programming, game theory, input-output analysis, statistics, welfare economics, utility theory, and business cycles. Prerequisite: MATH 122 or consent of instructor.

504 Introduction to Mathematical Economics
4 hrs.
An introductory course to acquaint the student with the application of basic mathematical concepts to economic analysis, including such topics as revenue curves, cost curves, capital assets, growth models, and multipliers and accelerators. Prerequisites: ECON 201 and 202; MATH 122, or consent of instructor.

506 History of Economic Thought
4 hrs.
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 natural liberties, special emphasis will be placed on the contributions of significant thinkers and the influence of various schools of economic thought on national policy and economic development. Prerequisites: ECON 201 and 202.

507 Monetary Theory and Policy
3 hrs.
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.

508 Institutional Economics
4 hrs.
An intensive examination of heterodox economic theory, conceived in terms of the basic social concepts of institutions and technology, and utilizing developments in modern social science for the resolution of persistent economic problems. Prerequisites: ECON 201 and 202.

509 Econometrics
3 hrs.
An introductory course in analytical and quantitative methods in economics. Applied economic problems like linear programming and input-output analysis will be considered. Simple regression models and their uses in economics are also included. Prerequisites: ECON 201 and 202; MATH 122 or consent of instructor.

512 Collective Bargaining
3 hrs.
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.

515 Economics of Human Resources
3 hrs.
The course will examine the development and utilization of manpower in the United States, including such topics as labor force components, contributors to productivity such as education, health and mobility, and issues of manpower policy. Prerequisites: ECON 201 and 202.

516 Collective Bargaining in Public Employment
3 hrs.
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.

517 Economics of Health and Human Service
3 hrs.
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.

525 State and Local Government Finance
3 hrs.
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.

526 The Urban Economy
3 hrs.
The course will examine the economic structure and development of the urban complex. Among the topics to be considered are: the process of suburbanization, urban sprawl and urban blight, the pricing and production of public utilities in the local economy, economies of scale in the size of urban areas, the place of planning, the impact of public services and the tax structure on the location of economic activity, intergovernmental economic relationships. Prerequisites: ECON 201 and 202.

539 Economic Anthropology
3 hrs.
A thorough examination of the relationship between economic and anthropological theory, with a strong emphasis on its applicability and usefulness for explaining the nature of specific economic relationships existing in selected primitive societies. Prerequisites: ANTH 220 or 240, ECON 201 and 202, or consent of instructor.

545 The Economics of Location
3 hrs.
The application of economic analysis to the study of the location of economic activities as determined by transportation and the spatial distribution of resources and markets. Consideration is given to selected industry studies, problems in urban land usage, congestion, and the environmental effects of various economic activities. Prerequisites: ECON 201 and 202.

580 International Trade: Theory and Policy
3 hrs.
The course is designed to study the pure theory of international trade and trade policy. Prerequisite: ECON 480 or consent of instructor.

585 The Economics of Sub-Saharan Africa
3 hrs.
A survey of the indigenous economic systems of Sub-Saharan Africa and how these systems have been modified over time by the intrusion of various foreign population. The economic progress has been examined, and a detailed investigation of economic, social, and political obstacles to further progress will be made. Not open to students who previously received credit in Economics of North Africa and the Near East 585. Prerequisites: ECON 201 and 202.

588 Economic Development
4 hrs.
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 pattern 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.

590 The Economics of Latin America
3 hrs.
A survey of the principal economic problems of the Latin American countries. A substantial portion of the course will be devoted to case studies of the development of particular countries. Prerequisites: ECON 201 and 202.

591, 592 Guest Economist Seminar
1 hr.
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.

598 Readings in Economics
3 hrs.
An independent program of study for qualified students to be arranged in consultation with the instructor. Prerequisite: Consent of Department Chairperson.

Open to Graduate Students Only

600 Applied Economics for Management
3 hrs.
The course examines the relationship between the theory of the firm and recent developments in the area of operations research. Among the concepts and tools discussed are game theory, linear programming, capital budgeting, inventory theory, input-output analysis, price policy, and cost analysis. This course may not be taken for credit if a student has received credit for ECON 400.

601 Economic Analysis for Administration
3 hrs.
This course will focus on the basic principles of economic theory and policy analysis to give the Public Administration student the essential tools needed for understanding policy analysis and resource allocation. Students will be expected to demonstrate the ability to analyze a policy or resource allocation problem using the tools presented in the course. Closed to Economics Graduate Students. Prerequisite: ECON 201 or consent of instructor.

603 Advanced Price Theory
3 hrs.
An advanced study in the logic of the pure theory of production, joint production and
joint costs, an introduction to the multiperiod production theory. Advanced theory of consumer behavior, aggregation problems in product supply, factor demand and consumer demand analysis; review of selected empirical studies on consumer demand analysis; consumer surplus; problems involving optimization over time and under conditions of uncertainty: role of savings in consumer demand theory (utility maximization over time). Prerequisites: ECON 303 and 503.

609 Seminar in Economics 1-3 hrs. Offers the graduate an opportunity to investigate contemporary problems in economic theory and analysis. Prerequisite: Four hours of advanced economic theory or consent of staff. Topics will vary and course may be repeated.

612 Labor Union Structure and Practice 3 hrs. An analysis of the government and operation of American labor unions with particular reference to the problems of union leadership, disciplinary procedures, membership control, and the economic and social consequences of these practices.

623 Public Budgeting 3 hrs. This course focuses on budget processes and techniques at the local, state, and federal levels. Primary emphasis is on the preparation phase of the budget process and the alternative budgeting techniques currently in use. Sources of revenues will also be examined. Contested Economics Graduate Students. Prerequisite: ECON 601 or consent of instructor.

624 Issues in Public Finance 3 hrs. An exploration of issues in taxation, government spending, fiscal policy, and intergovernmental relations with emphasis on recent literature in those areas. Prerequisites: ECON 201 and 202.

650 Industrial Organization and Public Policy 3 hrs. The interest of this course centers on the areas where markets are characteristically oligopolistic. After a brief review of the different market types, the more important market structure, behavior, and performance variables and their accompanying public policy implications are dealt with.

651 Seminar in Industry Studies 2 hrs. This course offers the graduate student who has previously studied industrial organization and public policy the opportunity to investigate the structure, behavior, and performance of a particular industry of his/her choice. The course will be conducted as a seminar in which the participants will discuss their findings as well as particular problems that they have incurred in the course of their research. Prerequisite: ECON 650 or the permission of the instructor.

662 National Income Analysis 3 hrs. A basic course in economic theory with emphasis on modern theories of output of the economy as a whole and on the uses of these theories as guides to policy. Prerequisites: ECON 201 and 202.

680 Problems in International Trade and Finance 3 hrs. An analytical understanding of contemporary issues in international trade and finance will be emphasized. Prerequisite: ECON 480 or 580 or consent.

684 Analysis of Economic Systems 3 hrs. A comparative analysis of the role of markets and planning as means for the implementation of the goals and ideals of modern economic systems. Prerequisite: ECON 484 or consent of the instructor.

688 Issues in Economic Development 3 hrs. An intensive examination of a number of selected key topics in development economics, centering on issues of crucial importance to developing nations. Prerequisites: ECON 201 and 202.


Open to Graduate Students Only—Please refer to The Graduate College section for course description.

700 Master's Thesis 6 hrs.

710 Independent Research 2.5 hrs.

712 Professional Field Experience 2-12 hrs.

English (ENGL)

W. Combs, Chairperson; Professors Callan, Couley, Cooney, Davidson, Galligan, Gianakaris, C. Goldfarb, R. Goldfarb, Johnston, Miller, Sadler, H. Scott, Stroup, Weaver, Woods, Associate Professors Bailey, B. Carlson, N. Carlson, Cuttruff, Davis, Demetrakopoulos, Drzick, Dybek, Gingerich, S. Scott, Seiler, Shafter, Small, Syndergaard, Assistant Professors Flessher, Gordon, Harris, Hayden, Hinkel, Holloway, Jayne, Jorgens, Stone.

Except as noted below, graduate students in non-English curricula may elect 500-level English courses for graduate credit only if they have had two prior literature courses.

When they are scheduled as off-campus, internstitutional courses by the Division of Continuing Education to meet for thirty-six contact hours during the semester, 500-level English courses will carry three credits.

Open to Upperclass and Graduate Students

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.

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 studied mainly in translation.

532 English Renaissance Literature* 4 hrs. Readings in representative writers of the period 1500-1660.

534 Restoration and Eighteenth Century Literature (British Literature 1660-1800)* 4 hrs. Readings in representative writers of the period 1660-1800, focusing on the diversity of literary forms in the period.

536 Nineteenth Century British Literature* 4 hrs. Readings in representative writers, focusing on one or more principal movements of the century.

538 Modern Literature* 4 hrs. Readings in representative writers in the period 1890-1945, not exclusively in British and American literature.

540 Contemporary Literature* 4 hrs. Readings in representative writers who have come to prominence chiefly since 1945.

555 Studies in Major Writers* 4 hrs. Study of the works of classical, European, British, or American writers. Limited to one or two authors. May be repeated for credit as long as the authors covered are different.

566 Creative Writing Workshop 4 hrs. An advanced course in the writing of poetry, fiction, or drama, with class criticism of each student’s writing. The course may be taken more than once.

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.

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 270, 271, 373, or equivalent.

582 Studies in Children’s Literature 4 hrs. A study in depth of significant themes, movements, and types of children’s literature. Prerequisite: ENGL 282 or permission of the department.

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 in 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.
641 Studies in Modern Poetry 3 hrs.
An intensive study of the writings of several modern poets.

642 Studies in Drama 3 hrs.
Selected areas of drama from classical times to the present.

644 Studies in the Novel 3 hrs.
An examination of significant forms and techniques employed in the novel from its beginnings to the modern age.

645 Studies in the Modern Novel 3 hrs.
An intensive study of the works of some important novelists of the twentieth century.

Selected tragedies of Shakespeare.

653 Studies in Shakespeare: Comedy 3 hrs.
Selected comedies of Shakespeare.

666 Graduate Writing Workshop 3 hrs.
Any given section of this course will focus on either poetry, fiction, or drama. Course organization will emphasize roundtable discussion of student writing. Course may be taken more than once. A student may elect up to 12 credit hours in one genre and up to 18 hours in all. M.F.A. candidates must take at least 6 hours in their area of specialization. Open to graduate students accepted into the M.F.A. program only, and, with the permission of the instructor, to other graduate students.

710 Independent Research 2-6 hrs.
Judged by a committee of the graduate faculty to be worthy of publication or production, a public reading or performance is required.

Open to Graduate Students Only—Please Refer to The Graduate College section for course descriptions.

700 Master's Thesis 6 hrs.

712 Professional Field Experience 2-12 hrs.

Geography (GEOG)

521 Studies in Climatology & Meteorology 3 hrs.
Studies at an advanced level in climatology and meteorology. Topics of current interest to atmospheric scientists are examined in depth. Dynamic, complex, and synoptic methods of climatic description are also examined, and regional climatic phenomena and their relation to atmospheric circulation patterns investigated. Prerequisites: GEOG 225 or consent.

540 Political Geography 3 hrs.
General survey of the principles and the applied aspects of political geography; primary emphasis on the physical and cultural resource bases and costs of national states, the assessment of location, boundary delimitation and the territorial sea, politically-organized territories within the administrative hierarchy, and electoral geography.

543 Cultural Geography 3 hrs.
Techniques of spatial analysis applicable to the study of man's adjustment to different environments. 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 occupation of the earth's surface.

544 Studies in Economic Geography 2-3 hrs.
Present world patterns of agriculture, manufacture, or transportation which link global production and consumption. In any term, the course focuses upon one of these three economic sectors:

a. Agriculture. Describes and analyzes agricultural systems throughout the world. Focuses on selected crop- livestock systems and the changing character of agricultural land use in the United States.

b. Manufacture. Examination of theories and strategies of industrial plant location, the relationship of industrialization to regional economic growth and development, and selected industry case studies evaluating the interrelations of locational, economic, technological, and political factors in the respective industry's historic evolution.

c. Transportation. Examination of the historic evolution of transport systems in
developed and developing nations, transport factors in location theory, techniques of transport analysis, the urban transport dilemma, and competitive and complementary characteristics of the different transport modes.

550 Studies in Historical Geography 3 hrs. The major approaches to historical geography are analyzed in depth; then students concentrate on individual research problems within the course focus of that semester. The course focus will be designated in the class schedule.

553 Water Resources Management 3 hrs. Examination of water resources management with emphasis upon rational development and utilization of available supplies. Topics include supply and demand, methods of technological and geographical augmentation (desalination, inter-basin transfers, etc.), water administration and policies, and various water problems together with possible approaches to their solutions.

554 Outdoor Recreation: Resources and Planning 3 hrs. Examination of extensive resource-based outdoor geography (e.g., wilderness, wild rivers, hunting and fishing, hiking, etc.) with emphasis upon recreational planning. Topics include supply and demand for outdoor recreation, identification of present and future recreational needs; policy considerations, administration of recreational land uses, and various problems associated with outdoor recreation. Readings, discussions, and student-designed and executed individual studies provide professional orientation.

555 Contemporary Issues in Resources Management 3 hrs. 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 of instructor.

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.

a. Urban Planning and Zoning. The Planning Process and the development of Comprehensive Plans as practiced in American communities. The legal foundations of zoning and subdivision regulations, and the implementation of the comprehensive plan. The organization, role, and relationship of the planning commission, the zoning board, and the planning department in the community.

b. Regional Planning. Studies in the administration and coordination of planning programs at the regional level, e.g., transportation and communications, land use and conservation, drainage systems and wastewater treatment, residential and industrial development. The evolution and current status of planning methodologies are examined with emphasis on economic and environmental tradeoffs, and on problems of implementing regionally-oriented planning programs.

c. Public Lands and Parks. Specific programs and policies relating to the preservation and/or development of government-controlled lands.

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 of urbanized regions; 2. factors in city growth or decline; 3. the sizes, functions, and geographical distribution of cities; and 4. land use and 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.

Open to Graduate Students Only

620 Seminar in Physical Geography 2-3 hrs. A review of current literature and recent developments in several disciplines which form the basis of physical geography. Since each seminar emphasizes different subject areas, such as landforms, soils, and vegetation, this seminar may be repeated. A final research project is required. Prerequisites: One of several advanced courses in physical geography, geology or biology, or consent of instructor.

646 Analysis of Primary Resource Utilization in Developing Nations 2-3 hrs. Critical examination of the resource base of developing nations in the tropical and subtropical realms, with particular consideration being given to political, economic, and cultural forces affecting resource development. General themes will be developed through a study of current approaches in the measurement and mapping of resources and examination of representative plans for regional and national economic development. Students will prepare case studies in their area of concentration.

670 Seminar in Urban Geography and Planning 2-3 hrs. A review of the current literature and recent methodological developments in the field of urban geography and planning. Prerequisite: GEOG 556a or 570.

Regional Geography

Open to Graduate Students Only

510 Anglo America 3 hrs. Review of the physical, cultural, and economic geography of the United States and Canada. Focus on regional problems and outlooks. Lectures, assigned readings, and periodic seminars. May not be taken for credit if student has credit for GEOG 380.

511 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 interpretation of the present political, social, and economic conditions is included. May not be taken for credit if student has credit for GEOG 381.

512 Middle America 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. May not be taken for credit if student has credit for GEOG 382.

513 Western and Southern Europe 3 hrs. Examination from western Europe from a regional perspective. The environmental and historical backgrounds serve as a foundation for more intensive study of contemporary conditions, problems, and issues. May not be taken for credit if student has previously received credit for GEOG 383.

514 U.S.R.E. and Eastern Europe 3 hrs. Physical, cultural, and economic geography of the Soviet Union. Primary focus is on population change and agricultural/industrial development within a spatial framework. May not be taken for credit if student has credit for GEOG 384.

515 Southeast Asia 3 hrs. Survey of the physical, cultural, and economic geography of Southeast Asia. Primary focus is placed on countries of mainland Southeast Asia (from Burma to Malaysia and Vietnam) with emphasis on the spatial patterns of utilization within particular societies and countries. May not be taken for credit if student has received credit for GEOG 389.

516 Middle East and North Africa 3 hrs. Study of the diversity of uniformity—both physical and cultural—of the Middle East and Africa north of (and including) the Sahara. Special attention is given to salinity problems, economic development, petroleum, Arab re-unification movements, and the impact of the Muslim world on the current political scene. May not be taken for credit if student has credit for GEOG 387.

517 Middle and South Africa 3 hrs. Intensive study of the physical, economic, and political geography in Africa south of the Sahara: analysis of recent developments in selected regions and states. May not be taken for credit if student has completed for GEOG 386.

518 The Pacific Realm 3 hrs. Analysis of the human and physical geography of the Southwest Pacific, with concentration on Australia, New Zealand, and Polynesia. May not be taken for credit if student has credit for GEOG 385.

520 South Asia 3 hrs. Survey of the physical, cultural and economic geography of the Indian subcontinental region (India, Pakistan, Bangladesh, Sri Lanka and the countries of the Himalayas). Primary focus is placed on India with emphasis upon the characteristic spatial patterns and relationships found in the region. May not be taken for credit if the student has received credit for GEOG 390.

609 Studies in Regional Geography 2-3 hrs. An investigation of selected topics in physical and human geography of a region, e.g., Latin America, Anglo-America, Europe.
Regional concentration will vary from semester to semester, with the region being indicated at time of enrollment. May also be offered in combination with field studies to various areas, and may be repeated for credit. Prerequisite: An appropriate introductory course at either the undergraduate or graduate level.

Geographic Methodology and Research

Open to Upperclass and Graduate Students

557 Environmental Impact Assessment
3 hrs.
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. The course provides an introduction to the analysis and preparation of environmental impact statements. Prerequisites: Senior standing and Geography 350 or permission.

558 Quantitative Methodology
3 hrs.
Introduction to the application of quantitative concepts and methods in the analysis of geographic problems. Emphasis is placed on data base management, computer applications of common numeric and statistical methods, and utility assessment of various research designs and strategies. Prerequisite: A course in statistics or consent.

560 Advanced Cartography
4 hrs.
The compilation of data, design of maps, production techniques, and application of statistical techniques in mapping are applied to advanced cartographic methodology and photogrammetry. Students are assigned projects, and current trends in cartographic research, state-of-the-art production techniques, and geodetic surveying techniques are examined. Prerequisite: GEOG 560 or consent.

562 Remote Sensing of the Environment
3 hrs.
The student will acquire proficiency in the fundamental techniques and skills of photogrammetry and photointerpretation 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 resources, rural and urban land use, as well as topics adapted to the interest and anticipated future work of the student.

596 Readings in Geography
1-3 hrs.
Designed for highly qualified majors and graduate 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.

Open to Graduate Students Only

661 Geographic Research
4 hrs.
Problem formulation and research design are introduced in light of modern geographic thought and current practices. Other courses emphasize sources of geographic information, search strategies, and the written presentation of research materials. Graduate students in geography are urged to complete this course as soon as possible. Prerequisite: Consent of graduate adviser.

664 The Development of Geographic Thought
3 hrs.
The evolution of the philosophies, concepts, and methods in use by geographers today is traced and evaluated. Prerequisite: An undergraduate major or minor in geography and written consent of instructor.

665 Seminar in Geography
1-3 hrs.
Designed for the advanced student interested in analyzing systems related to various topics in geography. Prerequisite: Consent of instructor. May be repeated.

Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

700 Master's Thesis
6 hrs.

710 Independent Research
2-6 hrs.

712 Professional Field Experience
2-12 hrs.

Geology (GEOL)

Smachtz, Chairperson; Professors Chase, Grace, Passero, Straw, Associate Professors Harrison, Sauck.

Open to Upperclass and Graduate Students

502 Problems in Geology and Earth Science
3-1 hrs.
Individual problems involving topical reading and/or research problems in earth sciences. May be repeated for credit. Prerequisite: Consent of instructor.

505 Regional Geomorphology of the United States
3 hrs.
A study of geomorphic processes and landforms by consideration of geologic regions of the United States. Prerequisite: GEOL 131 or consent of instructor.

520 Economic Geology
3 hrs.
Origin, occurrence, and utilization of metallic and non-metallic mineral deposits, and mineral fuels. Three lectures a week. Prerequisite: GEOL 335 or consent of instructor.

530 Plate Tectonics and Earth Structure
3 hrs.
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.

532 Surficial Processes and Groundwater Geology
3 hrs.
Detailed consideration of fluvial, eolian and glacial processes, and the geologic aspects of surface water and groundwater hydrology. Qualitative and quantitative aspects of ground water movement, location, evaluation, and the influences of man on the hydrologic system.

535 Sedimentation and Stratigraphy
4 hrs.
Principles of sedimentation and stratigraphy including correlation, facies, stratigraphic nomenclature, sedimentary petrology, processes and environments; includes analysis of clastic and carbonate regimes in modern and ancient sediments. Laboratory involves 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.

536 Glacial Geology
3 hrs.
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 instructor.

543 Paleocology
3 hrs.
Study will include the ecology, life, habits, and environmental interactions of ancient organisms. Prerequisites: GEOL 533 or BIOL 541.

544 Environmental Geology
3 hrs.
Geology related to human affairs and land use planning. Includes engineering 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 130, 131, or consent.

545 Carbonate and Evaporite Depositional Environments
3 hrs.
Processes, characteristics, and relationships of modern and ancient 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 slabs at the mesoscopic level. Two lectures and one 3-hour laboratory per week. Prerequisites: GEOL 533, 535, and consent.

560 Introduction to Geophysics
3 hrs.
Introduction to geophysical exploration methods including seismic reflection and refraction, gravity, electric, and electromagnetic techniques. Prerequisites: PHYS 110-111 or 210-211, MATH 122, and GEOL 130.

561 Seismic Methods
3 hrs.
Reflection and refraction seismology as applied to the search for petroleum, site studies in civil engineering, and other
geologic problems. Two lectures and three hour practical laboratory with field exercises and problems. Prerequisites: GEOL 560, MATH or CS 306, and MATH 123.

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, MATH or CS 506, and MATH 123.

563 Electrical Methods
3 hrs.
Resistivity sounding and profiling, induced polarization, spontaneous potential, electromagnetic methods using natural and artificial fields. Two lectures and three hour laboratory with field studies and laboratory modeling. Prerequisites: GEOL 560, MATH or CS 506, MATH 123, and PHY 540.

Open to Graduate Students Only
610 Geochemistry
3 hrs.
An introduction to the basic principles and theories of geochemistry. Prerequisites: GEOL 440 or permission.

611 Mineral Analysis
3 hrs.
X-Ray diffraction and fluorescence techniques applied to mineralogical and petrological problems. Prerequisites: GEOL 335 or permission.

612 Hydrogeology
3 hrs.
The study of surface and ground water with special emphasis on its chemistry, movement, and relation to the geologic environment.

620 Marine Geology
3 hrs.
A course in oceanography with emphasis on marine geology and the relationships of physical, chemical, and biological principles to marine sediments and oceanographic processes. Prerequisite: GEOL 500 and consent.

630 Structural Analysis
3 hrs.
The theory of and methods involved in the geometric, kinematic, and dynamic analysis of deformed rock bodies. All scales of observation are considered from large map areas to hand specimens. Prerequisite: GEOL 430.

634 Research in Geology and Earth Science
1-4 hrs.
Advanced readings or research in an area to be selected after consultation with a supervising staff member. May be repeated for credit (for no more than a total of six hours).

640 Igneous and Metamorphic Petrology
4 hrs.
Advanced discussion of origins and positions of igneous and metamorphic rocks in light of recent experimental evidence and concepts of global tectonics. Prerequisites: GEOL 440 or permission.

650 Topics in Geology and Earth Science
2-4 hrs.
An intensive study of specific subjects in the area of Earth Science as listed. Prerequisite: Consent of instructor. Subject offered during a semester or term will be announced in advance.

655 Sedimentary Petrology
4 hrs.
Thin section and hand specimen study of sandstones, mudrocks, carbonate rocks, and chemical sediments, with emphasis on paleogeographic, tectonic, environmental, and paragenetic interpretation. Prerequisites: GEOL 335, 535, or consent.

660 Seminar in Geology and Earth Science
1 hr.
A seminar designed to provide students with the opportunity to examine and discuss important problems in Earth Science. Oral presentations will be required. Prerequisite: Consent.

Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

700 Master's Thesis
6 hrs.
710 Independent Research
2-6 hrs.
712 Professional Field Experience
2-12 hrs.

History (HIST)

Breisach, Chairperson; Professors Beech, Brown, Brunner, Castel, Cordier, Davis, Elsasser, Gregory, Hammer, Maier, Mowen, Nahm, Nodel, Schmitt; Associate Professors Burke, Hahn, Hawks, Patterson; Assistant Professor Hannah.

United States History

Open to Upperclass and Graduate Students
520 Colonial America
3 hrs.
The American colonies as part of the British empire: their founding, their political, social, and economic growth to the eve of the American Revolution.

521 The Era of the American Revolution, 1763-1789
3 hrs.
The causes, development, nature, and consequences of the American Revolution. Emphasis is given to the factors which induced the British to alter existing relationships with the American colonies: the reasons for and the variety of American responses are examined. Efforts made by both British and American leaders to preserve the imperial connection are studied along with the gradual development of the American movement to independence. Military and diplomatic aspects of the Revolution are examined, and an attempt is made to evaluate societal changes brought by American independence.

522 The Age of Democracy and Expansion, 1789-1848
3 hrs.
The United States is a democracy. Or is it? This course attempts to answer that question by examining the origin and development of American political institutions during a time that is much like our own—that is, a time of rapid changes and intense ideological, racial, international, sectional, and personal conflict.

523 The American West
3 hrs.
A study of the exploration, conquest, and occupation of the North American continent.

Among the topics included are Indian relations, the fur trade, land disposition, the cattle frontier, the mining frontier, and problems of law and order.

524 The Civil War and Reconstruction
3 hrs.
Between 1861 and 1865 over 600,000 Americans died fighting each other. Why? And with what results? The answers to these questions do not simply illuminate the past, they also tell us much about the present—a present in which many of the basic factors which produced the Civil War are still operating.

525 The Emergence of Modern America, 1877-1914
3 hrs.
This 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 problem of generalization, and to the anonymous American.

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.

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.

578 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.

Open to Graduate Students Only

605 Studies in American History
3 hrs.

606 Seminar in American History
3 hrs.

Europe

Open to Upperclass and Graduate Students

501 Studies in 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.
534 Medieval France
3 hrs.
A study of the formation of the French people and nation during the thousand years which followed the fall of the Roman empire in the 5th century A.D. Threatening this process were the disruptive forces of provincialism and invasion by foreigners. Contributing to its success were the growth of a unified church, a national monarchy, the expansion of a vigorous rural and urban economy, and the development of a national language and literature.

535 Medieval England
3 hrs.
The story of the growth of the English people from scattered tribes of Anglo-Saxon invaders in the 5th century into one of the most highly organized European nations by the 15th century. Basic to this growth were the creation of a powerful kingship based on a common law and Parliament, the establishment of a vigorous national church, the prosperity of countryside and town, and the development of a national language and literature.

538 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.

539 Contemporary Britain: The Era of the Common Man
3 hrs.
An exploration of the history of Great Britain during the crucial years of challenge to her position as a world power, to her position as mother country, to her democratic monarchy, and consideration of the ways in which these challenges were met, two world wars successfully fought, a Commonwealth organized with each member equal among equals, and a state responsible for the welfare of all subjects of the Crown from the cradle to the grave established in the socialist revolution after World War II.

551 Imperial Rome (The First Century)
3 hrs.
A study in depth of Roman politics and culture from the close of the Republic through the reigns of the emperors Augustus, Caligula, Claudius, and Nero. Emphasis will be placed on original sources in shaping the history of the century 30 B.C. to 70 A.D.

552 The Medieval Church
3 hrs.
Christianity is the most obvious and, perhaps, the most important element in early Western culture. In this course we are not so much interested in the Church as an institution as in the growth of Western culture in the age—from the time of Jesus to that of Luther—in which Christian values were so important in everyday life. Among the topics we will consider are the impact of the classical and Germanic cultures on the church, the church and feudalism, church-state relations, the rise and fall of papal theocracy, scholasticism, and mysticism. The emphasis throughout will be on topics most important for understanding our own values and society.

553 Life in the Middle Ages
3 hrs.
This course seeks to capture the reality of everyday life for the three main groups of lay people in medieval society—peasants, nobles, and townspeople—by studying members of each of those groups from the following viewpoints: 1. the ways in which they made a living, i.e., their work, the way it was organized—yes, for instance in the manor or the guild, and the methods, techniques, and equipment available to them; 2. the ways in which they spent their leisure time; 3. their standard of living as measured by their food, clothing, and other material possessions; 4. the social groups of which they were members and which gave meaning to their lives such as the family, the local community, and their social class; 5. their beliefs, values, and general outlook with special emphasis on the consequences of widespread illiteracy—the course will not discuss the culture of the educated elite such as in medieval philosophy and theology; and finally, 6. their normal life cycle from childhood to old age, looking at decisive events such as marriage, the birth of children, and death, and giving special attention to the high birth and death rates and low life expectancy, and their causes and consequences.

554 The Renaissance
3 hrs.
Between 1300 and 1517 great changes in European life were brought about by the catastrophic Black Death, the activities or merchant venture, the coming of gunpowder and diplomacy, the state as a new form of life, new ideas about man, God, and the universe, and by the geniuses of the brilliant Italian Renaissance (Petrarch, Giotto, Michelangelo, Leonardo da Vinci, and others).

555 The Reformation
3 hrs.
After 1517 the Western church broke apart and with it vanished the last remainder of European unity. Luther, Calvin, and Zwingle reshaped religious thought. Regional churches appeared. The Roman Catholic Church underwent a renewal. All of that was accompanied by bitter religious wars but also by early traces of the sciences, visionary social schemes, and a teverish artistic activity.

558 The Age of Enlightenment
3 hrs.
A wide-ranging study of a creative period during which many modern institutions and values took form: social structure and economic development, domestic politics and international relations, currents in religion and the arts, the Enlightenment.

559 The French Revolution and Napoleon
3 hrs.
Theories respecting the French and related revolutions, and the nature of revolution and of the revolutionary psychology, the 18th-century background, the moderate and radical phases of the Revolution proper, the rise and fall of the Napoleonic Empire.

560 Nineteenth Century Europe
3 hrs.
A study of the revolutionary currents pulsating through Europe in the 19th century, of the conflicts they engendered, and the profound changes they wrought.

562 Hitler's Europe, 1914-1945
3 hrs.
The first modern generation of Europe is associated with an era of unprecedented violence. The course is concerned with the experiences of people and the events of states that raise questions as to the dynamics of revolution, hate, idealism, propaganda, optimism, wars, economic ambitions, progress, and murder.

563 Europe since 1945
3 hrs.
The recovery of Europe from World War II, the movement toward European unity, the defense of Europe, and the role of Europe in the international community.

577 The Soviet Union in World Affairs
3 hrs.
Consideration is given to the various factors constituting the background necessary for the appreciation of the role of the Union of Soviet Socialist Republics in world affairs from 1917 to the present time. This includes a study of geographical, ideological, political, economic, military, social, and human aspects of Soviet foreign policy. The nature of Soviet foreign policy as affected by national and international events during the leadership of Lenin, Stalin, Khrushchev, and Brezhnev-Kosygin is studied.

Open to Graduate Students Only

651 Studies in European History
3 hrs.
652 Seminar in European History
3 hrs.
654 Seminar in Medieval History
3 hrs.
656 Studies in Medieval History
3 hrs.

Non-Western World
Open to Upperclass and Graduate Students

502 Studies in Non-Western 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 African, Latin American, and Asian History which are not adequately covered by regularly scheduled courses.

581 Modern China
3 hrs.
A study of the rise of Chinese nationalism: the revolutionary movement of the Nationalists, the Kuomintang rule; the Japanese aggression in China; the rise of communism and Mao Tse-tung; the Great Leap Forward and Cultural Revolution in Communist China.

583 Modern Japan
3 hrs.
A study of the growth of nationalism, colonialism, militarism, and imperialism in Japan: international relations of Japan; the fall, the Allied Occupation, and reconstruction, Japan's new role in the world.

584 Modern Korea
3 hrs.
A study of the decline of the Yi dynasty, Korea's struggle against foreign encroachment, the era of Japanese colonial rule, the liberation of Korea, and the establishment of two Koreas.

586 Mexico: The Building of a Nation
3 hrs.
A review of the 19th century groupings toward national unity and identity, and of the
20th-century eras of violent revolutionary paroxysm and post-revolutionary ordered development in the Latin American nation which has impinged most immediately and continuously on the conscious awareness of the United States.

Open to Graduate Students Only
625 Studies in History of Non-Western World 3 hrs.
528 Seminar in History of Non-Western World 3 hrs.

General
Open to Upperclass and Graduate Students
500 Problems in History 1-3 hrs.
Variable topics in historical studies including problems in applications, public historical awareness, local history, and historical analysis of issues in the contemporary world. Repeatable for separate credit so long as the topic varies. Consult Schedule of Classes for topics.

Open to Graduate Students Only
635 Studies in Historical Problems 3 hrs.
638 Seminar in History 3 hrs.

Theory and Practice
Open to Upperclass and Graduate Students
505 Local and Regional History 3 hrs.
Studies of small areas in great detail, pursued by interested laymen as well as professional historians, frequently precede, modify or augment historical studies of wider scope. The local historian relies almost exclusively on primary sources: archives and manuscript collections, oral history, genealogy, records of local government units, and so on. This course is an introduction to the specialized techniques and sources of local history, how they may be located and exploited for a variety of research objectives.

511 Introduction to Archives 3 hrs.
Theory, techniques, and practice in the development and administration of archives and archival materials.

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, conservation and security, care of collections, display techniques, historic preservation, registration and cataloguing, and museum ethics.

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.

590 Current Developments in Historical Theory and Practice 2 hrs.
This course surveys the major theoretical, technical and interpretive issues in the field of History as they emerge from ongoing research. It assesses the impact of such disciplines as archaeology, geography, computer science, environmental studies, and psychology upon History, the development of new techniques for evaluating all forms of historical documentation and data, and the major historical interpretations currently before the academic world and the public.

593 Philosophy of History 2 hrs.
What do all the rulers, battles, catastrophes, cultures, glories, and defeats add up to? Is there a goal toward which all of history marches or is there no rhyme or reason to the collective human experience? Thinkers such as Thucydides, St. Augustine, Vico, Hegel, Marx, Spengler, Toynbee, and the existentialists gave different answers to these questions.

599 Professional and Field Experience
Variable Credit
Upon prior approval by the Department of History students may earn credit through appropriate professional experiences such as museum internships, work in archives and manuscript collections, historic preservation advocacy, or other meaningful activities. Prerequisite: Approval of the Graduate Adviser and one appropriate course from among the following: 511 or 512 or 513. Graded on a Credit/No Credit basis.

Open to Graduate Students Only
598 Independent Reading in History 3 hrs.
Open to Graduate Students Only
599 Professional and Field Experience 3 hrs.

Other Courses
Open to Upperclass and Graduate Students
598 Independent Reading in History 2-3 hrs.

Languages and Linguistics (LANG)
Palmayer, Chairperson; Professors Cole, Dwarikesh Eblig, Oomun, Associate Professors Benson, Bigelow, Feltel, Gardiner, Giedman, Griffin, Hendriksen, Kissel, Krawutschke, Miller, Reisch, Teichert, Assistant Professors Felbes, Muizniec, Orr.

Language Teaching Courses
Open to Upperclass and Graduate Students
558 Modern Language Instruction (in French, German, Spanish, or other language) 3 hrs.
Required for modern language teaching majors; recommended for teaching minors. (May not be counted in 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, 557, Teaching of Latin, is described under Classical Studies below.

Critical Languages
See LINGUISTICS for courses.

French (FREN)
Open to Upperclass and Graduate Students
550 Independent Study in French 1-3 hrs.
Directed, individual study of a specific topic in a French literary or linguistic area. Departmental approval required for admission. GPA of 3.0 in major.

551 Advanced French Grammar and Composition 3 hrs.
Intensive review of French structure and practice in composition. Prerequisite: FREN 316 and 317 or equivalent.

552 Advanced French Conversation 3 hrs.
Intensive practice with spoken French. Prerequisite: FREN 316 and 317 or equivalent.

560 Studies in French Literature 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. Prerequisite: FREN 316, 317, 328, and 329 or permission of instructor.

Representative topics which may be treated in this area include:
Medieval Literature—Outstanding works from various genres of the medieval period, such as chansons de geste, romans courtois, didactic works, farces, and poetry.

Renaissance Literature—Outstanding works from the period, to include Montaigne, Rabelais, and the Pléiade.

Seventeenth Century Literature—Literary trends of the seventeenth century, to include major works by Voltaire, La Rochefoucauld.

Twentieth Century Literature—Studies in realism and naturalism.

Twentieth Century Literature—Studies in the modern French theatre.

German (GER)

Open to Upperclass and Graduate Students

528 Survey of German Literature 3 hrs.
A comprehensive study of German literature from its beginning through Romanticism. Prerequisite: GER 316, 317, and 325 or equivalent.

529 Survey of German Literature 3 hrs.
A comprehensive study of German literature from German Realism to the present. Prerequisite: GER 316, 317, and 325 or equivalent.

550 Independent Study in German 1-3 hrs.
Directed, individual study of a specific topic in a German literary or linguistic area. Departmental approval is required for admission. Prerequisite: One course at 500-level, preferably among GER 528, 529, and 560.

552 Advanced German Composition 3 hrs.
Intensive practice in composition and stylistics directed towards appreciation of literary and other written expression in German with work in free composition at an advanced level. Prerequisite: GER 316 and 317 or equivalent.

553 Advanced German Conversation 3 hrs.
Intensive training in conversational German with emphasis on colloquial language and idiom. Prerequisites: GER 316 and 317 or equivalent.

559 History of the German Language 3 hrs.
Survey of the development. Prerequisite: Six hours of 300-level German or above.

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, and 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.

Latin (LAT)

Open to Upperclass and Graduate Students

550 Independent Study in Latin 1-3 hrs.
Directed individual study of a specific topic or genre in a Latin literary or linguistic area (e.g., biography, bucolic poetry, comedy, history, or satire). Departmental approval required for admission.

557 Teaching of Latin 3 hrs.
For prospective teachers of Latin in the elementary or secondary school. Principles, problems, and current practices. Required for Latin teaching majors.

560 Studies in Latin 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. Prerequisite: LAT 324 or equivalent. Representative topics which may be treated in this area include:

Satire—Roman as pictured in the conversations of Horace and the invectives of Juvenal. Readings on the origins and development of satire as a genre.

History—Reading and appraisal of Livy and of Tacitus as historians and literary artists.

Bucolic Poetry—Readings from Vergil’s Eclogues and Georgics plus selections from later writers of bucolic poetry and discussion of its development as a literary form.

Roman poetry, centering around Catullus, Ovid, Martial, and the other poets of love. Discussion of the origin and influence of elegy as a poetic form.

Medieval Latin—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.

Russian (RUSS)

Open to Upperclass and Graduate Students

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.

552 Advanced Russian Composition and Conversation 3 hrs.
Practice in composition and stylistics directed towards a command of literary and other written expression in Russian combined with training in conversational Russian with an emphasis on the colloquial idiom. Prerequisites: RUSS 316, 317, and 328.

560 Studies in Russian Literature 3 hrs.
Topic varies according to genre, author, and 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: RUSS 316, 317, 328.

375 Topics treated in this area include but are not restricted to:
The Poetry of Pushkin: Emphasis on the tales and Byronic narratives.
Classic Russian Short Stories: Emphasis on the works of Turgeniev, Gogol, Tolstoy, and Leskov.

Modern Russian Poetry: Emphasis on Mayakovsky, Akhmatova, Esenin, Yevgeny Tushenok, and Voznesenski.

Spanish (SPAN)

Open to Upperclass and Graduate Students

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.

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.

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.

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.

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.

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.

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 improved written expression in Spanish at an advanced level. Prerequisites: Spanish 316, 317, and one additional 300-level course; at least three hours of 526, 527, 528, or 529 are recommended.

553 Advanced Spanish Conversation 3 hrs.
Intensive practice to reinforce and expand the basic oral communication skills and to develop flexible and idiomatic oral expres-
sion. Prerequisites: SPAN 316, 317, and one additional 300-level course. At least three hours of 526, 527, 528, or 529 are recommended.

560 Studies in Spanish Literature 3 hrs.
Topic varies according to some, 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. Prerequisite: Three 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—Department of the regional novel from Fermin Caballero through Blasco Ibanez
- Generation of '98—Thought and works of typical representatives such as Unamuno, Alarcon, Baroja, 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 (LING)

General Linguistics Courses

Open to Upperclass and Graduate Students

500 Introduction to Linguistics 4 hrs.
An introduction to modern linguistic theory and to the application of that theory to linguistically-related disciplines.

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.

512 Principles of Teaching English as a Second Language 4 hrs.
Study of the linguistic theory and historical development of teaching 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.

515 Methods of Teaching Critical Languages 2 hrs.
Study of the application of linguistics to the teaching of one or more "critical" languages (e.g., Latvian, Hebrew, Japanese, Arabic, Korean, etc.). 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 502 or equivalent.

540 Generative Grammar 4 hrs.
An examination of the theories of Transformational Grammar and Generative Semantics, and a study of their origins, development, modifications, and applications. Prerequisite: LING 500 or equivalent.

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.

552 Sociolinguistics 1 hr.
A systematic study of the linguistic correlates of social behavior and the influence of society on the nature of language.

597 Seminar in Linguistics—Variable Topics 2-4 hrs.
Each seminar will deal with a selected topic relating to language and 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.

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 Department. Prerequisites: Permission of the instructor and chairperson.

Critical Languages Courses

Open to Upperclass and Graduate Students

501 Intermediate Critical Languages I 4 hrs.
Continuation of LING 302, with greater attention to achieving self-reliance in conversation and to increasing reading and writing skills with the help of a dictionary. Prerequisite: LING 302 or equivalent.

502 Intermediate Critical Languages II 4 hrs.
Continuation of 501. Prerequisite: LING 501 or equivalent.

508 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 502 or equivalent.

599 Writing Critical Languages 4 hrs.
Intensive practice in writing a critical language to improve the student's ability to express himself or herself effectively and to develop an individual style of composition. Prerequisite: LING 502 or equivalent.

Mathematics (MATH)


Open to Upperclass and Graduate Students

506 Scientific Programming 3 hrs.
Designed to give preparation in the use of numerical methods on digital computers for scientific and engineering applications. The FORTRAN language will be used. Problems such as series evaluation, multiplication and inversion of matrices, numerical integration and pointwise differentiation, as well as general numerical approximation will be prepared for the computer. Prerequisites: (MATH 230 or 374) and CS 112 or 306. (Cross-listed with CS 506.)

507 Numerical Analysis 3 hrs.
Numerical methods involving polynomial evaluation, series approximations, numerical integration, interpolation solution of linear and differential equations, linear programming, least squares and minimax approximations. Topics include Chebyshev polynomials, Legendre polynomials, Weirstrass Theorem, Bernstein polynomials, Runge-Kutta methods. Generalized Rolle's Theorem, Taylor's Theorem, Newton's method. False Position method, economization of power series, Minimax Theorem, forward differences, central differences, Simpson's rule, Boole's rule, and predictor-corrector methods. Prerequisites: MATH 272, and a programming course, (274 or 374 recommended).

510 Multivariate Mathematical Methods 3 hrs.
Topics from multivariate calculus, including jacobians and optimization techniques, and from linear algebra, including eigenvalues, idempotent matrices and generalized inverses. Emphasis on applications and examples from statistics. Prerequisites: MATH 230 and 272.

512 General Topology I 3 hrs.
Topics include: separation axioms, continuity, compactness, connectedness, product and quotient spaces, metric spaces. Prerequisite: MATH 570 or permission of instructor.

530 Linear Algebra 3 hrs.
Properties of finite dimensional abstract vector spaces, linear transformations, and matrix algebra are studied. Prerequisite: MATH 330.

540 Advanced Geometry 3 hrs.
Topics are selected from projective geometry, algebraic geometry, differential...
550 Teaching of Secondary Mathematics
3 hrs.
In this course consideration is given to curricu-
ulum problems and trends in secondary school
mathematics and to specific prob-
lems of teaching mathematics effectively to sec-
ondary school students. Prerequisite: MATH 330.

551 Participation in Teaching Secondary Mathematics
2 hrs.
School experiences and related seminar
designed to provide the prospective teacher of
secondary mathematics with tutorial
small group, and a limited amount of total
class teaching experience in the junior or
senior high school mathematics classroom.
Enrollment is restricted to students concur-
rently enrolled in MATH 550. Graded on a
Credit/No Credit basis. Prerequisite: Ap-
proval of instructor.

552 Teaching of Elementary Mathematics
3 hrs.
Consideration is given to curriculum prob-
lems and trends in elementary school
mathematics and to specific problems of
Teaching Mathematics effectively to elemen-
tary school children. Prerequisite: MATH 150.

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 supervis-
ing the course. Graded on a Credit/No Credit
basis. Prerequisite: MATH 552.

560 Applied Probability
3 hrs.
A first course in probability for upper division and
graduate students interested in applica-
tions. Topics will include probability spaces,
expectation, moment generating functions,
central limit theorem, special discrete and
continuous distributions. Applications will in-
clude reliability and production problems,
and Markov chain methods. Not recom-
manded for students who have taken MATH 362 or 660. Prerequisite: MATH 272.

562 Statistical Analysis I
4 hrs.
The first course in the sequence MATH 562, 565
of applied statistics which combines both
teaching 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; means and variances; simple linear regression; correlation; one-
way and two-way analysis of variance, fixed
effects models. Prerequisite: MATH 560 or 362.

563 Sample Survey Methods
3 hrs.
This course consists of a broad overview of
the techniques of survey data collection and
analysis and forms a minimum of theory.
Topics may include: simple random,
stratified, systematic, single-stage 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 introd-
tory statistics course, and consent of in-
structor.

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: inference for proportions,
contingency tables, goodness of fit pro-
blems, estimation and hypothesis testing
based on ranked methods; measures of rank
correlation; efficiency. Emphasis will be
on the application of nonparametric
statistical methods to data from many dif-
ferent applied fields. Prerequisite: An in-
troductory statistics course.

567 Statistical Design and Analysis of Experiments
4 hrs.
A course in experimental design and the
analysis of variance with particular em-
phasis on industrial experiments. Topics in-
clude: completely randomized, randomized
complete block, Latin square, and split-plot
designs; orthogonal contrasts and polyno-
imals; multiple comparisons; factorial
arrangement of treatments; confounding,
fractional replication. This course is modeled
around the complete analysis of good ap-
piled problems. Prerequisite: An introd-
tory statistics course.

568 Regression Analysis
3 hrs.
An applied course in regression analysis:
simple and multiple linear regression; resolu-
tion 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 in-
troductory statistics course.

570 Advanced Calculus
3 hrs.
Properties of real numbers, Cauchy se-
quencies, series, limits, continuity, differen-
tiation, Riemann integral, sequences and
series of functions. Prerequisite: MATH 272 and 330.

571 Foundations of Analysis
3 hrs.
Fundamental concepts of real analysis, func-
tions of one variable, topology of E,
Riemann-Stieltjes integral. Prerequisite: Ap-
proval of advisor.

574 Ordinary Differential Equations
3 hrs.
Methods of solution, linear differential equa-
tions, ordinary and singular points, series
solutions, Bessel and Legendre functions,
boundary value problems, systems of equa-
tions, non-linear equations. Prerequisite:
MATH 230, 272, 274, or 374, or consent of
instructor.

575 Introduction to Partial Differential Equations
3 hrs.
Quasi-linear equations of the first order,
linear and quasi-linear equations of the sec-
ond order, separation of variables and
Fourier series; solutions of Laplace equa-
tions; heat equations and wave equations,
as examples of elliptic, parabolic and hyper-
bolical equations. Prerequisite: MATH 574 or
consent of instructor.

576 Introduction to Complex Analysis
3 hrs.
Complex numbers, elementary functions, dif-
ferentiation of complex functions, integra-
tion, series, residue theory, conformal mapp-
ings. Graduate students may elect both 576 and 676. Prerequisite: MATH 272.

580 Number Theory
3 hrs.
Diophantine equations, congruences, quadra-
tic residues, and properties of number-theoretic functions. Prereq-
quisite: MATH 330.

586 Seminar in Elementary Mathematics
Education
1-3 hrs.
Current curriculum problems in the area of elementary mathematics educational identi-
fied and discusses. Students are required to identify a problem and give both oral
and written report on research in that area. Prerequisite: MATH 552.

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 in-
terest for them. Topics are chosen and ar-
rangements are made to suit the needs of
each particular student. Prerequisite: Ap-
proval of chairperson of department.

Open to Graduate Students Only
600 Statistics for Public Administrators
3 hrs.
This course is designed to assist public ad-
mnistrators in understanding various
statistical procedures which could be used
to comprehend and interpret data sets
related to public policy analysis. Topics
covered in the course include: a review of
basic statistics in the context of policy
analysis, and case studies used in analyzing
policy data. Throughout the course,
examples will be used from policy analysis
and evaluation literature to illustrate the utility
of the statistical procedures presented. Prere-
quisite: Elementary statistics or equivalent.
(Cross-listed with PADM 691.)

605 Optimization
3 hrs.
Optimization methods including nonlinear
programming, calculus of variations, and
integer programming will be covered. Network
flow problems and dynamic programming
may also be covered. Applications to pro-
blems in business and industry will be
cluded. Prerequisites: MATH 123 and 408 or
608 or IEQM 610.

608 Linear Programming
3 hrs.
Linear inequalities; convex geometry; op-
timization in linear systems; zero-sum
games; applications. Prerequisite: An in-
troductory course in linear algebra.

609 Studies in Applied Math
3 hrs.
Advanced work organized around topics
related to the field of study indicated at the
time the course is scheduled. Students may
take this course more than once.

The courses 610 through 619 are primarily for teachers and ordinarily will not apply
towards the Master of Arts degree in Mathematics.

610 Concepts of Mathematics
4 hrs.
The course will include the following topics
sets, relations, functions, equivalence and
other relations, axioms, logical structure of elementary algebra, mathematical induc-
tion, integers, rational and real numbers, cardinals. Prerequisite: Consent of adviser.

611 Mathematical Applications
3 hrs.
An introduction to the philosophy of, machinery for, and methodology in applica-
tions of mathematics. Topics will be chosen from graph theory, linear algebra, numerical
approximation, optimization and graphical linear programming, probability, and linear
differential equations. Prerequisite: Consent of the adviser.

615 Intermediate Analysis
3 hrs.
This course will include the following topics: limits, continuity, differentiation, integration, applications. It will stress concepts rather than techniques. Prerequisite: Consent of adviser.

616 Survey of Algebra
3 hrs.
This course will discuss groups, rings, in-
tegral domains and fields, including such topics as homomorphisms and isomor-
phisms, subgroups and ideals, with examples involving permutation groups,
transformation groups, polynomial rings and finite fields. Prerequisite: Consent of adviser.

619 Computer Methods in Secondary Mathematics
3 hrs.
This course will emphasize applications of computing techniques to the teaching and learning of mathematics in grades 7-12. The BASIC programming language will be review-
ed in the context of solving mathematical problems using microcomputers and the WMU DEC System-10. Computer-oriented mathematics curriculum materials will be ex-
amined and developed. Prerequisite: Consent of adviser.

620 General Topology II
3 hrs.
Topics include: continuous functions, uniform spaces, function spaces, para-
compactness. Prerequisite: MATH 520.

621 Algebraic Topology
3 hrs.
Topics include: simplicial complexes, homology and cohomology theories, in-
cluding singular homology theory. Prere-
quisite: MATH 520.

629 Studies in Topology
3-4 hrs.
Advanced work organized around topics related to the field of study indicated in the
above title. Students may take this course more than once. 

630 Abstract Algebra I
3 hrs.
A general study of groups, rings, and
modules. A specific study of finite groups,
polynomial rings and Euclidean domains. Prerequisite: MATH 530.

631 Abstract Algebra II
3 hrs.
A continuation of 630. Modules, structure
theory of modules over principal ideal do-
 mains, applications to finitely generated abelian groups, rational and Jordan normal forms of a linear transformation, Bilinear and quadratic forms. Prerequisite: MATH 630.

632 Field Theory
3 hrs.
Algebraic and transcendental extensions of
fields, Galois theory, and valued fields. Prerequisite: MATH 630.

639 Studies in Algebra
3 hrs.
Advanced work organized around topics
related to the field of study indicated in the
above title. Students may take this course more than once. 

640 Graph Theory I
3 hrs.
Fundamental concepts: eulerian graphs; ad-
jacency and incidence matrices; trees; the
Reconstruction Problems. Prerequisite: Ap-
proval of adviser.

641 Graph Theory II
3 hrs.
Kuratowski's theorem, genus and the
generalized Euler formula; connectivity; hamiltonian graphs; extremal regular subgraphs; graphs and groups; Cayley color graphs. Prerequisite: MATH 640.

642 Graph Theory III
3 hrs.
Graph valued functions; chromatic numbers
and the Four Color Problem; Ramsey Theory and extremal problems. Prerequisite: MATH 641.

645 Studies in Combinatorics
3 hrs.
Advanced work organized around topics related to the field of study indicated in the
above title. Students may take this course more than once. 

648 Studies in Geometry
3 hrs.
Advanced work organized around topics related to the field of study indicated in the
above title. Students may take this course more than once. 

The courses 651, 652, 653, and 654 are primarily for teachers and ordinarily will not apply towards the Master of Arts degree in Mathematics.

651 Mathematics for Elementary School Teachers
3 hrs.
Emphasizes the concepts and foundations of the mathematics commonly taught in elementary school, and of associated prob-
lems of learning and teaching. Each stu-
dent will be expected to study and report on some special problem or aspect of the
Teaching of mathematics.

652 Mathematics for Junior High School Teachers
3 hrs.
This course is designed to acquaint the stu-
dent with contemporary trends in junior high school Mathematics. Several current pro-
grams will be studied to determine what topical content should be included and the treatment to be given to this content in a modern mathematical program for junior high school students.

653 Studies in Teaching of Secondary Mathematics
3 hrs.
An advanced methods course devoted to identification and examination of strategies for teaching mathematics. Strategies for
Teaching skills, concepts, generalizations problem-solving, and proof-making will be ex-
plicated. Prerequisite: Consent of adviser.

654 Curve Application Studies in Algebra and Geometry
3 hrs.
Current curriculum recommendations, prob-
lems, and trends in algebra and geometry
are identified and discussed and the most recent experimental and commercial cur-
riculum materials analyzed. Prerequisite: Consent of adviser.

656 Teaching of College Mathematics
2 hrs.
In this course consideration is given to cur-
riculum problems and trends in post-high school mathematics: research on specific problems of teaching mathematics effective-
ly to college students will be emphasized. Prerequisite: Consent of adviser.

660 Statistical Inference I
4 hrs.
A first course in mathematical statistics. Topics include: distributions of statistics; asymptotic distribution theory; theories of estimation, functions of sufficient statistics; confidence intervals; theories of testing, uniformly most powerful tests; likelihood ratio tests; selected topics in statistics. Prerequisites: MATH 582.

661 Multivariate Statistical Analysis
3 hrs.
A treatment of multivariate statistical pro-
blems and techniques. Topics include: multivariate normal distribution; quadratic forms; multiple and partial correlation; sam-
pel correlation coefficients; Hotelling's T2 statistic; Wishart distribution; applications to tests of the mean vector and covariance matrix; principal components; factor analysis; cluster analysis; discriminant analysis. Prerequisite: MATH 510 and 660, or consent of instructor.

662 Applied Linear Models
3 hrs.
A theoretical course in applied statistics.
Linear models will be used to treat a wide range of regression and analysis of variance methods. Topics include: multivariate normal distribution; quadratic forms; multiple and partial correlation; sample corre-
lation coefficients; Hotelling's T2 statistic; Wishart distribution; applications to tests of the mean vector and covariance matrix; principal components; factor analysis; cluster analysis; discriminant analysis. Prerequisite: MATH 510 and 660, or consent of instructor.

664 Design of Experiments I
3 hrs.
An applied course in the design and analysis of experiments. Topics include: general con-
siderations in the design of an experiment; standard designs such as Latin square, balanced incomplete block, split plot, and nested; pooling of experiments; multiple comparison techniques; orthogonal con-
trasts and polynomials; factorial arrange-
ment of treatments, fixed, random, and mix-
ed models; confounded designs; fractional replication. Prerequisite: MATH 662.

665 Statistical Inference II
3 hrs.
Mathematical statistics is considered in a decision theoretic framework. The decision
problem: loss and risk function. Bave pro-

666 Nonparametric Statistical Theory 3 hrs.
A theoretical study of nonparametric statistics and robust statistical procedures. Topics may include: order statistics, empirical cdfs, M-estimates, rank statistics, optimality considerations, asymptotic distribution theory. Prerequisite: MATH 571 and 660.

667 Introduction to Random Processes 3 hrs.
This course is a treatment of random sequences and Markov processes. Discrete and continuous Markov processes; transition and rate matrices; Chapman-Kolmogorov systems; transient and limiting behavior; examples and illustrations; random walks, birth-and-death processes, etc.; stationary processes. Prerequisite: MATH 571, 510 or 530, and one probability course.

The subject matter for this course is variable. Advanced work is considered and organized around topics not usually considered in the other courses.

670 Measure and Integration 3 hrs.
The basic theory of measure and integration, including such topics as Lebesgue measure, abstract measures, measurable functions, product measures, Lp spaces, Radon-Nikodym theorem. Prerequisite: MATH 571.

671 Introduction to Functional Analysis 3 hrs.
Metric spaces; category; compactness; Banach spaces; Hahn-Banach theorem; completely continuous operators; Hilbert spaces, self-adjoint operators; elementary spectral theory. Prerequisite: MATH 670.

673 Real Analysis 3 hrs.
Uniform convergence of sequences and series of functions; Fourier series; functions of several variables; Lebesgue measure; measurable functions; Lebesgue integration on the real line. Prerequisite: MATH 571.

674 Theory of Ordinary Differential Equations 3 hrs.
Systems of equations; existence and uniqueness of solutions; analyticity with respect to parameters and initial conditions; linear differential equations; isolated singularities, asymptotic solutions at infinity; stability. Prerequisites: MATH 530, 574 (576 or 676 recommended).

676 Complex Analysis I 3 hrs.
Topics include: Cauchy Theory, series expansion, power series, types of singularities, calculus of residues.

679 Studies in Analysis 3 hrs.
Advanced study organized around topics related to the field of analysis studied in the title. Students may take this course more than once.

686 Studies in Number Theory 3 hrs.
Advanced work organized around topics related to the field of study indicated in the title. Students may take this course more than once.

690 Seminar in Applied Mathematics 1-3 hrs.

691 Practicum in Statistical Consulting 1 hr.
Provides graduate students with the opportunity to participate as statistical consultants on real projects. The student consultants are involved with all aspects of the statistical consulting experience from data manipulation and analysis to the design of the statistical aspects of the project and from interaction and effective communication with a client to the production of a final written report on the statistical aspects of the project. May be taken for credit at most three times. Prerequisite: MATH 662 (or concurrent enrollment) and at least one of MATH 563, 566, 567, or 568.

692 Seminar in Topology 1-3 hrs.

693 Seminar in Algebra 1-3 hrs.

694 Seminar in Graph Theory 1-3 hrs.

695 Seminar in Mathematics Education 1-4 hrs.

696 Seminar in Probability and Statistics 1-3 hrs.

697 Seminar in Analysis 1-3 hrs.

698 Statistical Consulting Internship 2-6 hrs.
The statistical consulting internship program provides a graduate student with the opportunity to work as a member of the staff in the Center for Statistical Services. The student gains considerable experience in all aspects of the consulting experience and the operation of a consulting center. Prerequisite: Permission of the Director of the Center for Statistical Services.

699 Reading and Research 1-6 hrs.
Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

712 Professional Field Experience 2-12 hrs.

720 Specialist Project 2-6 hrs.

730 Doctoral Dissertation 15 hrs.

735 Graduate Research 2-10 hrs.

Medieval Studies (MDVL)
Otto Gründler, Director

The Medieval Institute of Western Michigan University offers an interdisciplinary program leading to the Master of Arts degree in Medieval Studies. The program provides preparation in medieval and Renaissance history, languages, literatures, philosophy, religion, and the arts. This flexible course of studies presents in one year, opportunities for broad preparation in medieval studies as background for intensive work on the doctoral level. Western Michigan University offers an academic environment appropriate for the study of the Middle Ages. The University is the host institution for the annual International Congress on Medieval Studies, and the Medieval Institute publishes various series of monographs and periodicals in the field of Medieval Studies.

The Teaching Faculty of the Medieval Institute are the following (Members of the Institute are indicated by (MDVL)).

George T. Beech (History)*, Guntram G. Bischoff (Religion)*, Gary Bigelow (Spanish), Joan A. Boucher (Music), Ernst A. Breisach (History)*, Norman E. Carlson (English)*, Nancy Cutbirth (English)*, Audrey Davidson (General Studies)*, Clifford Davidson (English)*, David Ede (Religion)*, E. Rozanne Elder (History)*, Robert W. Felkel (Spanish)*, Stephanie Demetarakopoulos (English)*, Jeffrey B. Gardner (German)*, C.J. Gianakaris (English)*, Elizabeth Giedeman (Latin)*, Otto Gründler (Religion)*, Faule Miller (French), Robert P. Johnson (Art), Johannes A. Kissel (German)*, Peter Krawutschke (German), Charles E. Meyer (Art), George F. Osman (Classics), Robert A. Palmatier (Languages and Linguistics)*, Thomas Seiler (English)*, Kathleen Reish (French, Kalamazoo College), John H. Stroupe (English), Larry E. Syndergaard (English)*, John Wickstrom (History, Kalamazoo College).

Medieval Institute
Open to Upperclass and Graduate Students

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), a political 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 of and with the methodological tools of their respective discipline, 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.

Open to Graduate Students Only

600 Advanced Seminar in Medieval Studies 2-4 hrs.

A research seminar for advanced graduate students with the focus on research and the preparation of papers in highly specialized areas of medieval studies. The specific topic of each seminar will be announced in the Schedule of Classes. May be repeated for credit with a different topic.

610 Introduction to Medieval Studies 3 hrs.

An interdisciplinary course required of all graduate students in the Medieval Institute and designed to provide a broad introduction to medieval culture. In a series of lectures and discussions a limited number of texts will be examined historically and stylistically from the perspective of various disciplines in an effort to describe both the "what" and the "how" of medieval studies.
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>620</td>
<td>Independent Study in Art</td>
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<td>504</td>
<td>Foreign Studies Seminar</td>
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<td>Norse Literature</td>
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<td>Medieval Literature</td>
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<tr>
<td>520</td>
<td>English Renaissance Literature</td>
<td>4 hrs.</td>
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<tr>
<td>598</td>
<td>Readings in Major Writers</td>
<td>4 hrs.</td>
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<td>599</td>
<td>Readings in Art History</td>
<td>4 hrs.</td>
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<td>670</td>
<td>Art History</td>
<td>2-3</td>
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<tr>
<td>680</td>
<td>Medieval History</td>
<td>3 hrs.</td>
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<tr>
<td>560</td>
<td>Studies in French</td>
<td>4 hrs.</td>
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<tr>
<td>582</td>
<td>Western Music before 1600</td>
<td>3 hrs.</td>
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<tr>
<td>590</td>
<td>Readings in Music</td>
<td>1-4</td>
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<tr>
<td>517</td>
<td>Colloquium Musicum</td>
<td>1 hr.</td>
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<tr>
<td>598</td>
<td>Readings in Philosophy</td>
<td>4 hrs.</td>
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<tr>
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<td>Ancient and Medieval Philosophy</td>
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<td>4 hrs.</td>
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<td>4 hrs.</td>
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<td>1-4</td>
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**Philosophy (PHIL)**

Pritchard, Chairperson; Professors Ellin, A. Falk, Associate Professors Sheridan, Dilworth.

There is no graduate program in philosophy at WMU. Graduate students in other areas seeking to add analytical depth and perspective to their major studies through the study of philosophy should consult with the department chairperson, 5005 Friedmann Hall.

**Open to Upperclass and Graduate Students**

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**Physics (PHYS)**

Bernstein, Chairperson; Professors Carley, Hardie, Oglieri, Shamu, Soga. Associate Professor Tanis; Assistant Professors Halderson, McGinn.

**Open to Upperclass and Graduate Students**

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<td>520</td>
<td>Analytical Mechanics</td>
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<tr>
<td>500</td>
<td>Electricity and Magnetism I</td>
<td>3 hrs.</td>
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<tr>
<td>540</td>
<td>Electricity and Magnetism II</td>
<td>3 hrs.</td>
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<tr>
<td>560</td>
<td>Water and Molecular Physics</td>
<td>3 hrs.</td>
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<tr>
<td>562</td>
<td>Atomic and Molecular Physics</td>
<td>3 hrs.</td>
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<tr>
<td>563</td>
<td>Solid State Physics</td>
<td>3 hrs.</td>
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<tr>
<td>564</td>
<td>Nuclear and Particle Physics</td>
<td>3 hrs.</td>
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...
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: Physics 342 and Physics 560 (560 may be elected concurrently with 566).

570 Relativity
3 hrs.
The 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: Physics 520 (may be taken concurrently).

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.

Open to Graduate Students Only

610 Research Seminar
1 hr.
This is a required course for the first-year graduate students and will be offered every winter semester. The course consists of faculty research talks and student talks (one by each student) on papers chosen by the students and approved by the faculty members. Students taking the course are required to attend the weekly research lecture. The course will be graded on a Credit/No Credit basis.

622 Quantum Mechanics I
3 hrs.
This course is designed to provide a foundation of fundamental techniques of calculation for more advanced work in the physics and chemistry of atoms, molecules, nuclei, and solids. An attempt will be made to provide an understanding of the principles of the subject through the Schrodinger-Heisenberg equations as well as through the formal operator theory of Dirac. The simple and representative systems of the simple harmonic oscillator and the one-electron atom will be discussed. The course will be confined almost solely to the non-relativistic approximation. This course and 662 are offered in alternate years.

623 Quantum Mechanics II
3 hrs.
This course is a continuation of 622. It employs state-vector formulation to study several problems of general interest, such as time-dependent perturbation theory, systems of identical particles, and introduc-tory relativistic quantum mechanics. Prerequisite: PHYS 622.

624 Statistical Mechanics
3 hrs.
Statistical methods, employing ensemble theory, are used to study the equilibrium properties of systems having many degrees of freedom. Classical and quantum theories are developed and applied to selected problems of interest in physics and chemistry. The relationships between microscopic models and macroscopic properties are emphasized. This course and 630 are offered in alternate years.

630 Classical Mechanics
3 hrs.
Lagrange's equations are developed early in the course and are used in the analysis of both point-mass and rigid-body problems. The modifications of classical mechanics required by the theory of relativity are reviewed. The Hamilton equations of motion and Hamilton-Jacob theory are introduced, and some of the analogies between classical and quantum mechanics are discussed. This course and 624 are offered in alternate years.

660 Nuclear Physics
3 hrs.
This course emphasizes low-energy nuclear physics and covers the following areas: basic properties of nuclei, the two body problem, scattering, electromagnetic decay of nuclear levels, and nuclear models.

662 Electricity and Magnetism
3 hrs.
This course deals with the static electromagnetic field and its interaction with matter. The applications of boundary value problems are emphasized. This course and 622 are offered in alternate years.

664 Solid State Physics
3 hrs.
In this course the following topics are treated: superconductivity, the dielectric properties of solids, ferroelectricity, diamagnetism, paramagnetism, fer-romagnetism, antiferromagnetism, magnetic resonance, optical phenomena in insulators, and point defects and dislocations in solids. Prerequisite: PHYS 563.

Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

700 Master's Thesis
6 hrs.

710 Independent Research
2-6 hrs.

Political Science (PSCI)

Piano, Chairperson; Professors Bernhard, Clark, Dahlberg, Isaac, Kaufman, Kim, Klein, McNamor, Olton, Phillips, Ritchie, Rossi, Ziring; Associate Professors Chandler, Dicle, Hannah, Kobrak, Lewis, Renstrom, Rogers, Assistant Professors Houghton, Thompson

American Political System
Open to Upperclass and Graduate Students

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.

506 Problems of American Government
3-4 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.

516 Political Campaigning
4 hrs.
How are elections won? The 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 used to try to influence voters.

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.

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.

525 The Politics of Criminal Justice
3 hrs.
An examination of the relationship between the political system and the process of criminal justice with particular emphasis on the exercise of political discretion in the creation and application of judicially established guidelines.

526 Administrative Law and Public Regulation
3 hrs.
A study of the requirements for, and the limitations on, the exercise of administrative powers by public officials charged with regulating significant aspects of the social and economic life of the nation. Special attention is paid to governmental regulation and the means of safeguarding individual rights through fair administrative procedures and judicial control over administrative determination. Prerequisites: PSCI 200 or a course in Economics.

530 Problems in Public Administration
3-4 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.

531 Administration in Local and Regional Governments
3 hrs.
The administrative organization, structure, procedures, and forms of local units of government are analyzed.

532 The Bureaucracy
3 hrs.
The analysis of the role of public bureaucracies in the decision processes of government.

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.
534 Administrative Theory 3 hrs.
A study of descriptive theories of organizational and administrative behavior relevant to government administrative agencies. Theories of complex formal organizations, decisional theories, and systems theories will be analyzed.

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.

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.

Open to Graduate Students Only

600 Seminar: National Politics 3 hrs.
Research and study in selected topics in national politics. Topics will vary from semester to semester and students may repeat the course.

601 Seminar: State Politics 3 hrs.
Research and study of selected topics in state politics. Topics will vary from semester to semester and students may repeat the course.

602 Seminar: Urban Politics 3 hrs.
Examination of the literature on American urban politics and application of this literature to the development or refinement of some theories of community political behavior. The city will be used as a laboratory for the advancement of theoretical and empirical knowledge of politics. May be repeated.

610 American Political Institutions 3 hrs.
A systematic treatment of the characteristics of the coordinate branches of American government, interest group and media influences, and the processes by which public policy is formulated and carried out.

622 Seminar: The Judiciary 3 hrs.
Study and research of major topics of interest in the judicial process, judicial decision-making, judicial behavior, the judiciary as policy-maker, judicial systems, and public law. Topics will vary from semester to semester and students may repeat the course.

626 Administrative Law and Governmental Rules 3 hrs.
Examines the process by which local, state, and national laws are administered and enforced by public agencies. Special attention is focused on the development, adoption, and enforcement of administrative rules. Prerequisite: PSCI 200 or consent.

630 Seminar: Public Administration 1-3 hrs.
Study in selected topics in public administration. Subject matter will vary, and the course may be repeated. The number of hours for which the course is offered in any given semester will be listed in the schedule of classes.

631 The Foundations of Public Administration 3 hrs.
This course is designed to introduce and review major developments in the field of public administration, to acquaint the student with the constitutional and legal basis of administration in public agencies, and to review the ethical and legal significance of accountability in the public service.

633 The Political Environment of Public Administration 3 hrs.
This course examines the interaction between the administrative agency and the social, economic, and political forces which constitute its external environment. Emphasizes the sources of bureaucratic power, the nature of administrative and political elites, and the strategies which agencies pursue in seeking to survive and expand their programs. Examines the impact of the political system on administrative decision-making and agency responsiveness.

634 Seminar: Professional Issues in Public Administration 1 hr.
This seminar examines topics of interest to professionals in the field of public administration. May be repeated. Total not to exceed three hours. Graded on a Credit/No Credit basis.

635 Professional Seminar in Agency Administration 3 hrs.
This professional seminar concludes the MPA candidate's program of study and provides an opportunity to focus all previous professional experience and academic preparation on the analysis and solution of a major problem confronting an agency of government. The candidate's report culminating this study should be of educational value to the student, of practical benefit to the agency studied, and of academic quality acceptable to the faculty.

636 Planning and Budgeting in Developing Countries 3 hrs.
This seminar will focus study and research on several issues central to the planning and budgeting process in developing countries. To be explored are such questions as: How does the budgetary process work in developing countries? Why do annual budgets often prove inaccurate as a guide to the actual allocation of resources in developing countries? How can the planning and budgeting processes in developing countries be reformed?

Foreign and Comparative Political Systems

Open to Upperclass and Graduate Students

541 Comparative Political Systems 3 hrs.
A study of the principal types of political systems. The course examines comparative and theoretically governmental institutions, political processes, political behavior, and political development.

542 Administration in Developing Countries 3 hrs.
A consideration of the role 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 to the nature of, and obstacles to, administrative modernization.

549 Problems of Foreign Political Systems 3-4 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.

Open to Graduate Students Only

640 Seminar: Foreign Political Systems 3 hrs.
Study and research on major topics dealing with the political systems of selected countries. Independent research and seminar presentations for each student are stressed. The country to be studied may be located in Europe, Asia, Africa, or Latin America, and will be announced each semester. May be repeated.

644 Seminar: Political Modernization 3 hrs.
Focusing on the developing areas and using an interdisciplinary approach, the process of political modernization is examined in selected countries or typically on a cross-national basis. The topic to be studied will be announced each semester. Each student will conduct independent research. May be repeated.

645 National Political Systems and International Politics 3 hrs.
The course explores the interrelationships between national and international politics. Efforts are made to describe and explain variances and discontinuities between national policy and a country's international posture. Subjects to be explored focus on political culture, mechanisms for addressing popular demands, political movements, ideological/philosophical conflict and external commitment.

646 Seminar in Development Administration 3 hrs.
The seminar is devoted to research related to administration in developing areas. Topics may range from general subjects dealing with various aspects of bureaucracy in one or more countries to narrow problems at the level of a ministry or sub-ministry. The research experience and final papers will be shared with the other students in the seminar.

International Relations

Open to Upperclass and Graduate Students

552 Studies in International Relations 3 hrs.
Examines selected topics within the field of international relations. Topics will vary and will be announced each semester. Course may be repeated.
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, nationalism vs. internationalism, conflict resolution and UN peace-keeping efforts, specific UN accomplishments in maintaining a dynamic international equilibrium; UN weaknesses and the future of world organization.

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.

557 Studies in Foreign Policy 3-4 hrs.
Examines selected topics within the field of foreign policy. Topics will vary and will be announced each semester. Course may be repeated.

Open to Graduate Students Only

560 Seminar: International Relations 3 hrs.
Study and research on a common topic of current international political, organizational, or legal significance. Individual papers and reports will be presented. May be repeated.

Political Theory and Methodology

Open to Upperclass and Graduate Students

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 Ostrogorski. Second, an analysis of the attempts of contemporary economists, political scientists, and sociologists to meet these criticisms by revising democratic theory.

563 Theories of Revolution 4 hrs.
Examines significant classical and contemporary theories of revolution with reference to both their analytical and normative implications.

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.

569 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.

591 Statistics for Political Scientists 3 hrs.
An introduction to statistical reasoning with particular reference to research on political institutions and processes. This course will emphasize bivariate statistics, but will include a brief introduction to multivariate analysis. No mathematical prerequisite is required.

Open to Graduate Students Only

660 Seminar: Political Thought 3 hrs.
An analysis of problems and subject matter considered by political philosophers that are significant to the social sciences. Various issues arising in political thought, certain periods in history, or regions of the world may be considered. Subject will vary, and the course may be repeated.

661 Principles of Politics 3 hrs.
A systematic introduction to the concepts which are crucial to an understanding of the political institutions and processes. The course is directed to the needs of the beginning graduate student.

Special Studies

572 Computer Utilization 1-4 hrs.
A non-technical introduction to the computer. Emphasis is placed on the actual use of the computer by the student. The use of readily available data banks and library programs will allow the student to focus on the processing and manipulation of data. Computer programming and statistics are not taught and are not prerequisites.

590 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. Prerequisite: Approval of Department Chairperson and instructor.

Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

700 Master's Thesis 6 hrs.
710 Independent Research 2-6 hrs.
712 Professional Field Experience 2-12 hrs.

Psychology (PSY)

Lyon, Chairperson. Research Professor Ulrich; Professors Asher, Farns, Gault, Huitema, Kent, Koronakos, R. W. Malott, Michael, Mountjoy, Robertson, Snapper; Associate Professors Alesi, Breihower, Fuqua, Nangle, Assistant Professors Fulton, M. K. Malott, Peterson, Petty, Poling.

Open to Upperclass and Graduate Students

505 Teaching Psychology in the Secondary School 3 hrs.
Class preparation and materials designed for teaching of Psychology in high school. This is a required methods course for students who plan to teach Psychology in the secondary school. Prerequisite: PSY 361.

510 Advanced General Psychology 3 hrs.
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 as a cognate course in Psychology. Prerequisite: one prior course in psychology.

512 Behavioral Pharmacology and Toxicology 3 hrs.
Topics range from the use of drugs to clarify behavioral principles to the use of behavioral preparations to discern pharmacological principles' effects. Readings include summaries of pharmacological evidences and selected experimental reports concerning both the behavioral techniques and pharmacological problems in basic research. Prerequisite: 12 hours of Psychology, permission of Instructor, or enrollment in SPADA program.

513 Research in Animal Behavior 3 hrs.
A review of the research literature in several areas of animal behavior. Particular emphasis will be placed on species—typical behaviors and their ecological significance, and forms of learning which are not easily explained by simple operant and respondent models.

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. Lecture and laboratory.

517 Psychology of Learning for Teachers 3 hrs.
Designed to teach the principles of behavior and the application of these principles to teaching. Topic areas covered 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.

518 Research in Stimulus Control 3 hrs.
An examination of the literature surveyed 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 infra-human organisms. Prerequisite: Twelve hours of Psychology or permission of Instructor.

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 effectiveness of such plans. Graduate standing in psychology, education, or permission of instructor. Prerequisite: PSY 517 or concurrent enrollment.
523 Advanced Abnormal Psychology
3 hrs.
A comparative study of pathological behavior patterns in terms of the theoretical interpretation of the cause of these behaviors and the recommended treatment techniques. Designed for students in disciplines other than Psychology.

524 Human Sexuality
3 hrs.
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.

525 Behavior Analysis and Women
3 hrs.
This seminar considers the methods of inquiry and analysis representative of the common contemporary approaches to the study of sex differences. The class and written assignments emphasize a behavior analysis of the issues which feminists address as distinct from promoting feminism and consciousness raising.

526 Human Drug Use and Abuse
3 hrs.
This course will provide a general overview of basic pharmacological principles, discuss the behavioral physiological mechanisms of action of several classes of medicinal and recreational drugs, and survey 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, nonhuman research findings will be emphasized where appropriate.

528 Generalization, Discrimination, and Concept Formation in Humans
3 hrs.
Basic theoretical interpretations, methodological issues and data analysis in the stimulus control of behavior will be reviewed and analyzed with an emphasis on the potential and actual applications to human behavior.

530 Statistics for Education
3 hrs.
An introduction to basic statistical procedures and concepts. 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.

535 Instrumentation in Psychology
3 hrs.
A survey of problems in response measurement in experimentation. Lecture and laboratory. May be repeated for credit.

540 Industrial Psychology
3 hrs.
Application of psychological principles to industry and other organizations. An examination of employee selection, job satisfaction, training, evaluation of performance, supervision, and working conditions.

542 Human Factors in Engineering
3 hrs.
A survey of research on the adaptation of equipment, products, and environment to human capacities. Prerequisite: Permission of instructor. (Cross-listed with IEGM 542.)

560 Behavioral Medicine
3 hrs.
Application of behavioral technology to medical patients with emphasis on inpatient treatment. Sample topics include biofeedback, pain control, compliance with medical regimen, and issues in working in a medical setting.

562 Management of Health Related Behaviors
3 hrs.
A behavior analysis approach to the management of behaviors directly and indirectly impacting health. Emphasis will be placed on outpatient, public health applications and preventive approaches to health maintenance.

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.

572 Applied Behavior Analysis: A Systems Approach
3 hrs.
The application of systems analysis concepts to the design of systems which yield behavioral measures of complex social situations.

574 Experimental Social Psychology
3 hrs.
Methodology of research with groups, with emphasis upon design and application. Prerequisite: Permission of the instructor.

595 History of Psychology
3 hrs.
The historical and philosophical foundations of contemporary psychology are examined. Emphasis is placed upon theoretical and applied aspects of the evolution of the modern science. The origins and development of current behavioral approaches constitutes a major focus.

597 Topical Studies in Psychology
1-4 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 hours may be limited by the degree program, students should consult the program advisor. Courses may include the following:

599 Practicum in Psychology
1-4 hrs.
In-depth training in the application of the principles of psychology to a specific and restricted problem area in the discipline. The course practicum application is often identified by the location of the research site or professional service agency published in the Schedule of Classes. It may be repeated for credit, although number of credits may be limited by program requirements. Written permission must be obtained on forms available in departmental office.

Behavior Modification in the Public Schools Practicum KVMC
Practicum Lakeside
Practicum Mental Retardation
Practicum in Child Care
Applied Educational Psychology Practicum SMI

Open to Graduate Students Only

601 An Introduction to Issues in Behavioral Assessment
1 hr.
This course is designed to provide information on the legal and ethical issues in assessment which serve as a framework for the evaluation of testing procedures. An overview of norm-referenced assessment instruments, traditional personality tests, and criterion-references tests, as well as supervised practice in direct observational assessment are included. This course is scheduled for the first five weeks of the semester in which it is offered.

602 An Introduction to the Theoretical Analysis of Behavior
1 hr.
This course considers the extension of basic behavioral concepts and relations to thinking, private stimulus control, self-awareness, perception, and other related topics often considered least amenable to behavioral analysis. It presents a radical behavioral position on these and other theoretical issues, and considers the various objections to the point of view. This course is scheduled for the second five weeks of the semester in which it is offered.

603 An Introduction to Professional Issues in Applied Behavior Analysis
1 hr.
This course considers an examination of recent literature with respect to the areas of legal regulation of behavior modification, professional standards of practice, the conduct of human research, and an analysis of ethical behavior. This course is scheduled for the final five weeks of the semester in which it is offered.

608 Current Research in Applied Behavior Analysis
3 hrs.
A detailed examination of research methodology and strategies, emphasizing the areas of measurement, reliability, and single organism research design. In addition, several areas of current research interest, as exemplified by the Journal of Applied Behavior Analysis, will be studied. Prerequisites: Previous course work in applied behavior analysis and previous or concurrent enrollment in PSY 530, 634, or equivalent.

609 Advanced Seminar in Applied Behavior Analysis Research
3 hrs.
An advanced course emphasizing a) the continued examination of current research topics, and b) the development of professional research skills (planning and preparation, grantmanship, dissemination, self-maintenance). Prerequisites: Previous enrollment in PSY 608 and permission of instructor.
610 Experimental Analysis of Behavior
3 hrs.
A survey of the major facts, concepts, principles, and methodology of respondent and operant research. The emphasis will be on lower animal research especially as described in the Journal of the Experimental Analysis of Behavior.

611 Current Research in Experimental Analysis
3 hrs.
A detailed study of the immediately preceding year's principal research in the analysis of behavior. The emphasis will be on lower animal research, especially as described in the Journal of the Experimental Analysis of Behavior.

612 Advanced Physiological Psychology
3 hrs.
A survey of the interrelationships of physiological and behavioral processes. Lecture and laboratory. Prerequisite: Permission of the instructor.

614 Motivation and Emotion
3 hrs.
An introduction to the experimental analysis of psychological and physiological aspects of motives, incentives, and emotions, with an emphasis upon aversive control procedures. Prerequisite: Permission of instructor.

617 Experimental Psychology of Learning
3 hrs.
An intensive study of selected topics with special emphasis upon the techniques employed in the experimental analysis of behavior in the human and infra human organisms.

618 Experimental Psychology of Perception
3 hrs.
An examination of the current facts and theories of sensation and perception.

620 Analysis of Abnormal Behavior
3 hrs.
An advanced study of the analysis of abnormal behavior, with consideration of the experimental foundations of the course and interpretation and treatment of various deviant behaviors. Restricted to graduate students in Psychology.

624 Personality Theory
3 hrs.
Consideration and evaluation of the major theories of personality with emphasis on those theories having implications for counseling and therapy. An examination of experimental evidence and illustrative case studies.

634 Advanced Statistics
3 hrs.
Topics include statistical decision theory, one factor analysis of variance, multiple comparison procedures, factorial designs, randomized block designs, fixed, random, and mixed models, and basic issues in experimental design. Prerequisite: PSY 530 or equivalent.

635 Correlation and Regression Analysis
3 hrs.
An advanced course covering simple and complex correlation and regression, analysis of covariance, and related topics. Prerequisite: PSY 634 or equivalent.

636 Experimental Design
3 hrs.
A study of true and quasi experimental designs, single organism vs. group designs, and artifacts and interpretation. Statistical and nonstatistical designs. Prerequisite: PSY 634 or equivalent.

637 Advanced Data Analysis
3 hrs.
Advanced procedures for the analysis of single subject and group experimental designs including several variants of time series and analysis of covariance.

643 Personnel Selection and Placement
3 hrs.
A critical study of assessment techniques such as testing, weighted application blanks, and interviewing. Included is consideration of administrative procedures and the methods of measuring the functional adequacy of assessment methods.

644 Personnel Training and Development
3 hrs.
The course emphasizes the principles of behavior as well as techniques and administrative procedures used in the development of human resources at all levels.

645 Psychology of Work
3 hrs.
Emphasis is placed upon an investigation of worker attitudes, morale, motivation, supervisory styles, and social interaction as determiners of employees' productivity and job satisfaction with particular attention paid to the "problem employee."

650 Professional and Ethical Issues
3 hrs.
A seminar devoted to topics of current as well as historical professional concern regarding professional application and research ethics. The American Psychological Association publications on professional ethics and the use of human subjects in research will be included in the required reading.

652 Systems Analysis
3 hrs.
An advanced course stressing integration of behavioral analysis and systems analysis applied to the design, creation, and management of human services settings. Students will do analyses of human services settings in which they are involved and implement their systems designs in those settings. Concurrent involvement in human services setting or enrollment in service systems laboratory. Prerequisite: PSY 572.

654 Mental Health Systems
3 hrs.
Comparative approaches to psychological problems: This course concerns the various ways in which psychological problems are treated and the organizations involved in the treatment.

655 Seminar in School Psychology
3 hrs.
A seminar devoted to current professional practices in School Psychology. Focus is on studying various model systems for delivery of special services in the schools, as well as the various legal, ethical, and practical constraints on operation of such systems. Techniques of system analyses and synthesis are covered as well as consultation methods employed to implement or facilitate operation of new school programs.

660 Introduction to Clinical and Community Psychology
3 hrs.
A survey of the fields of Clinical and Community Psychology with emphasis upon the new roles of Clinical Psychologists and Community Psychologists. Recommended for beginning graduate students.

661 Behavior Change: Individual
3 hrs.
Therapeutic problem-solving interventions applied on an individual client basis. Prerequisite: Permission of Instructor.

662 Behavior Change: Groups
3 hrs.
The practice of the behavioral and experiential techniques of behavior change applied on a group basis.

663 Behavior Change: Marital Therapy Methods
3 hrs.
Practice in the techniques of behavior change interventions applied to problems of couples. Prerequisite: Permission of Instructor.

666 Behavior Change: Family Therapy Methods
3 hrs.
Supervised experience in applying therapeutic interventions. The course consists of a co-therapy model of applying behavioral and experimental interventions to a simulated family group.

667 Cognitive—Behavioral Therapy
3 hrs.
A course designed to familiarize the clinical student with the theory and techniques of a cognitive-behavioral approach to therapy with major emphasis on rational-emotive therapy as applied to individual and group settings. Prerequisite: PSY 661 and permission of Instructor.

668 Behavioral Assessment and Consultation
3 hrs.
The course is intended to develop proficiencies in the assessment of behavior problems, using self-report measures, behavioral interviewing, direct observation techniques, and physical recording. Reliability and validity issues with respect to each assessment tool are covered. Behavioral consultation, an efficient alternative to one-to-one counseling in which therapist contact is primarily with the mediator rather than the client, is introduced. Students complete a lab project, using assessment and consultation techniques learned in the course. Prerequisite: PSY 661, nine hours graduate credit in psychology, or permission of instructor.

674 Verbal Behavior
3 hrs.
The experimental analysis of language and verbal behavior, with an emphasis upon the analysis of language as presented in the writings of Skinner.

675 Verbal Behavior Applications
3 hrs.
The application of the principles and concepts of behavioral analysis to the areas of deafness and sign language, first and second language learning, reading, and related problems. B. F. Skinner's analysis of verbal behavior is contrasted with other treatments of these problem areas. Prerequisite: PSY 674 or equivalent.

676 Skinner's Recent Writings
3 hrs.
A consideration of About Behaviorism and Beyond Freedom and Dignity, especially as they consider issues of broad scientific, philosophic, and social significance. A much earlier work, Warden Two, is studied for historical and contrastive perspective. Prerequisite: nine hours of graduate credit in Psychology or permission of Instructor.
678 Behavioral Analysis and Cognitive Psychology
3 hrs.
The first third of the course will consider behavioral approaches to the kinds of issues that are the focus of cognitive psychology, complex human learning, memory, thinking, problem solving, imagery, language, and the self. The remainder will survey and analyze the approach to these issues taken by various types of cognitive psychologists: developments from the field of verbal learning, information theory, psychological linguistics, ethology, Piaget, and the cognitive behavioralists. Prerequisite: nine hours of graduate credit in Psychology or permission of instructor.

679 Radical Behaviorism and Behavior Modification
3 hrs.
This course is intended to provide training in the theoretical analysis of various psychological events which include both behavioral and mental references. The course includes an in-depth analysis of the theoretical basis of the philosophers' position identified as "radical behaviorism" as constructed with other theoretical positions in Psychology. Prerequisite: nine graduate hours in Psychology.

681 Personality Measures
(Non-Projective)
3 hrs.
Survey of theory of personality assessment and the basic concepts of non-projective measurement, with emphasis on the administration scoring and interpretation of various instruments for personality evaluation. The course includes, but is not limited to, the supervised practice in the administration of the MMPI, clinical analysis questionnaire, and observational rating scales. Prerequisite: PSY 601 or equivalent and graduate program status.

682 Norm Reference Testing: Interpretation
2 hrs.
A lecture course with an emphasis on basis psychometric concepts, related to the theory and interpretation of test results and psychological assessment reports. The selection of remedial educational programs related to these test results, as well as the recent issues and controversies in the testing controversy are discussed. The course emphasizes the selection of standardized test batteries and assessment techniques, including but not limited to Stanford-Binet Intelligence Scale (1972), McCarthy Scales of Children's Abilities (1972), Peabody Picture Vocabulary Test, Bayley Scales of Infant Development, ITOP, Columbia Mental Maturity Scale, WPPSI, WISC-R, and WAIS. Prerequisite: PSY 601 and graduate standing in school or clinical psychology or permission of instructor. Not open to students completing PSY 683.

684 Personality Assessment: Projective
3 hrs.
An intensified study of and supervised practice in the administration, scoring, and interpretation of the Rorschach, revised Bender Gestalt, TAT, and other projective tests. The course emphasizes the selection and interpretation of an integrated projective tests battery for clinical evaluations. Prerequisite: PSY 601, 681, and degree program status.

686 Criterion Referenced Assessment
3 hrs.
A combined lecture and laboratory course covering theory and basic concepts related to criterion or domain referenced behavioral assessment. Supervised experience in administering, scoring, and interpreting selected formal and informal criterion referenced assessment systems, as well as developing personalized intervention plans with the collected data. Focus is on academic and social behavior, including but not limited to: reading, language, mathematics writing, spelling, fine and gross motor, social and self help skills. Formal systems include: SRA Diagnostic Aids; reading and math; Pupil Record of Educational Behavior, Bessie (basic educational skills inventory) Criterion Test of Basic Skills, Assessment of children's language competency, Basic Concept Inventory, Key Math, and Woodcock Reading Mastery Test. Prerequisites: Graduate standing in school psychology, education, or permission of instructor. PSY 519.

690 College Teaching Seminar
3 hrs.
Discussion and design of college instructional technology, especially recent developments and research. Topics considered are decision-making, source materials, behavioral objectives, course design and programming, testing and evaluation, remediation, and grading practices.

691 College Teaching Practicum
3 hrs.
Supervised practice in the instruction of Psychology at the undergraduate level. The student will be responsible for the design, execution, and evaluation of a college course section involving undergraduate students.

696 Systematic Psychology
3 hrs.
An intensive study of current theories in psychology with emphasis on the philosophy of science and the logic of system building.

697 Advanced Topical Studies in Psychology
2-4 hrs.
An in-depth examination, discussion, and survey of selected relevant and/or professional topics. Permission of instructor. 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: Applied Multivariate Analysis, Advanced Industrial Psychology, Behavior Analysis of Parenting.

699 Advanced Practicum in Psychology
1-4 hrs.
In depth training in the application of the principles of psychology to a specific and restricted professional and/or research problem area in the discipline. The intent of the practicum is to provide the opportunity to work at the solution of a particular applied or basic research problem, rather than gaining general experience at a professional service or research site. The content of the practicum activity is often identified by the title of the site listed in the published schedule. May be repeated for credit, although number of credits may be limited by program requirements. Written permission must be obtained on forms available in departmental office.

Behavior Analysis in the Public Schools
Alternative Methods of Education
School Adjustment Problems
Corrective Reading and Language
Psychological Services Clinic
Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

700 Master’s Thesis
6 hrs.

710 Independent Research
2-6 hrs.

712 Professional Field Experience
2-12 hrs.

720 Specialist Project
2-6 hrs.

725 Doctoral Research Seminar
2-6 hrs.

730 Doctoral Dissertation
15 hrs.

735 Graduate Research
2-10 hrs.

Public Administration (PADM)

671 The Public Good
3 hrs.
This course will introduce students to the problems associated with defining the public good and the public interest, the historical and philosophical contexts of moral reasoning, the ambiguities of the value side of the policymaker's life, and how to think constructively about moral dilemmas; how the administrator uses discretionery power; how personal moral codes determine assumptions about professional ethics and standards.

672 Historical and Comparative Analysis of Public Policy
3 hrs.
This course will deal historically and comparatively with the substance of administrative practices and policy assumptions and applications.

673 Quantitative Public Policy Analysis
3 hrs.
This course will examine the principal quantitative methods of public policy analysis. The focus of the course will be on the use of quantitative analytic techniques or tools employed to study policy issues. A majority
of the analytic tools and techniques con-
considered will be data- and problem-oriented.

674 Human Behavior in Public Organizations 3 hrs.
This course is designed to aid in developing a basic understanding of human behavior within organizations and the implications this behavior has for organizational effec-
tiveness. It also discusses the means available to a manager for improving perfor-
mance within organizations. Topics include personality and motivation theories, group 
formation and dynamics, leadership, human factors engineering, performance appraisal, and organizational development.

675 Advanced Administrative Theory 3 hrs.
Students will assess current normative and descriptive theories of Public Administration, 
the variety of conceptual systems, operationalism and levels of organizational 
analysis, including the history of organization theory, the theory of bureaucracy, tax-
one theories, non-bureaucratic organizations, organization as a social issue, and tommor-
row's organizational theory.

676 Cases in Public Policy Implementation 3 hrs.
This course will utilize a case study ap-
proach to public management problems. Students will be asked to weigh such factors as the following on a case-by-case basis: economic costs and benefits, political 
stakes, organizational processes, interpersonal relationships, legal requirements, ethical obligations, and technological con-
straints.

677 The Public Administrator 3 hrs.
This course will examine the following fac-
tors: expectation versus reality in the ad-
ministrative world; the nature of ad-
ministrative work, asserting authority, 
building commitment and motivation; building lateral relationships; gaining power; working the hierarchy; designing valid con-
trols; initiating change; the skills of the pro-
ject manager; the psychological matrix of leadership.

678 Program Evaluation 3 hrs.
Pressure to reduce the nature, size and scope of government has heightened in-
terest in evaluating the impact of govern-
mental activities. This course will focus on 
how to measure the effectiveness of agency 
programs.

681 Designing Policy and Policy Systems 3 hrs.
The focus of this course is three-fold. First, it provides the administrator a conceptual understanding of the policy analysis process and illustrates how quantitative models fit in-
to that process. Building upon this base, the 
second part of this course focuses on the 
bureaucratic and political impediments to implementing policy analysis. Finally, it con-
siders how administrators manage research 
and analysis at various stages of the policy-
making process.

682 Administrative Decision Making 3 hrs.
This course will examine the organization as a system of linked sub-systems and analyze 
the elements of decision making as influenc-
est by these linkages. The impact of bureau-
pathologies on communication and control patterns will be related to managerial 
processes. Attention will be devoted to the 
effect of a systemic decision framework 
on individual decisions and decision 
makers.

691 Statistics for Public Administrators 3 hrs.
This course is designed to assist public ad-
ministrators in understanding various 
statistical procedures which could be used 
to comprehend and interpret data sets 
related to public policy analysis. Topics 
covered in the course include: a review of 
basic statistics in the context of policy 
analysis; sampling theory and application, 
regression analysis: time series analysis, 
and case studies used in analyzing policy 
data. Throughout the course, examples will 
be used from policy analysis and evaluation 
literature to illustrate the utility of the 
statistical procedures presented.

693 Action Research Project 3 hrs.
This course will be taken twice. Each time it 
will follow a methodological sequence of 
other courses that discussed various 
research techniques used in the analysis 
and evaluation of public policy. Various pro-
jects will be undertaken by students on a 
team basis. These projects will allow for 
the specific application of the tools of analysis 
previously examined in the quantitative 
survey courses. Repeatable for credit.

698 Studies in Selected Public Policy Areas 3 hrs.
The students in this tutorial course will 
review the specialized literature in the 
substantive or functional area of particular 
interest to them. After surveying the 
literature generally, the student will write a 
paper that in a number of cases will become 
the literature review chapter in his or her 
dissertation.

725 Doctoral Research Seminar 3 hrs.
This course will include conceptual and 
model analysis, hypothesis testing, research 
literature, theory construction, and individual 
research papers. Those papers may become 
the research design chapters for the students' dissertations. Graded on a Credit/No Credit basis.

730 Doctoral Dissertation 15 hrs.
The dissertation will be policy-oriented 
and done with methodological care. It will be the student’s bridge back to the agency for 
which he or she works or to the agency for 
which he or she would like to work. A practi-
tioner’s labor, the dissertation will provide 
analysis at a sophisticated level of a management problem confronting the 
people of Michigan and how an ad-
ministrative agency could recommend and 
implement alternative solutions. Graded on a Credit/No Credit basis.

Religion (REL)

Lawson, Chairperson, Professors Bischoff, Earhart, N. Falk, Gründler, Loew, Siebert, Associate Professors Ede, Kaufman.

Open to Underclass and Graduate Students 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: Zen Bud-
dhism, Buddhism, Taoism, Shinto, New 
Religions of Japan, Religion in Japanese 
Literature, Islam in the Modern World, Chris-
tian Theology to 1500, Renaissance and 
Reformation Theology.

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: Millennium, 
Utopia, and Revolution, Femininity as a 
Religious Form, Great Islamic Thinkers: the 
Hindu Yoga, the Occult Tradition.

520 Methodological 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.

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 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, organiza-
tion, selection, and use of materials will be 
discussed. Required of all students following a 
Secondary Education Curriculum which in-
cludes the academic study of religions as a 
minor.

530 Constructive 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: Religious Im-
ages of Man, Christian Humanism, the 
Structure of Religion.

594 Readings in Religion 1-4 hrs.
Research on some selected period or topic 
to under supervision of a member of the 
Religion faculty. Approval of instructor in-
volved and Chairperson of the department 
must be secured in advance of registration.

Open to Graduate Students Only 621 Introduction to the Academic Study of Religions 2 hrs.
This course is designed for those students who have not previously completed a major, minor, or teaching minor sequence at 
Western Michigan University. The course is 
tended to give the student a broad overview 
of the actual wealth of religious 
phenomena and attempts that have been 
made to arrange the data according to a 
certain order. Among the problems to be
### Science Division (SCI)

**Open to Upperclass and Graduate Students**

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<th>Course Code</th>
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<td>360</td>
<td>&quot;How do I best teach the academic study of religions in our (Michigan) public high schools?&quot;</td>
<td>2</td>
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<tr>
<td>361</td>
<td>Topics in Science</td>
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<td>362</td>
<td>Environmental Science Seminar</td>
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<td>710</td>
<td>Independent Research</td>
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**Science Division (SCI)**

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<td>Independent Research</td>
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**Social Science Division (SSCI)**

**Open to Upperclass and Graduate Students**

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Sociology (SOC)

Chaplin, Chairperson; Professors Bouma, Braithwaite, Brewer, Cothran, Friday, Hunt, Lewis, Robin, Wagenfeld, Walker; Associate Professors Markle, Page-Robin, Peterson, Smith, Sonnad, VanValley, Wait, Wiemer; Assistant Professor Kramer.

Open to Upperclass and Graduate Students

500 History of Social Thought
3 hrs.
A critical survey of the social thinking of outstanding students of society from Plato to modern social scientists. Prerequisite: Nine hours of sociology

501 Social Systems Theory and Analysis
3 hrs.
An investigation and critique of social systems theory, general systems analysis, and specific systems analysis techniques which have been used in social organizations. Each student will be required to conduct a systems analysis during the course. Prerequisite: SOC 320 or 600, or consent of instructor.

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 instructor.

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.

521 Childhood Socialization
3 hrs.
An investigation of the development of individual knowledge and abilities during childhood as acquired through social interaction and biological maturation. Social theories of learning and child development will be covered; with emphasis on such topics as biological maturation and social learning, language acquisition, the development of self, and the acquisition and systematic organization of beliefs, attitudes, norms, and values. Prerequisite: SOC 320 or consent of instructor.

522 Adult Socialization
3 hrs.
An examination of the processes of social learning and personality development from adolescence through middle age. The course will focus on the selection and performance of adult roles, continuities and discontinuities in role learning across the life span and adaptation to social events as these affect the development and change of adult personalities. Prerequisite: SOC 320 or 521 or consent of instructor.

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 600, or equivalent.

525 Social Psychology of Education
3 hrs.
An intensive examination of the roles and the interaction of students, teachers, and administrators within the school setting. Particular attention will be given to the importance of peers, family, and social structure. Prerequisite: SOC 320 or equivalent.

526 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 research within a selected area. Prerequisite: SOC 382 or equivalent.

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 or 600.

532 Introduction to Comparative Sociology
3 hrs.
An introduction to the history, major theoretical perspectives, and methodological issues associated with cross-national and cross-cultural studies. Particular emphasis will be placed upon those studies which have been central to the development of the comparative approach in sociology. Prerequisite: Consent of instructor.

533 Comparative Institutional Studies
3 hrs.
A comparative study of the structure and functioning of selected aspects of culture in America and other selected countries. The legal structure, family and educational systems, the welfare structure, stratification, economic institutions, political organization, the role of science, and the basic character of social change. Prerequisite: SOC 200 or 600, or equivalent.

535 Changing Social Systems: Sub-Saharan Africa
3 hrs.
A study of the erosion of traditional tribal systems and the rise of secondary associations and social systems resulting from the impact of European culture and other contemporary world influences. Prerequisite: SOC 200 or equivalent, or consent of instructor.

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.

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 aging, the meaning of work and retirement, and the status and roles of the aged. Prerequisite: Six hours of sociology including SOC 200 or 600, or consent of instructor.

553 Urban Sociology
3 hrs.
An introduction to sociological theory and research on the city including ecological theory, social psychology, institutional analysis, structure and processes like metropolization, suburbanization, and planning. Cities in developed and developing societies will be compared and contrasted and specific attention will be given the industrial biases of current urban theories.

556 Social Stratification
3 hrs.
An analysis of the nature, causes, and consequences 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 600, or consent of instructor.

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 or 600.

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 reviewed. 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.

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.

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 600, or consent of instructor.
An analysis of the bases, distribution, and uses of power in societies and in local communities. Marxist, elitist, and pluralist theories will be considered along with empirical studies of power. A major goal will be understanding the use of power by various groups in facilitating or controlling social change. Prerequisite: SOC 200 or equivalent.

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 equivalent.

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 equivalent.

The study of the social role of religious institutions and beliefs with particular reference to the United States. The course considers social factors affecting development of different types of religious institutions and the influence of religion on American society. Prerequisite: SOC 200 or equivalent.

The theological study of industrial organizations and of the process of industrialization. The impact of technology and related factors on labor, the structure and operation of labor unions, and the changes occurring in industrial society are discussed. Prerequisite: SOC 200 or equivalent.

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 the control of society, and schooling and stratification, as well as impediments to change, power and authority structures and the schools, the teaching profession, and student status. Prerequisite: Six hours of sociology or consent of instructor.

Advanced studies of education focusing on the impact of culture and school organization on learning in the educational setting. Topics include cultural forces such as ethnicity, religion, socio-economic status and bureaucratic structure, classroom organization, team teaching and the open classroom, segregation, and school type. Prerequisite: Six hours of sociology or consent of instructor.

An examination of legal organization, the legal profession, and legal norms in the United States 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.

An introduction to statistical reasoning and application with particular reference to social science. The course will view statistics as an aspect of scientific inquiry and consider problems of analysis and interpretation of typical social science data. Not for sociology majors.

This course is designed to provide grounding in basic univariate and bivariate descriptive and inferential statistics for social scientists. Prerequisite: SOC 200 or equivalent.

The family viewed in historical and cross-cultural perspectives. A structural-functional analysis of the family system. Emphasis is placed on change and comparative analysis. Prerequisite: SOC 200 or equivalent.

Provides the student with a working knowledge of the methods and materials appropriate in the school, the church, and other social settings for working with individuals and small groups who desire preparation for marriage and parenthood. Some attention will be given to techniques for handling counseling opportunities arising out of these teaching situations. Prerequisite: SOC 200 or equivalent, or consent of instructor.

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 instructor.

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. Maximum of four hours may be applied toward master's degree. 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.

Open to graduate students only.

An introductory course in sociology for graduate students. This course is not open to those who have had a foundation course in sociology. The concepts of sociology, cultural anthropology, and social psychology essential to understanding human development and social behavior are systematically explored and integrated.

A comprehensive survey of trends in the major fields of sociology. Prerequisite: Open only to graduate students in sociology.

An intensive and critical study of major sociological theories developed in the 19th and early 20th centuries. The course will examine the logical structure of classical theories, patterns of influence among theorists, and the central issues raised in their works. Theories will be examined with respect to both historical context and their influence on contemporary sociology.

An intensive and critical study of contemporary perspectives and theories in sociology. Theories which exemplify functionalist, conflict, and interpretive approaches will be examined. The course will examine the logical structure of contemporary theories and the relevance of contemporary perspectives and theories to major substantive areas in sociology.

A study of the various social and behavioral theories regarding the causation of alcohol and drug addiction. The findings of research will be examined as they tend to support or disconfirm these social and behavioral theories.
618 Seminar in Substance Abuse I
3 hrs.
An interdisciplinary seminar designed to reflect broadly conceived intervention strategies ranging from primary prevention to rehabilitation of the addict. The basic training in the principles of intervention and clinical practice will continue to be taught within the student's basic professional discipline. In part, the seminar will be used to elaborate upon the applications of these principles to the problems of substance abuse. This course is cross-listed with Biology, Counseling-Personnel, Psychology, and Social Work. Graded on a Credit/No Credit basis.

619 Seminar in Substance Abuse II
3 hrs.
Continuation of SOC 618. This course is cross-listed with Biology, Counseling-Personnel, Psychology, and Social Work. Graded on a Credit/No Credit basis.

622 Publics and Propaganda
3 hrs.
A systematic analysis of the nature, composition, and etiology of publics and related phenomena such as masses and interest groups, and exploration of propaganda techniques and research. Prerequisite: Consent of instructor.

625 Social Psychological Theory
3 hrs.
A study of major theoretical approaches in social psychology and their methodological and substantive implications. Prerequisite: SOC 520 or equivalent.

626 Advanced Social Psychology
3 hrs.
Advanced exploration of contemporary social psychology, with selected examples of theory and research to represent current work in socialization, small groups, and cognitive social psychology. Prerequisite: SOC 625.

628 Seminar in Social Psychology: Variable Topics
3 hrs.
An advanced seminar in some specialized aspect of social psychology. May be repeated for credit with a different topic. Prerequisite: SOC 625.

630 Comparative Methods
3 hrs.
Sociological analysis of selected societies around the world with particular emphasis on theoretical and methodological problems: aggregate data analysis, development of social indicators, and an appraisal of macrosociological theories. Prerequisite: SOC 581 and 604.

632 Studies in Comparative Sociology: Variable Topics
3 hrs.
Intensive analysis of selected topics using a comparative frame of reference. The seminar will focus on such topics as major theoretical perspectives, methodological issues, and interpretation of studies of such institutions as: educational systems, industrial systems, and family systems. May be repeated for credit with a different topic. Prerequisite: SOC 532 or equivalent, and consent of instructor.

640 Social Organization of the Health System
3 hrs.
An examination of traditional and emerging ways in which health care is organized. A major concern will be the politics of health and the role of various interest groups (professional associations, unions, consumer groups) in the formation of health policy. Among the topics to be considered are the development of American medicine, the relationships of organizational structure to effectiveness in health organizations, the social control of health care organizations, and the growth of medical bureaucracy. Prerequisite or co-requisite: SOC 540.

641 Social Psychology of Health and Illness
3 hrs.
An examination of the impact of disease or disability on the individual. Individual responses to disease and disability are examined in relation to cultural, social psychological and personality variables. Environmental stress and personality factors are considered as they relate to the onset of disease. Consideration is given to the relevance of social factors for health services planning and communication of health care professionals with patients and clients. Prerequisite or co-requisite: SOC 540.

642 Social Epidemiology
3 hrs.
An examination of the relationships between sociocultural and demographic variables and variations in the distribution of infectious and chronic diseases, mental disorders and substance abuse. Sources of epidemiological data and methods of research are studied and evaluated. Applications to the planning of health services and the development of service systems are presented.

643 Seminar in Medical Sociology
3 hrs.
An advanced seminar in some specialized aspect of medical sociology. May be repeated for credit with a different topic. Prerequisite: Permission of instructor.

660 Seminar on Theories of Crime
3 hrs.
This course will deal with the most current theoretical developments in criminology, evaluating research related to the verification of theories and analysis of the objectives of theory, the requirements of theory, and the testing of theory. Prerequisite: SOC 566.

661 Seminar on Current Issues in Criminology
3 hrs.
This course will deal with the current debates and controversies in criminology, radical versus traditional perspectives, economic and white-collar crime as areas of research, the ethics of criminological research, environmental design and crime, and other timely and relevant issues emerging from current literature and conference debates.

662 Comparative Corrections
3 hrs.
Review and analysis of the philosophies of corrections in different societies, the implementation of penal measures and innovative and alternative strategies of social control in eastern and western Europe, Asia, and the United States.

663 Comparative Criminology
3 hrs.
An analysis in depth of crime as this phenomenon is viewed in Sweden, Germany, Poland, and other eastern and western European countries. Emphasis is placed on theoretical and etiological approaches in different societies, and the applicability and tests of theories in these societies. Prerequisite: SOC 566.

673 Formal Organization
3 hrs.
This course analyzes the nature of large-scale, formal organizations, concentrating on their structure, types of organizational goals, processes of control, authority and leadership, and the relationship of organizations to their social environment. Examples of organizations will be selected from different areas such as education, government, medicine, science, leisure, and industry. Prerequisite: SOC 200 or 600, or consent of instructor.

678 The School and the Community
3 hrs.
Analysis of the school as a social institution in the American community, including consideration of interaction between the school and other basic social institutions, and the sociological significance of community structures, processes and problems for school-community relationships. Prerequisite: SOC 200 or 600, or equivalent.

677 Studies in the Sociology of Education: Variable Topics
3 hrs.
Deals with selected sociological aspects of education, such as sociological theory and education, social class and education, social control and education, socialization in the school system, and sociological problems in the education of exceptional children. May be repeated for credit with a different topic. Prerequisite: SOC 576 or equivalent, and consent of instructor.

680 Studies in Research Methodology: Variable Topics
3 hrs.
A seminar on advanced theoretical and methodological problems which are important to systematic research in sociology. Suggested specialized topics include: philosophy of the social sciences, relationship between theory and research, and model building and testing. May be repeated for credit with a different topic. Prerequisite: Consent of instructor.

681 Advanced Multivariate Analysis I
3 hrs.
A study of the assumptions, logic, and application of current multivariate techniques of analysis such as regression analysis, path analysis, factor analysis, and canonical correlation. Prerequisite: SOC 682.

682 Logic and Analysis of Social Research II
3 hrs.
This course covers basic multivariate descriptive and inferential statistics for social scientists. Prerequisite: SOC 581.

683 Research Design and Data Collection I
3 hrs.
This course is designed to provide experience with the formulation of research problems, the choice of data gathering techniques and the development of research proposals. Students will use data from the sociological research by collecting documentary, observational, sample survey and experimental data. Advantages and disadvantages of the different data collection techniques will be assessed. Prerequisite: SOC 581 or consent of instructor.
684 Research Design and Data Collection II
3 hrs.
This course focuses on problems and issues in the design of research and the collection of sociological data. Emphasis will be placed on the critical evaluation of current research designs and the development of research design skills. Topics will include the internal and external validity of research designs, measurement and scaling, the uses of qualitative and historical data, and philosophical and ethical issues raised by various research designs and procedures. Prerequisite: SOC 683.

685 Advanced Multivariate Analysis II: Variable Topics
3 hrs.
The study of advanced statistical techniques which are important to systematic research in sociology. Suggested specialized topics include factor analysis, advanced non-parametric techniques, path coefficient analysis, and regression analysis. May be repeated for credit with a different topic. Prerequisite: SOC 681 or equivalent.

687 Evaluation Research I
3 hrs.
The basic purpose of this course is to familiarize students with the various research techniques for evaluating action agencies through a survey of the literature, study of evaluation models, and study of techniques and procedures used in evaluation. Prerequisite: SOC 682.

688 Practicum in Social Research
3 hrs.
A research seminar structured to provide practical experience in various phases of research related to the student's major area of interest. Under faculty supervision, students will act as consultants to projects initiated by other agencies in the community or carry out their own supervised projects. May be repeated in different areas of concentration with permission of student's doctoral committee. Prerequisite: SOC 682.

689 Evaluation Research II
3 hrs.
The purpose of this course is to provide an opportunity to conduct an actual evaluation study based on the techniques and procedures covered in SOC 687. The course will include discussion of each student's evaluation findings. Prerequisite: SOC 687.

690 Seminar in Marriage and the Family
3 hrs.
Advanced study of the interactional or institutional aspects of marriage and the family. Emphasis upon one or two of the following areas during the semester: the social psychology of the family, the family and social structure, comparative family systems, current family research, family problems, social change and the family, or pertinent issues within the sociology of the family. Can be repeated without duplication of material. Class size limited to fifteen students. Prerequisite: SOC 680 or equivalent.

692 Family Analysis
2 hrs.
An introduction to major theoretical frameworks by which family behavior can be studied and analyzed. It is intended to familiarize students with selected approaches to understanding and studying family behavior and organization, and to introduce research based upon these major frameworks. Prerequisite: SOC 200 or 600, or equivalent.

695 College Teaching Practicum in Sociology
3 hrs.
A practicum in the teaching of sociology in college. Students will attend assigned lectures and seminars, prepare a syllabus for a course in sociology, and deliver at least two supervised lectures to a sociology class. Prerequisite: Fifteen hours of graduate sociology courses and consent of instructor. Graded on a Credit-No Credit basis.

696 Supervised College Teaching in Sociology
1 hr.
Teaching of a section of a sociology course under supervision. Prerequisite: SOC 695 and approval by department chairperson.

697 Advanced Multivariate Analysis II: Variable Topics
3 hrs.

698 Practicum in Social Research
3 hrs.

699 Evaluation Research II
3 hrs.

700 Master's Thesis
6 hrs.

710 Independent Research
2-6 hrs.

712 Professional Field Experience
2-12 hrs.

725 Doctoral Research Seminar
2-6 hrs.

730 Doctoral Dissertation
15 hrs.

735 Graduate Research
2-10 hrs.
Accountancy (ACTY)

Weike, Chairperson; Professors Burke, Neubig, Newell, Wetnight; Associate Professors Dykhoom, Laudeman, Morris, Schaeberle, Sheppard, Sinning; Assistant Professors Hines and Hodges.

Open to Upperclass and Graduate Students

513 Accounting Information Systems
3 hrs.
A study of concepts, organizations, technology and controls of an accounting information system. Includes a study of specific applications (payroll, accounts receivable, etc.), with particular emphasis on data input, processing, and output utilizing the computer. Prerequisite: BEAS 102, ACTY 310, and ACTY 322, or their equivalent.

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: ACTY 211 or consent of instructor.

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.

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.

522 Cost Accounting—Concepts and Practice
3 hrs.
The development and application of cost accounting principles to organizations. The course includes: the application of costs to operations and to products; the preparation and analysis of detailed cost information; and the methods and procedures for solving complex cost problems encountered in industry. Prerequisite: ACTY 322 or equivalent.

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.

598 Readings in Accounting
1-4 hrs.
Directed individual study of topics not otherwise treated in departmental courses. Prerequisite: Written consent of instructor.

Open to Graduate Students Only (Not open to students with FTC status)

606 Advanced Financial Accounting
3 hrs.
An intensive study of asset valuation, liabilities, corporate capital, and the determination of income. Prerequisite: ACTY 211 or equivalent.

607 Accounting Control and Analysis
3 hrs.
A study of management systems and techniques used for profit planning and control of a business firm. Organizational relationships and implications are examined in the development of operations controls, management controls, and strategic planning. This course is in the graduate business core, and is closed to students with credit in Cost Accounting 322 or its equivalent. Prerequisite: ACTY 211 or equivalent.

608 Advanced Accounting
3 hrs.
A study of advanced accounting problems distinctive to corporate and partnership types of business organizations. Prerequisite: ACTY 606 or equivalent.

610 Seminar in Financial Accounting Theory
3 hrs.
Intensive examination and study of the underlying postulates, concepts, and principles of accounting. Course may be repeated under different topics. Prerequisite: ACTY 608 or consent of instructor.

617 Seminar in Advanced Auditing and Systems Concepts
3 hrs.
An advanced course which integrates auditing and systems concepts. Intensive examination of audit tools, audit theory and practice, management of the accounting information systems, and EDP applications. Prerequisites: ACTY 607, ACTY 513, ACTY 516 or consent of instructor.

622 Seminar in Management Accounting Concepts
3 hrs.
A study of advanced methods of cost measurement and control. Includes standard cost, budgetary control, profit-volume analysis, direct cost, return on employed capital, and quantitative methods. Prerequisite: ACTY 522 or equivalent.

624 Seminar in Business Tax Planning
3 hrs.
An advanced course in business taxation involving the identification and analysis of tax problems. Income tax strategy is studied involving the timing of income, types of business organizations, and the various
alternative tax treatments. Tax problems of corporate acquisitions, reorganizations, liquidations, estates and trusts, partnerships, and capital gains will also be included. Case studies will be used and research in taxation will be emphasized. Prerequisite: ACTY 324 or equivalent.

Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

700 Master’s Thesis 6 hrs.

710 Independent Research 2-6 hrs.

712 Professional Field Experience 2-12 hrs.

Business Education and Administrative Services (BEAS)

Niemi, Chairperson; Professors Jones and Sanders; Associate Professors Bowman, Branchaw, DeYoung. Assistant Professors Halvas, Malcon, Nazir, Plansee, Rossi, Shull, Swenson, Vander Lugt.

Open to Upperclass and Graduate Students

542 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 and give one oral report. Open to students with junior standing and above. Prerequisite: BEAS 242.

554 Topics in Business Communication 3 hrs.

An intensive study of a topic in business communication such as communication systems, business media, business publicity, and others. The topic will be announced in advance. May be repeated for credit.

555 Topics in Data Processing 3 hrs.

Special topics appropriate to business applications such as programming documentation and efficiency, planning, organizing and directing management information systems. Course may be repeated. Prerequisite: Permission of instructor.

556 Office Management 3 hrs.

Areas of office administration from the manager’s viewpoint. Particular emphasis is placed on developing, managing, and controlling office systems. The topic will be announced in advance. May be repeated for credit.

557 Topics in Administrative Services 3 hrs.

Includes an intensive study of a selected topic in Administrative Services such as consumer relations, communication audits, office systems, work measurement and simplification, forms control and design, and others. The topic will be announced in advance. May be repeated for credit.

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. Prerequisite: BEAS 102.

561 Advanced COBOL 3 hrs.

Continuation of BED 261, including advanced treatment of sequential access, plus index sequential and random access, report writer, COBOL report generator, documentation, efficiency, and data-base management systems. Prerequisite: BEAS 261.

583 Coordination Techniques in Office Education 3 hrs.

A study of the role and responsibilities of the office education coordinator in the educational system. Surveys the organization of the office education program, the course content of the related class, supervision of on-the-job trainees, the establishment of working relationships among the school, business, and home; examines pertinent research.

584 Improvement of Instruction in Secretarial Subjects 3 hrs.

A study of the latest research findings, materials, teaching procedures, tests and measurements, and developments in secretarial subjects.

585 Principles of Skill Instruction 3 hrs.

After studying the principles of skill learning, each student will have an opportunity to develop a complete teaching-learning system for a typingwriting or a shorthand program.

586 Improvement of Instruction in Typewriting 3 hrs.

A study of the latest research findings, materials, teaching procedures, tests and measurements, and developments in typewriting.

588 Improvement of Instruction in Accounting/Computing Programs 3 hrs.

A study of the latest research findings, materials, teaching procedures, tests and measurements, and developments in the accounting/computing programs.

599 Organization and Teaching of Office Practice 3 hrs.

A consideration of aims and content of office-practice course with plans and techniques for organizing and teaching the subject matter of the course and its laboratory material.

590 Vocational Block Programs 3 hrs.

Examines purposes and philosophy of vocational block programs, considers instructional development, classroom management, and program evaluation. Required for vocational office endorsement. Senior standing only.

591 Improvement of Instruction in Basic Business/Economic Education 3 hrs.

A study of the latest research findings, materials, teaching procedures, tests and measurements, and developments in basic business, consumer, and economic education.

596 Independent Study 1-4 hrs.

A directed independent project in an area of business education or administrative services. Prerequisite: Consent of department head.

598 Readings 1-4 hrs.

A series of direct readings in the area of business education or administrative services. Prerequisite: Consent of department head.

Open to Graduate Students Only

600 Seminar in Business Education and Administrative Services 3-4 hrs.

Intensive problem solving in areas of business education or administrative services. May be repeated for credit.

602 Computer Usage and Information Processing 3 hrs.

An introduction to computer assisted problem solving through programming in the BASIC language. Each student is required to write and test several programs. Also a survey of applications of information processing and some of the economic and social implications.

680 Principles of Business Education 3 hrs.


682 Guidance in Business Vocations 3 hrs.

The challenges of business education in a changing world of work. Problems and objectives of business education to meet vocational choices of students in today’s automated, free enterprise, democratic society. Particular emphasis is given to the career education and counseling of the business student.

683 Supervision and Administration of Business Education 3 hrs.

Principles and problems involved in the administration and supervision of business education programs. Emphasis is placed on the work of the department head, city, and state business education supervisors.

684 Tests and Measurements in Business Education 3 hrs.

A study of evaluation techniques in business education, including the selection and use of published tests, and the interpretation of the results of testing through statistical procedures.

685 Research in Business Education 3 hrs.

An examination and analysis of research in business education with emphasis on utilization of these findings in the upgrading of instruction. Research tools and methodology are also examined.

690 Methods and Materials in Business Education 3 hrs.

A consideration of the latest research methods, materials, equipment, curriculum development; objectives, and standards in the teaching of specific business subjects. May be repeated for credit.
General Business (BUS)

Finance Area

Professors Burdick, Edwards, Issa, Associate Professor Howard, Assistant Professors Jones, Planisek, Weber.

Open to Upperclass and Graduate Students

519 Security Analysis
3 hrs.
An analysis of stocks and bonds. Prerequisite: BUS 326 or equivalent.

520 Portfolio Analysis and Management
3 hrs.
In-depth approach to the development and administration of security portfolios. Emphasizes the investment strategies followed by individuals and by portfolio managers in financial institutions. Latest portfolio strategies and techniques are studied and evaluated. Prerequisite: BUS 320 or equivalent.

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: BUS 320 or equivalent or consent of instructor.

522 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. Prerequisite: BUS 330 or consent.

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: BUS 322.

527 Risk Management and Insurance
3 hrs.
Insurance and self insurance. The management of risk for a company. Prerequisite: BUS 321 or consent of instructor.

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: BUS 323.

598 Readings in General Business—Finance
1-4 hrs.
Directed individual study of bodies of knowledge not otherwise treated in departmental courses. Prerequisite: Written consent of instructor.

Open to Graduate Students Only

608 Financial Management
3 hrs.
Study of the principles and problems underlying the management of capital in the business firm. Stresses the financial officer's responsibilities. Skills developed in the marshalling and interpreting of figure data, such activities as making and implementing capital expenditure policies, solving short-term and long-term financing problems, establishing dividend policies, effecting mergers and consolidations, and adapting to trends in financial markets. Techniques used include case analysis and problem solving. Demonstrates financial management's role in the total management effort. Prerequisite: BUS 320 or equivalent.

610 Financial Aspects of Higher Education
2-4 hrs.
A survey of the financial considerations in the administration of institutions of higher education. The topics covered include the management of short-term investments, the management of endowment funds, budgeting for operations and for capital projects, and the development and implementation of group insurance and pension programs. Prerequisite: Advisor's consent.

620 The Capital Market
3 hrs.
Study of the sources and flow of demand and supply of credit. The business application of monetary theory to financial institutions and their operational problems. Prerequisite: BUS 325 or equivalent.

621 Investment Analysis and Management
3 hrs.
A detailed analysis of the investment of corporate securities as long-term investment media, largely from the standpoint of the individual investor. Investigates the techniques for security valuation and portfolio management, with some discussion of financial institution investment procedures. Considers mechanics, markets, institutions, and instruments important to the investment process. Not open to students with credit earned in BUS 326 or its equivalent. Prerequisite: BUS 320 or equivalent.

622 Mergers and Acquisitions
3 hrs.
A detailed investigation and analysis of the financial aspects of corporate business combinations. The course analyzes valuation considerations in large and closely-held companies and examines the structuring of the financial package to be offered as well as the accounting and tax implications of various corporate combinations. Prerequisite: BUS 320.

624 Applied Financial Management
3 hrs.
An analytical approach to problems facing the financial executive. Cases selected cover short-term and long-term financial decision-making processes with particular emphasis on statement analysis and working capital management. Other problems will emphasize capital investment decision, valuation and cost of capital, risk analysis, capital structure, and dividend policies. Prerequisite: BUS 608.

626 Insurance and Government
3 hrs.
The course covers the historical development, legal background, and methods of governmental supervision of the insurance industry. Principal emphasis will be placed upon state supervision of insurance, but the role of the federal government in present and future regulation is also considered. Prerequisite: Consent of instructor.

691 Seminar in Finance
3 hrs.
The analysis of specialized financial problem areas (e.g., financial futures markets, financial forecasting, commodities, and similar contemporary problems). Topics will vary from semester to semester. Prerequisite: BUS 608 and consent of instructor.

Law Area

Morrison, Chairperson. Professors Batch and Gossman, Assistant Professor Stevenson.

Open to Upperclass and Graduate Students

532 Real Estate Law
3 hrs.
The study of land ownership, sales agreements, including the legal duties of the real estate broker, mortgages, land contracts, leases, zoning, condemnation and urban land development problems. Prerequisite: BUS 340.

532 International Business Law
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: BUS 340.

554 Government Regulation of Business
3 hrs.
Examine the laws, rules and regulations on the federal, state and local level which affect most business enterprises. Substantive laws affecting the firm's obligations to employees, stockholders and the general public are examined as are procedural laws affecting the regulation of the firm by public institutions. Prerequisite: BUS 340.

556 Marketing and Sales Law
3 hrs.
The course examines the law as it applies to the sale of goods, warranties affecting such sales and methods of financing those sales. Legal obligations imposed upon and risks assumed by the seller are emphasized. Prerequisite: BUS 340.

560 Seminar in Criminal Law and Procedure
3 hrs.
The 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 462 or PSCI 525 or BUS 340 or consent of instructor.

598 Readings in General Business—Law 1-4 hrs.
Directed individual study of bodies of knowledge in business administration which will enhance the student's areas of interest and competence. Prerequisite: Written permission of instructor.

Open to Graduate Students Only

607 Legal Controls of the Business Enterprise 3 hrs.
Review the legal problems encountered by executive in various business enterprises. Legal controls affecting the marketing, management, finance and accounting functions are studied. Various facets of antitrust law, labor law, corporation law, and securities law are examined. Prerequisite: BUS 340.

609 Law and the Administration of Higher Educational Institutions 1-4 hrs.
A survey of statutes, case decisions, and developing legal principles affecting the administration of higher educational institutions. Teachers, counselors, staff, and administrative personnel will become acquainted with some of the legal rules and procedures with which today's colleges and universities must deal. Prerequisite: Advisor's Consent.

Open to Graduate Students Only

650 Managerial Aspects of Labor Law 3 hrs.
Background and consequences for business policy of law governing collective relationships between employers, employees, and their representatives with special emphasis on interpretation and evaluation of current legislation. Prerequisite: BUS 340.

General Area

Open to Upperclass and Graduate Students

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 first-hand knowledge of business operations abroad through on-site inspection of foreign manufacturing, marketing, financial, and governmental organization, supplemented by coordinated faculty lectures and assigned readings. Prerequisite: MGMT 200 or permission of instructor.

Open to Graduate Students Only

600 Seminar in Business 3 hrs.
Intensive problem-solving in the primary business fields. Consent of instructor required. May be repeated for credit.

Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

700 Master's Thesis 6 hrs.
710 Independent Research 2-6 hrs.
712 Professional Field Experience 2-12 hrs.

Management (MGMT)

510 Multinational Management 3 hrs.
An examination of management strategy, controls, environmental influences of the multinational corporation with consideration of geographic factors. The management function abroad will be examined in light of the cultural assumptions underlying U.S. management and will deal with the necessary modification for effective operations in a cross-cultural environment.

512 Women in Management: Male, Female and Organizational Perspectives 3 hrs.
A seminar dealing with the changing roles of women in business. Emphasis is given to the unique needs of women aspiring to managerial and professional ranks. Changes in attitudes and behaviors of women, men and organizations and the implications of change for traditional male-female relationships and organizational operations are explored.

514 Entrepreneurship 3 hrs.
A senior or graduate elective for students interested in entrepreneurial careers. Primary attention given to managing a new or rapidly growing business. Alternative sources of capital are examined. Various growth strategies considered along with personal requirements for entrepreneurial success. Prerequisite: MGMT 300, BUS 300, BUS 320, MKTG 370 or department consent.

520 Planning for the Future 3 hrs.
An exploration of alternative ways of predicting future events, selecting long-range goals, and systems-planning for achievement. A variety of forecasting and planning methodologies will be examined. Skill will be gained in the more common and well-developed methods through class exercises. Graduate students will be expected to develop an independent application in an area of interest.

540 Advanced Statistics 3 hrs.
A second course in statistics complete enough to be used with limited background. Includes probability theory, t, F, and binomial probability distributions, hypothesis testing with sampling theory, and Type I, Type II errors, point and interval estimates, statistical inference, comparison tests (two-sample and K-sample), association tests (correlations and regression), and non-parametric tests. Prerequisite: MGMT 200.

550 Behavior Analysis Applications 3 hrs.
Applications of behavior analysis and the principles of behaviorism to management problems in public and private organizations. Emphasis is placed on maintenance of performance reliability, effectiveness and efficiency. Students will apply principles to the improvement of an existing organization.

561 Introduction to Management Science 3 hrs.
A systematic study and application of the scientific method to management decision-making. Introduction to techniques of linear programming, inventory theory, scheduling theory, and other optimizing decision models. For students who will take more specialized courses as well as those in other disciplines desiring a limited exposure to the field. Prerequisite: MGMT 200.

563 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 purposeful organizations. Prerequisites: MGMT 200 and 300 or equivalents.

564 Simulation 3 hrs.
A systematic study and application of the methodology of system simulation including system identification and description, model development, computer implementation, experimental design and validation. Special attention is given to model classification, especially deterministic vs. probabilistic and discrete vs. continuous, and how it relates to computer implementation and fields of application. Prerequisites: Management 102 or 602 and Management 200 or permission of instructor.

565 Inventory Management 3 hrs.
The practical application of modern management techniques in the definition and solving of problems in inventory systems. Prerequisites: MGMT 200 and 561.

598 Readings in Management 1-4 hrs.
Directed individual study of bodies of knowledge not otherwise treated in departmental courses. Prerequisite: Permission of instructor.

Open to Graduate Students Only

600 Seminar in Management (Topic) 3 hrs.
Intensive problem-solving in advanced management topics, including the preparation of a major staff report. Repeatable for different topics.

604 Management Analysis and Practice 3 hrs.
A survey of the use of management theories and behavioral science knowledge to analyze human problems in management and to assist in designing and operating organizations more effectively. The course treats planning, organizing, directing and controlling, as well as motivation, leadership,
individual and group behavior, decision making and change strategies. Values, as they relate to the managerial process, will be considered.

630 Systems Design and Evaluation 3 hrs.
A survey of systems analysis and the various techniques to select among alternative courses of action when components of the problem cannot be measured accurately and precisely. Students will complete a project examining an existing system. Advanced standing (15 hrs.) recommended.

641 Data Acquisition, Reduction, and Interpretation 3 hrs.
The uses and methods of research are examined as a strategy for reducing risk and uncertainty. Strategies will be evaluated under the criteria of minimizing error, economizing effort, and effectively achieving the project objectives. Data classification, collection, recording, and transformation techniques are related to the use of information for making judgments and decisions.

642 Statistical Interpretation 3 hrs.
A survey of the advanced statistical techniques as applied to business problems. Includes probability theory, estimation of proportion, means and variances; test of hypothesis, simple and multiple regressions. Also includes topics selected from the following fields: sequential analysis, non-parametric methods: elements of experimental design; analysis of variance and introduction to statistical decision theory. Prerequisite: MGMT 451.

651 Analysis of Administrative Behavior 3 hrs.
Analysis of the contributions of management theory and of the behavioral sciences to modern administrative practices. Group and individual behavior as related to and affected by the administrative process. Lectures, cases, conferences. Not open to students having received credit for MGMT 451.

653 Behavioral Science Application for Managerial Effectiveness 3 hrs.
Models, methods, and applied technology relevant to the control of human performance in complex organizations. Emphasis on achieving human outputs such as productivity, satisfaction, learning, retention, decisions, problem solutions. Applied technologies could include selection, placement, job, and organizational analysis and evaluation.

655 Organization Theory 3 hrs.
Theories, models, and applications relevant to the structure of complex organizations and their subunits. Emphasis on alternative designs, their causes and consequences.

695 Advanced Management Practices 3 hrs.
Independent study of current trends and advanced problems in the organization and management of complex organizations. Prerequisite: Permission of instructor. May be repeated for credit.

699 Policy Formulation and Administration 3 hrs.
This course focuses on the job of the general manager in formulating short and long run strategy. Using cases drawn from actual situations, the course develops ways of (1) perceiving specific opportunities from an analysis of evolving environmental trends, (2) understanding company strengths and (3) integrating strengths and opportunities in setting strategy and detailed operating plans. This is an integrative capstone course in that the tools and skills learned in other core courses are needed to develop practical, company-wide general management decisions. Prerequisites: Completion of MBA core courses.

Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

700 Master's Thesis 6 hrs.

710 Independent Research 2-6 hrs.

712 Professional Field Experience 2-12 hrs.

Marketing (MKTG)
Trader: Chairperson; Professor Otteson. Associate Professors Brogowicz, Cannon, Crow, Delene, Lindquist, Long, Lurman, Powell; Assistant Professors Belonax, Quaraesi.

Open to Upperclass and Graduate Students

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. Prerequisites: Permission of instructor and senior level.

571 Services and Non-Profit Marketing 3 hrs.
An analysis of problems and issues relating to the marketing of services and the use of marketing in non-profit organizations. Emphasis in these two different areas will be given to application of marketing concepts, methods, policies, and strategies; special emphasis on environmental interactions. Prerequisites: MKTG 370 or permission of instructor.

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 474.

574 Marketing Logistics 3 hrs.
An analysis 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. Prerequisites: MKTG 370 and MGMT 200.

575 International Marketing 3 hrs.
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 needed to locate and evaluate foreign markets. Prerequisite: MKTG 370 or permission of instructor.

576 Marketing Strategy 3 hrs.
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.

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 374.

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.

598 Readings in Marketing 1-3 hrs.
Directed individual study of bodies of knowledge not otherwise treated in departmental offerings. Prerequisite: Consent of instructor.

Open to Graduate Students Only

607 Marketing Management 3 hrs.
Analysis of marketing activities from management point of view. Includes study of decision-making relative to competition, demand analysis, cost analysis, product analysis, product design, promotion, pricing, and channels of distribution. Prerequisite: MKTG 370.

671 Quantitative Analysis for Marketing Decisions 3 hrs.
Applications of quantitative methods of marketing management utilizing analytical tools in the areas of product, price, distribution, promotion decisions, and other marketing-related problems. Required for all MBA marketing majors, although waived for those having MKTG 371 or 471 or the equivalent.

673 Product and Pricing Strategies 3 hrs.
In-depth consideration of product life cycle including addition, modification, deletion analysis, special attention to demand analysis, cost considerations, competitive actions, and governmental regulations.

674 Promotional Strategy 3 hrs.
A decision-making course taught using the case method; includes exposure to communications, demand analysis, promotional objectives, budget determination, personal selling, resource management, reseller support, and promotional campaigns.

675 Analysis of Distribution Systems 3 hrs.
Organization, structure, and behavior channels of distribution; focus on various distribution systems through which goods are marketed; cases and problems utilized.
677 Buyer Behavior
3 hrs.
A decision-making course, taught using the case method, includes analysis of variables affecting buyer behavior. Course focuses on the consumer decision process and such influence on the process as culture, social status, economic condition, personality, the family, and mass communications.

678 Seminar in Marketing
3 hrs.
Intensive problem solving in the primary business fields. Prerequisite: Consent of instructor.

679 Market Programming
3 hrs.
Designed for special emphasis toward developing a total marketing strategy within an organization. Practical application of the marketing tools and techniques to a current problem originating in a business organization. Prerequisite: Consent of instructor.

Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

700 Master's Thesis
6 hrs.

710 Independent Research
2-6 hrs.

712 Professional Field Experience
2-12 hrs.
Graduate Offerings:
Counseling and Personnel Education and Professional Development Educational Leadership Health, Physical Education, and Recreation Special Education

Counseling and Personnel (C-P)
Griffeth, Chairperson; Professors Betz, Carlson, Gesler, Hopkins, Mazer, Oswald, Trembley, Urbick; Associate Professors Belson, Bullmer, Lamper, Assistant Professor Stern.

Open to Upperclass and Graduate Students

580 Principles and Philosophy of Guidance
2 hrs.
An introductory course which presents a thorough investigation of the philosophical concepts underlying guidance service programs; a survey of the history and principles of guidance; and overview of guidance services. Open to all students, but is not intended for counseling majors.

581 Interpretation and Use of Tests of Guidance
2 hrs.
Designed to familiarize students with various psychological tests and scales that may be used in school guidance programs. Tests are taken and scored by students, and the results are interpreted and evaluated. Open to all students, but is not intended for counseling majors.

582 The Information Service in Guidance
2 hrs.
Designed to introduce teachers and agency personnel workers into the world of work. Areas of occupational, educational, personal, and social information are studied. Vocational development theories are investigated and their application to processes of guidance and counseling are discussed. Open to all students, but is not intended for counseling majors.

583 Guidance Workshop
1-4 hrs.
Designed for teachers and counselors who wish to study particular guidance problems and procedures in relation to their local guidance program. Open to all students, but is not intended for counseling majors.

598 Readings in Counseling and Personnel
3 hrs.
Advanced students with good academic record may elect to pursue independently the study of some special interest topic. The topic chosen must be approved by the instructor involved, and arrangements made with instructor’s consent. May be selected more than once.

Open to Counseling and Personnel Graduate Students Only (Graduate students from other programs may enroll by special permission.)

601 Research in Counseling and Personnel
3 hrs.
The application of selected research design and techniques as they relate to current theory and practice specifically germane to the field of counseling and personnel. Students will formulate and submit a research proposal in their specialty area of counseling and personnel.

602 Group Procedures
3 hrs.
The study of group dynamics, i.e., the nature of groups and the laws affecting group development and process. An analysis of the various group procedures and the process associated with these procedures.

603 Tests and Measurement
3 hrs.
Designed to develop skills in analyzing, scoring, administering, and interpreting standardized tests. Students will examine selected aptitude, achievement, intelligence, personality and vocational instruments, as well as analyze their use in their area of specialization.

604 Counseling Techniques
3 hrs.
An introductory laboratory study of the concepts and skills required in interviewing and counseling.

605 Professional Issues and Ethics
3 hrs.
Identification and discussion of issues in counseling and related psychological services. A study of ethical standards of relevant professional organizations, including the American Psychological Association and the American Personnel and Guidance Association. A presentation of case studies applicable to an understanding of issues and ethics in the field.

606 Basic Personality Processes
3 hrs.
Focuses on personality issues of particular importance to the student of counseling. Basic personality constructs and experimental investigations of personality dynamics will be surveyed, including stress and anxiety, coping and defense mechanisms, emotion, conflict and cognitive styles. Various conceptualizations will be studied, including psycho-dynamic, interpersonal, phenomenological, cognitive and behavioral approaches.

610 Career Development Theory and Practice
3 hrs.
An introduction to: (1) basic resources available in the area of occupational, educational, personal, and social information; (2) theories of vocational development and their
application to the process of counseling and personnel over the life span; and (3) the world of work, and especially an analysis of work’s impact on American culture.

611 Theories of Counseling
3 hrs.
The nature, rationale, development, research and use of theories in counseling are studied. Major points of view including the psychoanalytic, the cognitive, the behavioristic, the phenomenological, and the existential are studied and compared.

612 Counseling Practicum
4 hrs.
This unit provides practical work in the student’s area of specialization. Counseling experiences are provided in a laboratory setting so that the student may put into practice the knowledge and behaviors gained during previous studies. In addition, a supervised, professional experience is required in a setting appropriate to the student’s vocational objectives. Graded on a Credit/No Credit basis.

613 Field Practicum
2-6 hrs.
An on-site supervised field placement in a mental health, school, agency or university setting. Clock hours, semester hours of credit, nature of supervision and setting requirements are determined by program option. Graded on a Credit/No Credit basis. May be repeated.

620 Personal Development
2 hrs.
A structured group experience focusing on the interpersonal and vocational development of participants. Individual personal counseling adjBGutive to the experience is required for C-P majors. Graded on a Credit/No Credit basis.

621 Psychopathology: Classification and Treatment
3 hrs.
Basic concepts of history, current paradigms, and assessment of psychopathology with special emphasis on the APA diagnostic classification system and counseling/clinical approaches to treatment.

622 Psychoeducational Consultation
3 hrs.
A study of the process of consultation with emphasis upon methods, stages and strategies used with individuals, small groups and organizations. Consideration will be given to the counselor’s role in psycho- affective education and primary prevention.

623 College Student Development
3 hrs.
Explores the nature and development of the post-secondary student pertaining to student personnel program administration. Theories of college student development, administrative strategies and techniques of program implementation are studied.

624 Program Evaluation in Student Affairs
2 hrs.
Methods and techniques appropriate for the student affairs administrator will be considered as they relate to: (1) assessment of student needs, and (2) program evaluation.

625 Legal Issues in Student Personnel Services
2 hrs.
The law, as evidenced in constitutional provisions, legislative enactments, and court decisions, related to the administration of student personnel services will be the major focus of the course. Institutional-govermental relations and issues of consumerism will be reviewed.

626 Administration of Student Personnel Services
3 hrs.
Emphasis will be upon administration/management aspects of student personnel services in post-secondary education. A general overview of administrative concerns will be provided. Primary focus of course content will relate to: (1) organizational models; (2) budgetary systems; (3) personnel practices; and (4) administrative tools and techniques.

627 Community Agency Counseling
3 hrs.
A survey of counseling and administration counseling practice in agencies with families and individuals of all ages.

628 Counseling Psychology
3 hrs.
This course provides an introduction to the role and functions of Counseling Psychologists in mental health services. Specific areas to be studied include: Professional identity and the contextual variables of employment, an overview of the therapeutic process, intervention strategies of both a preventative and remedial nature, ethics, process and outcome research, and related professional literature.

629 Organization and Principles of Elementary School Guidance
3 hrs.
A thorough investigation of philosophical concepts and principles underlining counseling and pupil personnel programs in elementary schools. The history, organization, and administration of the program services are surveyed and practical application of concepts are required.

630 Organization and Principles of Secondary School Guidance
3 hrs.
Enables students to understand, apply, and formulate programs of guidance as they apply to secondary schools. In particular the history, philosophy, role, function, organization, administration, and development of guidance will be examined in depth so that the counselor in preparation will have the necessary skills to assume an entry level position in secondary education.

631 Seminar in Substance Abuse I
3 hrs.
An interdisciplinary seminar designed to reflect broadly conceived intervention strategies ranging from primary prevention to rehabilitation of the addict. The basic training in the principles of intervention and clinical practice will continue to be taught within the student’s basic professional discipline. In part, the seminar will be used to elaborate upon the application of these principles to the problems of substance abuse. This course is cross-listed with Biology, Social Work, and Sociology. Graded on a Credit/No Credit basis.

632 Seminar in Substance Abuse II
3 hrs.
Continuation of C-P 631. This course is cross-listed with Biology, Social Work, and Sociology. Graded on a Credit/No Credit basis.

633 Student Affairs in Post-Secondary Education
4 hrs.
The introductory section of this course will include the history of post-secondary education in America. The second phase of the course content will focus on the student personnel services area: (1) historical perspectives; (2) philosophical foundations; (3) professional organizations; and (4) service delivery systems.

670 Administration of Counseling Services and Programs
3 hrs.
Offered as a professional seminar to develop and enhance the leadership qualities of advanced graduate students. This seminar is designed to acquaint participants with a broad range of policies and procedures of administration options from various organizational settings. Each participant will develop an administrative manual or handbook which could be used as a set of guidelines for use in a setting appropriate to the student’s career objectives. Prerequisite: MA in Counseling.

672 Use of Clinical Judgment in Assessment
3 hrs.
Clinical judgment in diagnosis and assessment is studied with the focus on sources of error that enter into the process of judging, diagnosing, and assessing. Opportunities for practicing the systematic use of behavioral observations and interviews are provided. Prerequisite: MA in Counseling.

673 Marital and Sex Therapy
3 hrs.
The subject of human sexuality is examined from a variety of social, physiological, and cultural viewpoints. Various forms of sexual dysfunction are studied and examined for understanding of both physiological and psychological components and role of each in the dysfunction. Finally, there is in-depth study of current approaches to therapy as well as attention to other issues such as conjoint treatment of couples, resistance, sexual dysfunction in both partners, and sexual dysfunction and its relationship to marital discord. Prerequisite: MA in Counseling.

674 Psychological Development Theory for Counselors
3 hrs.
This course is based upon a psychodynamic description and conceptualization of personality development and functioning from birth to death as expressed by Freud, E. H. Erikson, Kubler-Ross, and others. In addition, application of developmental theory in relation to the process of counseling and psychotherapy is considered. Prerequisite: MA in Counseling.

675 Counseling Theories and Practices
3 hrs.
This is an advanced seminar in counseling theory and practice. The course is concerned with theoretical aspects of the counseling relationship as well as the general practices of counseling. Prerequisites for the class include one formal exposure to counseling theory, supervised laboratory work, and experience in the field of counseling. The course is not designed to include practicum type experiences, but it is helpful if the participant is concurrently seeing clients on a paid or volunteer basis. Prerequisite: MA in Counseling.
690 Practicum in Counseling and Psychotherapy Supervision I
2 hrs.
Designed for advanced graduate students who plan to assume leadership and supervision responsibilities in the continuing education of counselors. Includes didactic discussions of the elements of counseling supervision and practical experience in counselor education. Graded on a Credit/No Credit basis.

691 Practicum in Counseling and Psychotherapy Supervision II
2 hrs.
A continuation of C-P 690. Graded on a Credit/No Credit basis.

692 Advanced Practicum in Counseling and Psychotherapy I
4 hrs.
An advanced practicum designed to increase the competency of experienced counselors and therapists. Staffing conferences approach to the analysis of continuing cases presented by the participants will be combined with tapes and live demonstrations of advanced techniques. Individual supervision required. Graded on a Credit/No Credit basis. Prerequisite: Consent of instructor.

693 Advanced Practicum in Counseling and Psychotherapy II
4 hrs.
A continuation of C-P 692. Graded on a Credit/No Credit basis.

694 Vocational Development Theory
2 hrs.
A critical examination of existing theories of vocational development, the motivation to work, and their application to the counseling process. Research pertaining to vocational development and the world of work will be analyzed.

696 Practicum in Group Counseling
3 hrs.
Supervised practice in counseling with groups of varying types and ages. Staffing conferences of on-going groups will use audio and video tapes, content analysis, and other evaluative techniques. Prerequisite: Consent of instructor. Graded on a Credit/No Credit basis.

Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

710 Independent Research
2-6 hrs.

712 Professional Field Experience
2-12 hrs.

720 Specialist Project
2-6 hrs.

725 Doctoral Research Seminar
2-6 hrs.

730 Doctoral Dissertation
15 hrs.

Education and Professional Development (ED)
Ryan, Chairperson. Distinguished University Professor Travers; Professors Adams, Bosco, Burns, Cain, Curt, Dickie, Erickson, Fisk, Harring, Heilig, Inselberg, Kandel, Kilty, Larsen, Lloyd, McGinnis, Middleton, Moore, C. Smith; Associate Professors Armstrong, Balkin, Blad, Bren, Chapel, Cordier, Hong, Miller, Walker; Assistant Professors F. Bailey, Brashbear, Cowden, Crowell, Olenchak, D. Smith, Watson

Open to Upperclass and Graduate Students

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.

504 Adult Development and Learning
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, midlife 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.

505 The Adult Learner
3 hrs.
This course will provide an indepth look at the learning adult from approximately age 22 to death with special emphasis on human variability, unique learning styles, and characteristics of the adult learner. Theories of adult learning, studies of intelligence and memory, learning capabilities, abilities, approach, and speed of learning will be considered. Motivation as prerequisite for high level wellbeing and problem-solving will be studied. Limited to 20 students.

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.

507 Teaching of Social Studies in the Elementary Schools
3 hrs.
This course is designed to help teachers understand the role of the social studies in the elementary school, gain insight into important considerations in the selection of content, and discover how to guide and assess the learning of children in this field. Planning social studies experiences and ways of working with children in a classroom setting will be emphasized.

508 Parent Education
2 hrs.
Places major emphasis on home problems which have educational implications for the child. Parent-teacher relationships, program activities, and cooperative efforts for improvement of education in home and in school are studied.

509 Parent Education for Teachers of Young Children
3 hrs.
Prepares a variety of techniques for teachers to use in working together with parents. Teachers will study child-rearing factors which parents must 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 aides is included.

510 The Elementary Curriculum
2 hrs.
A consideration of content and procedures to adapt experiences of pupils in elementary schools to modern conditions and to child needs and interests. Individual or committee reports concerning the improvement of various aspects of the elementary school curriculum will be prepared.

511 Developmental Reading Theory and Application
3 hrs.
Emphasizes the application of reading theory in the teaching of reading skills to elementary and secondary students. Intensive study of the theory and practice of individualized reading, language experience approaches, and basic 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 or reading procedures will be studied through actual use with pupils. Prerequisite: ED 312 or 322 and permission of instructor.

514 Nursery-Kindergarten Education
2 hrs.
This course will acquaint the students with the history and present-day status of nursery school and kindergarten education. Consideration will be given to the organization, equipment, curriculum, and approved teaching procedures.

515 Seminar in Teaching of Social Studies
3 hrs.
Consists of two parts: perspectives and implementation. Under perspectives, a staff of social scientists will share with the participants their thinking concerning significant ideas and concepts from their disciplines that further amplify topics covered. Opportunities will be provided for the participants to implement social studies methods and skills in actual classrooms and other situations.

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.

517 Reading in the Content Area: Social Studies
3 hrs.
Designed to acquaint junior and senior high school teachers with the reading skills which should be taught and refined in their specific curricular areas. An effort will be made to help teachers, through demonstration and practice, achieve optimal benefit from secondary textbooks and related reading materials.

518 Reading in the Content Area: Science, Mathematics, Industrial Arts, etc.
3 hrs.
Designed to acquaint junior and senior high school teachers with the reading skills which should be taught and refined in their specific curricular areas. An effort will be made to help teachers, through demonstration and practice, achieve optimal benefit from secondary textbooks and related reading materials.

520 Implications of Piaget’s Research for Curriculum Design
3 hrs.
Provides the student with an understanding of the structure of the intellect developed by Piaget and examines the implications of this structure for the design of the curriculum. Some practical work will be combined with a study of the research on which Piaget has built his theory of intellectual development.

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.

525 Rural Life
2 hrs.
Critical study of recent books in rural social life. Consideration is given to individual problems related to social aspects of community life. Special problems are selected for study by each student. Field work is encouraged. Prerequisite: ED 220.

527 Instructional Planning in Accountability Context
3 hrs.
The purpose of the course is to assist the student in developing an understanding of models of accountability in education; in writing educational goals and performance objectives; in using various assessment procedures to determine the needs of the learner and the extent to which objectives have been achieved; and in determining appropriate instructional procedures for specified educational goals.

530 Introduction to Career Education
3 hrs.
This course is designed to acquaint teachers with the concepts of career education. Course work is centered on ways and means to incorporate career education into the existing curriculum structure at all levels of instruction.

535 Introduction to Teaching the Disadvantaged
3 hrs.
Designed for teachers and administrators who are presently working with disadvantaged children and youth. Class meetings are centered around problems arising from practical situations; particularly with respect to affective factors of environment and their relation to teaching and learning. Extensive use is made of consultants from social, governmental, and educational agencies working with the disadvantaged.

542 Administration and Methods of Driver Education
2 hrs.
History, philosophy, and psychology of driver education. Emphasis on organization and administration of high school driver education programs. Laboratory work in dual control cars and driving range programs. Prerequisite: ED 442.

544 Psychology of Driver Education
2 hrs.
Psychological and perceptual aspects of the driver and traffic safety. The role of the teacher in influencing driver behavior. Research in traffic safety. Prerequisite: ED 442.

548 Audiovisual Media I
3 hrs.
An introduction to audiovisual media as effective means for achieving educational objectives in presentational, interactive, and individualized modes of instruction. Emphasizes evaluation, selection, production, and classroom use of commercially available and locally produced educational 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 and video tapes, and photostatic and photographic slides and to demonstrate competency 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 twenty students.

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 processes and techniques. Laboratory experiences may include production of complex transparencies, photographic slides, timelabs 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 versatile camera. Limited to fifteen students. Prerequisite: ED 548 or equivalent experience.

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 in one or more of the processes. May be repeated up to a total of six credits. Limited to fifteen students.

552 Comparative Education
3 hrs.
This course is intended to provide students with an introduction to the field of comparative/cross-cultural education. The education philosophy and goals, curricula, administrative structure, educational technology, financing, and methods of instruction characteristic of selected European countries are examined and compared to parallel features of the American educational system.

555 Alcohol Education
2 hrs.
Deals with problems of alcohol education in the school and community, with special emphasis on teaching methods and procedures, relationships with governmental and social agencies, and administration of programs.

560 Practicum: Sociological and Psychological Foundations of Teaching the Disadvantaged
3-6 hrs.
The initial course required of all students in the MA program for teaching the disadvantaged. Designed to develop awareness of family situations, community conditions, behavior, value systems, and characteristics of the disadvantaged, as well as to develop positive attitudes toward these children and their problems. Consists of readings, lecture-discussions, and field experiences with the disadvantaged, including home visits, visits to social and governmental agencies, and school experiences including supervised teaching. Generous use is made of consultants from all agencies dealing with the problems of the disadvantaged.

561 Reading and Related Language Experiences
3 hrs.
A study of the current research in the many aspects of language which are involved in the process of effective reading.

568 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 advisor and instructor.

Open to Graduate Students Only

600 Fundamentals of Measurement and Evaluation in Education
3 hrs.
This course is designed to develop understandings and competencies in educational measurement and evaluation. Emphasis is placed on research techniques to evaluation, the interpretation of quantitative data in educational situations, and the application of basic evaluation models.
Students will be required to present a project on conducting such investigations, and the basic steps involved in understanding and designing research. Emphasis is placed on statistical concepts needed for students who have an understanding of the major types of educational research and the interpretation of research results. Emphasis is placed on development, language acquisition, psychomotor development, and parent education.

609 Early Childhood Education in Perspective 3 hrs.
A study of the history of the education of young children with emphasis on the philosophy, the social settings, and the people who have influenced the movement.

610 Guiding Child Development in the Elementary School 2 hrs.
Designed to help nursery, kindergarten, and elementary school teachers gain an understanding of the manner in which skills, information, attitudes, and behavior patterns are acquired and modified. The contributions of each curricular area, such as language arts, arithmetic, science, social studies, health, etc., are stressed with emphasis on suitability of experience for different stages of growth, instructional practices, and appropriate procedures of evaluation.

611 Informal Approaches to Studying Young Children's Development 3 hrs.
The course helps teachers to observe, evaluate, and guide young children's growth while developing their skill in informal observation techniques. Teachers will learn about their children from new perspectives, recognizing and meeting children's needs. Evaluation procedures will help to account for children's psychological and social growth while creating classroom conditions to maximize this growth.

612 Reading Techniques for the Elementary Classroom Teacher 3 hrs.
This course is designed to provide an in-depth study of the nature of the methods and procedures used in teaching children to read. This course will provide an opportunity for the production of original materials to be used in the classroom at the elementary level. Participation in classrooms will be required. Prerequisite: ED 516.

613 Early Childhood Problems and the Teacher 3 hrs.
Deals with concepts of "discipline" and questions of behavior. Teachers will acquire practical knowledge of research concerning children's social behavior and will evaluate and apply systems for promoting prosocial behavior in their classrooms.

619 Clinical Studies in Reading 3 hrs.
This course is intended to provide the basic information needed in the examination of persons with reading disorders. Interviewing techniques and examination procedures will be the basic content of the course. Emphasis will be placed on the educational, physical, psychological, and sociological factors affecting reading performance. Students will be provided with a knowledge of both standardized and informal reading tests. Experimental teaching and producing a practical bibliography of measurement instruments and materials. Prerequisite: ED 312 or 322.

620 Educational Therapy in Reading 3 hrs.
Laboratory application of knowledge gained concerning the psychological, sociological, and physiological factors affecting children's reading ability is stressed. The prevention, diagnosis, and treatment of reading problems is experienced through working with disabled readers. Students will become familiar with testing instruments, their use, administration, and interpretation. Students will also learn techniques of therapy and recognize those factors necessary for effective therapy. Prerequisites: ED 312 or 322 and 619.

621 Secondary School Curriculum 2 hrs.
Covers modern practices and recent emphasis and trends in subject areas of the secondary school curriculum.

622 Middle-Junior High School Curriculum 3 hrs.
An analysis of selected topics in middle and junior high school development, trends, and purposes. The focus of the course will be substantive as well as theoretical and methodological in areas of psychological and philosophical foundations; curriculum patterns; student activities programs; administrative, guidance, and evaluation processes. Special attention is given to the objectives and content of general education and the integration of learning in an open class environment.

630 Seminar in Career Education 3 hrs.
This seminar will deal with both the processes and content related to the development and leadership for infusing career education into the existing K-12 curriculum. Prerequisite: ED 530 or consent.

635 Mainstreaming Exceptional Children in the Regular Classroom 3 hrs.
For nonspecial education personnel. The course examines the evolution and implications of the mainstreaming concept; the mandates of state and federal legislation; program assessment at the interface of special/regular education; the categorical characteristics of impaired children; psychosocial considerations; diagnostic special needs; diagnostic-prescriptive teaching; behavior management; access to support services; and writing IEPs. Not normally for certification in special education.

641 Instructional Development 3 hrs.
Intended for media specialists and experienced teachers. This course employs an accountability model for application of media research and technology to actual courses and units of instruction. Students follow a systematic instructional development procedure from task analysis to evaluation, working together with their own students or as assistant and consultant to another teacher. Prerequisite: ED 548 or equivalent.

642 Photographic Communication 3 hrs.
Explores uses of photography in the communication of ideas, considering techniques of composition, lighting, equipment operation, and basic photographic processes as means toward achieving an effective visual statement. Following pre- and assignments, each student plans and produces a picture story or photo essay.
suitable for publication and a synchronized sound/slide presentation for a specified audience. Considerable laboratory time is required outside of class. In addition to text materials, students have the use of a high quality, versatile camera and should expect to spend $25 or more for supplies. Limited to fifteen students. Prerequisites: ED 549 or 550 or equivalent experience.

643 Practicum in Clinical Studies in Reading 3 hrs.
This course is intended to give students experience in employing both informal and formal standardized instruments and techniques necessary for the diagnosis and treatment of the disabled reader. The course emphasizes the use of various measurements pointing out their capabilities and limitations. Skills in interviewing, observing, diagnosing, planning treatment, and working with parents and school personnel are taught. Prerequisites: ED 619 and 620.

644 School Media Specialist Seminar 2 hrs.
A team-taught course by Librarianship and Education faculty designed to synthesize course experiences in the school media specialist curriculum. Students are prepared for their initial experiences in seeking employment in the public schools and given experiences to help them function efficiently and effectively as professional school media specialists. Prerequisite: Written consent of departmental adviser. (Cross-listed with LIB 644.)

645 Advanced Production of Audiovisual Media 3 hrs.
A laboratory course in which principles of graphic communication are applied to the design and production of instructional media. Provides an opportunity for the graduate student to pursue selected techniques in depth and to become acquainted with processes needed by the educational media production specialist. This course may be repeated for credit and different topics are offered. In addition to text materials, each student should expect to spend $25 or more for supplies. Limited to fifteen students. Prerequisites: ED 548 and 549 or equivalent experience.

648 Studies in Educational Technology 1-3 hrs.
Explores theory and innovative developments in educational technology and suggests practical, instructional applications. Such topics as the following may be considered: Design and Analysis of Individualized Instruction, Instructional Simulation and Gaming, Computer Applications in Instruction, and Diffusion and Adoption of Innovative Practices in Education. This course may be repeated for credit as different topics are offered. Prerequisite: ED 548 or equivalent experience. (Cross-listed with LIB 609.)

647 Administration of Audiovisual Media Program 4 hrs.
Considers audiovisual aspects of a unified instructional media program, including allocation and management of space, time, budget, and personnel; selecting, organizing, distributing, and maintaining materials and equipment; providing inservice education in audiovisual methods for teachers interpreting the media program to administrators, staff, students, and the community. Prerequisites: ED 548 or equivalent experience.

648 Instructional Media Seminar 3 hrs.
An analysis and comparison of instructional media programs and facilities. Students examine existing media center operations and prepare recommendations and working plans either for organization of a new media program or for reorganization and improvement of certain phases of operation in an on-going center. Limited to fifteen students. Prerequisites: ED 548 and 647 or equivalent experience.

649 Problems of College and Adult Reading 2 hrs.
An advanced laboratory course covering principles, philosophies, and practices of a development program in reading for college students and adults. Lectures, discussions, and demonstrations will center around teaching techniques in common practice.

650 The Characteristics of the College Student 2 hrs.
The course is primarily intended for students who are preparing to teach at the college (community, four-year, or graduate) level. As much as practicable, the course will be conducted on an "action-research" basis. Every opportunity will be given for interaction with college students on a firsthand, face-to-face basis will be utilized by the individual members of the class. Opportunities will be provided to investigate such topics as: the academic adjustment, capabilities, motivations, behaviors, attitudes, and factors affecting the academic achievement of college students; the effects of separation from home and family, effects of interpersonal relationships, and effects of campus social life on college students; and economic stability as it affects college students. Prerequisite: ED 601.

651 Philosophy of Education 2 hrs.
For graduate students and teachers of experience. Analyzes basic ideas, concepts, and value systems affecting educational practices; stresses a comparison of philosophical schools, historical and contemporary.

652 Language, Reading, and the Young Child 3 hrs.
The course focuses on language and the nature of the reading process and its development from birth through the primary grades. Teachers will explore contemporary reading and language programs from this point of view. Deeper understanding of language-reading processes will enable teachers to arrive at ideal language development-reading programs for the children they teach.

653 Practicum in Reading Therapy 3 hrs.
This course affords students the opportunity to build competencies attained in ED 643. Reading therapy is offered on a one student to one client basis. Under the direction of a trained clinical therapist, the course serves as an instructional internship for working with pupils who have problems in reading and related areas. This course will provide graduate students practice in setting up prescriptive instructional objectives, selecting materials in terms of needs, and carefully designing instructional procedures for disabled readers. Prerequisites: ED 619, 620, 643.

654 Practicum in Reading Supervision 3 hrs.
Principles and practices of organization and administration of reading programs for elementary, secondary, college, and adult students. Deals with the role of the reading consultant and the problems associated with providing effective reading instruction. Includes participation in classrooms and conferences with teachers concerning instructional goals, materials, and procedural approaches. Prerequisite: ED 653.

655 Seminar in Learning 2-3 hrs.
Open to selected graduate students with the consent of the instructor. Analyzes research in the field of learning, including affective factors, input and retention of information, and concept formation.

656 Organization and Administration of Reading Programs 3 hrs.
This course affords an opportunity for the individual to investigate the processes and procedures which may be employed in organizing and administering reading programs at the elementary and secondary levels. Emphasis is placed on the examination of existing programs and practices with a view toward improving reading education for all students. The course is intended to help students understand the development and management procedures of a reading program, kindergarten through adult basic education. Prerequisites: ED 597, 619, 687.

659 Seminar: Methods and Techniques in Teaching the Disadvantaged 3 hrs.
This seminar deals with problems inherent in educational programs for underprivileged youth. Emphasis is placed on developing a depth of understanding and resolutions to such problems as: curriculum development, methodology, school organizational innovations, and audiovisual adaptation of existing materials to the teaching of disadvantaged children. Students are encouraged to enroll for the seminar as a culminating activity for the degree and to meet actual problems faced in their own teaching situations. Prerequisite: At least twenty-one hours completed in master's program for teaching the disadvantaged.

663 Practicum in Teaching Reading at the Secondary Level 3 hrs.
This course is an instructional internship intended to provide opportunities for individuals to work with small groups of secondary students who have demonstrated problems in reading and related areas. This course provides supervised classroom and/or therapy experiences with a variety of reading situations. Emphasis will be placed on the study, application, and evaluation of diagnostic teaching procedures. This course will provide graduate students practice in setting up prescriptive instructional objectives, selecting materials in terms of needs, and carefully designing instructional procedures for disabled readers. Prerequisite: ED 668 or 620.

669 Strategies in Teaching: Variable Topics 1-4 hrs.
Designed for teachers and administrators who work with student teachers and wish to study supervisory and administrative problems and procedures. Emphasis is placed upon the development skills in evaluation,
planning, and the various supervisory strategies in working with student teachers in the classroom as well as the building or school system. Note is taken of current literature and research methods used in working with student teachers. Prerequisite: Teaching experience or consent of instructor.

670 School Climate and Discipline 3 hrs.
This course is designed for teachers and administrators who wish to develop a school or classroom climate which maximizes learning and minimizes discipline problems. Emphasizes new approaches to working successfully with problem students and classes.

687 Improvement of Reading in Secondary Schools 3 hrs.
Designed to aid teachers in developing the reading abilities and skills of their students at the secondary level. Emphasis is placed on aims, materials, and procedures. Graduate students will become knowledgeable with the readability of textbooks and how to adjust work to range of ability. Opportunities for understanding and using standardized and informal instruments as measures of student progress will be afforded. Emphasis will be placed on the organization of course work for improving reading skills. Prerequisites: ED 312 or 322.

688 Diagnosis and Treatment of Secondary Reading Problems 3 hrs.
This course is intended to provide an opportunity for diagnosing reading difficulties at the secondary level. Applying appropriate diagnostic procedures that enable the diagnostician to provide effective remediation is stressed. Prerequisite: ED 687.

690 The Community College 2 hrs.
Studies the historical development of the junior and community college movement; the function of the community college in the total educational program; the divergent aims and curricular requirements of pre-professional, academic, and vocational courses; the guidance and counseling functions; community services programs; and methods and materials of instruction at the college level.

695 Reading Seminar 3 hrs.
This course is designed to be the culminating course in each of the three streams in the master's program in reading. Designed to acquaint teachers, reading specialists, and administrators with the current research and literature pertinent to their areas of specialization. They should further be able to demonstrate an ability to design reading research studies which contribute to the body of knowledge in reading. As this course is intended as the capstone course, it must be taken in the last six hours of graduate work.

697 Special Topics in Reading 1-3 hrs.
A variable credit course designed to provide a vehicle for the development and implementation of special topics in the field of reading. The purpose is to provide students with the opportunity to study topical current issues.

698 Resolving Educational Problems in the Schools 1-6 hrs.
With variable topics and variable credit, this course is offered for in-service teachers, supervisors, and administrators who come together to solve school problems which they are encountering in the field. Problem-solving techniques, theoretical and evidential support for solutions, and workshops will be applied to actual school or classroom situations. The topic of the course will be stated in the schedule each time the course is offered. Students may repeat this course, providing topics vary. No more than six hours of 698 may be applied toward a graduate degree.

699 Seminar in College Teaching 2 or 4 hrs.
Designed for students who are interested in preparation for college teaching. The student is expected to enroll for four credit hours, work with a faculty member in his/her major department or unit in a classroom situation for a semester, and attend eight scheduled discussions arranged for all students in the seminar. These discussions will emphasize important topics related to college teaching. Exceptions may be made for the student who already has college teaching experience. In such cases, the student should enroll for two credit hours and attend the seminar discussion sessions only. Permission of instructor on "C" card is required.

Open to Graduate Students Only—Please refer to The Graduate College section for course description.

700 Master’s Thesis 6 hrs.

710 Independent Research 2-6 hrs.

712 Professional Field Experience 2-12 hrs.

Educational Leadership (EDLD)
Sheffer, Chairperson; Professors Boles, Smidchens, Sanders, Weaver, Associate Professors Bunda, Brinkerhoff, Munsterman, Schlack, Warfield.
Topical descriptions are available in the department office, 3102 Sangren Hall.

660 Administration 2-4 hrs.
Offerings in this area are intended to allow organizational leaders to acquire the general understandings, skills, and concepts necessary in the operation of agencies. Topics vary from semester to semester, and a student may take more than one topic area (see schedule for specific topic offerings in any one semester or session). Typical EDLD 660 topics offered include:

- a. Introduction to Educational Leadership (the first course in any degree program in this department)
- b. School Principalship
- c. School Law
- d. Business Management
- e. Administration of Higher Education
- f. Principles of Community Education
- g. Professional Development Seminar
- h. Critical Management Problems
- i. Advanced Seminar in Community Education
- j. Grantsmanship

661 Human Relations 2-3 hrs.
These offerings provide students with academic background in the behavioral sciences. Emphasis is on proficiency in working with people, understanding people and how they work, live, and get along together, and in using that understanding in getting the best from people, individually and in groups. Topics vary from semester to semester, and a student may enroll for more than one topic area (see schedule for specific topic offerings in any one semester or session). Typical EDLD 661 topics offered include:

- a. Personnel Evaluation
- b. Organizational Supervision and Development
- c. Administration of Staff Personnel
- d. Public Relations
- e. Practicum in Leading
- f. Training Skills Development

662 Concept Formation 2-4 hrs.
Each of these offerings focuses on concepts that should help the student to see the relationships among complex issues, of education to the larger culture, of specific occupations to overall institutionalized functions and to the world of work. Topics vary from semester to semester, and a student may enroll for more than one topic area (see schedule for specific topic offerings in any one semester or session). Typical EDLD 662 topics offered include:

- a. Contemporary Educational Scene
- b. Process of Curriculum Development
- c. Theory of Leadership
- d. Economics of Education
- e. Interdisciplinary Seminar
- f. Policymaking
- g. Politics of Education
- h. Human Resource Development
- i. Evaluation Seminar
- j. Evaluation Practicum
- k. Futuristics
- l. Systematic Problem Solving
- m. Writing For Publication
- n. Program Evaluation

663 Research 2-15 hrs.
Offerings are intended to provide the necessary understandings, attitudes, and skills to make every student working for a degree in this department a competent and discriminating consumer of research. The student who wishes to do so can specialize sufficiently to become a competent researcher or a director of research. Topics vary from semester to semester, and a student may enroll for more than one topic area (see schedule for specific topic offerings in any one semester or session). Typical EDLD 663 topics offered include:

- a. Measurement I
- b. Introduction to Research
- c. Statistical Analysis/Research Design I
- d. Statistical Analysis/Research Design II
- e. Dissertation Seminar

Individual Studies
Offerings in this area are intended to allow a student in any degree program in this department to demonstrate how well she/he can learn working alone and under facility supervision. Offerings are intended to allow the student to become acquainted on a one-to-one basis with at least one faculty member.
Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

710 Independent Research 2-6 hrs.
712 Professional Field Experience 2-12 hrs.
720 Specialist Project 2-6 hrs.
725 Doctoral Research Seminar 2-6 hrs.
730 Doctoral Dissertation 15 hrs.
735 Graduate Research 2-10 hrs.

Open to Upperclass and Graduate Students

598 Readings in Educational Administration 1-4 hrs.
An advanced student with a good academic record may elect to pursue independently the study of some topic having special interest to her/him. Topic chosen must be approved by and arrangements made with written consent of the instructor involved. May be elected more than once.

Health, Physical Education, and Recreation (PEGR)

Zabk, Chairperson. Professors Cheatum, Davies, Davis, Hening, Ray, Associate Professors Jones and Meyer; Assistant Professors Dawson, Katz, Schreiber.

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:

- Hunter Safety
- Nutrition and Fitness
- Outdoor Education
- Physical Fitness
- Relaxation

Open to Upperclass and Graduate Students

510 Modern Health for Teachers and Health Professionals 3 hrs.
This course, designed for teachers and health professionals who have need of current knowledge in health science, 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.

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 and actualization. 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, health promotion, and self-actualization.

514 Methods and Materials in Health Education 2 hrs.
Lectures and demonstrations with emphasis on effective health supervision of school children, principles and practices of health teaching in the various grades, and interrelation of this teaching with that of other subjects in the curriculum. Prerequisites: PEGR 314 and 315, or consent of instructor.

516 Issues in Health Education 1-4 hrs.
Issues vary or occasionally repeat depending on the timeliness of the issue. Following are currently recommended themes. Students may register for 516 more than once but may not repeat the same issue. Issues include:

- Improving Health Behavior
- Alcohol and Drug Education
- Venereal Diseases
- Consumer Health
- Cardiovascular Health
- Stress Release
- Bio Feedback
- Patient Education
- Health Careers
- Parent Education

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.

521 Therapeutic Trends for Exceptional Children 3 hrs.
A study of past, present, and future trends in habituation and rehabilitation programs for handicapped people.

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
- Bowling
- Gymnastics
- Ice Hockey
- Judo
- Karate
- Soccer
- Swimming
- Track and Field
- Volleyball
- Wrestling
- Yoga

535 Principles and Problems of Coaching 2 hrs.
Various dimensions and forces affecting coaching are identified and explored including educational implications of sport and coaching, characteristics of coaches and athletes, vital relationships, motivation, emotions, behavior, discipline, selecting and evaluating personnel, scientific principles and systems of training, the organization and planning of practices and total programs.

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.

550 The Making of American Sport 2 hrs.
An exploration of the historical-philosophical heritage of sport and physical education in the USA. Major persons, events, ideas, and institutions discussed.

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 of physical education and a discussion of standards for evaluating such programs.

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.

572 Recreation for the Aging 2 hrs.
An overview of aging especially as it relates to leisure pursuits and organized recreation.

580 Studies in Athletic Training 2 hrs.


c. Physical Conditioning and Rehabilitation Exercises: Scientific basis for remedial exercises and conditioning programs involving the building of endurance and strength are explained and related to current trends in competitive athletics. Prerequisite: Completion of concurrent enrollment in one PEGR 580, Exercise Physiology. Topic a of PEGR 580, or consent of instructor.

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 athletes. Prerequisites: BIOL 210, 219.

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.
595 Analysis of Movement in Sport 2 hrs.
The study of movement of muscles and the application of kinesiology to physical activity.

596 Reading in Health, Physical Education, and Recreation 1-2 hrs.
Advanced students with good academic records may elect to pursue independently a program of readings in areas of special interest. Prerequisite: Approval of graduate director in Physical Education.

Open to Graduate Students Only

610 Health Education in the Community 3 hrs.
Consideration of factors that influence health improvement in the community. Prerequisite: Approval of instructor.

612 Organization and Supervision of School and Community Health 3 hrs.
Administrative procedures and review of current trends and programs in health education. Prerequisite: Approval of instructor.

615 Major Chronic Diseases 3 hrs.
Considers prevention, detection, and control of major chronic diseases. Prerequisite: Approval of instructor.

618 Social Epidemiology 3 hrs.
Considers effects of stress manifested as mental, physical, biochemical, and social pathology. Prerequisite: Approval of instructor.

630 Advanced Coaching 1-2 hrs.
Theories of conditioning, training, practice organization, scouting, game and tournament planning, skill analysis and correction, defensive and offensive strategies, safety procedures, purchases and care of equipment, public relations, and promotion specific to each sport. A graduate student may apply a maximum of eight hours credit from PEG 530 and 630 combined toward the master's degree program.

631 Advanced Treatment of Athletic Injuries 2 hrs.
The prevention, etiology, symptoms, pathology, and prognosis of those injuries occurring most frequently will be studied. Treatment techniques and rehabilitation procedures will be demonstrated. Medical specialists will lecture in their special areas related to athletic injuries.

640 Rhythms in Elementary Education 2 hrs.
A study of the rhythmic movement needs of the elementary school child, including suggested methods of teaching through which children are stimulated to create their own responses in rhythmic play, folk and social dancing as outgrowths of movement fundamentals; and teaching examples, sample lesson plans, and up-to-date reference sources. Lecture and Activity periods.

641 Physical Education for Preschool, Elementary, and Middle School 2 hrs.
A study of the development needs of the child in terms of physical activity, the role of physical education in childhood education, the responsibilities of the classroom teacher in this area; demonstrations and practice in teaching activities.

642 Motor Development 2 hrs.
Scientific evidence studied to determine the nature of motor learning and its interrelationships with physical growth, biological maturity, and social development.

643 Psychology of Motor Learning 2 hrs.
An overview of major concepts and conditions important for the learning of motor skills and emphasis on the introduction and explanation of the psychomotor domain.

645 Curriculum Building in HPERS 2 hrs.
A critical analysis of Health, Physical Education, and Recreation programs. This interdisciplinary approach reflects local, national, and international developments. Construction of a comprehensive program, curricular models, and program evaluation are highlighted.

648 Advanced Studies in Motor Development 1-3 hrs.
A series of advanced seminars dealing with specific topics in motor development. Emphasis will be placed on in-depth study of theories, problems, practices, and issues with appropriate lectures and experiences leading toward the development of a research project or a master's thesis. Topics include:
- Play Theory
- Psychology of Sport

Mainstreaming 650 Socio-Cultural Foundations in HPERS 2 hrs.
The course is intended to investigate and identify the function of sport in contemporary American society with special emphasis on the relationship of sport to social institutions.

652 Comparative Systems of Physical Education and Sport 2 hrs.
The course will compare physical education and sport systems of selected societies and their relationship to social, political, and cultural foundations.

Deals with modern trends, and with instructional and supervisory problems involved in conducting an effective program of physical education including a critical appraisal of present practices.

663 Supervision in Health, Physical Education, and Recreation 2 hrs.
Applicable to physical education specialists who have the responsibility of supervising physical education teachers. Concerned with studying the role of the supervisor and appropriate and effective techniques unique to physical education and their application to the teacher-pupil learning the situations. Discussions of the supervisory responsibility and function in city, county, and state school systems.

668 Advanced Studies in Administration of Physical Education and Athletics 1-3 hrs.
A series of advanced seminars dealing with specific topics in administration of physical education and athletics. Emphasis will be placed on in-depth study of theories, problems, practices, and issues with appropriate lectures and experiences. Topics include:
- Planning Facilities
- Business Procedures
- Public Relations and Promotion
- Administration of Athletic Programs

670 Community Recreation 2 hrs.
Programs in community recreation. The essential elements pertaining to leadership, areas, facilities, programs, activities, and methods of organization and administration are concerned. A study is made of outstanding programs in operation. Recreation material is surveyed.

671 Camping Administration 2 hrs.
The organization and administration of camps and their program requirements and standards. Consideration is given to philosophy and objectives, personal skills in camp activities and methods of teaching them. Visits to camps are made and out-of-door activities are experienced.

672 Methods and Materials in Recreation 2 hrs.
Best methods and materials for the teaching and organization of recreation activities. Activities used in recreation will be presented. Opportunities for organization and actual participation and leadership will be given.

680 Advanced Studies in Athletic Training 1-3 hrs.
A series of advanced seminars dealing with specific topics in sports medicine. Emphasis will be placed on in-depth study of theories, problems, practices, and issues with appropriate lectures by physicians and specialists in the field. Professional sports medicine seminars will complement conventional on-campus study. Prerequisite: Completion of 580 series or consent of instructor. Topics include:
- A. Cranio-cerebral, Spinal, Thoracic, Pelvic, and Abdominal Injuries
- B. Shoulder, Upper and Lower Extremity Injuries
- C. Treatment Modalities and Injury Reconditioning
- D. Administration of an Athletic Training Program

690 Research Procedures in Health, Physical Education, and Recreation 3 hrs.
Research procedures in health, physical education, and recreation and sports introductory principles of scientific inquiry, research methods applicable to these fields, evaluation of published research, and procedures for developing a research design.

691 Psychological Foundations in HPERS 2 hrs.
An overview of the application of psychology to physical education and sport with special emphasis on transcendent experiences in sports and the consciousness of sports.

698 Advanced Studies in Exercise Science 2 hrs.
A series of advanced seminars dealing with specific topics in exercise science. Emphasis will be placed on in-depth study of theories, problems, and issues with appropriate lectures and experiences leading toward the development of a research project or a master's thesis.
Special Education (SPED)

Eisenbach, Chairperson; Professors Hannaford, Patterson, Sellin, Wirtz; Associate Professors Harris, Iacalone, Nicolau.

Open to Upperclass and Graduate Students

502 Educational Provisions for the Learning Disabled 2 hrs.

This course is specifically designed for teachers who are interested in identifying and instructing learning disabled children and youth in a regular classroom setting. Emphasis will be placed on (1) identifying the exceptional pupil; (2) developing an educational profile which reveals the learner's strengths and weaknesses; (3) identifying and describing methods and materials utilized in teaching the learning disabled individual; open to all students except majors in Special Education curriculum. Prerequisite: Consent of department.

512 In-Service Professional Development 1-4 hrs.

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 for this course is not applicable toward a graduate degree in Special Education.

530 Education of Exceptional Persons 3 hrs.

This course is primarily concerned with children and youth who are visually, auditorily, orthopedically, or emotionally atypical. Emphasis will be placed on developing and understanding the psychological, sociological, educational, and philosophical aspects of each type of exceptionality. Present programs and services are described and evaluated. Field trips are made to public and private schools, institutions, and agencies. Prerequisite: Consent of the department.

531 Practicum in Special Education 2 hrs.

Students enrolled in this course will be assigned to special classes in public or residential schools serving exceptional children and youth. Observation and participation will be combined with weekly seminars. Undergraduate students majoring in special education are required to enroll in SPEC 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. Prerequisite: Consent of the department.

532 Nature and Needs of the Mentally Retarded 4 hrs.

A course especially intended for teachers of the mentally retarded. 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. Prerequisite: Consent of the department.

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 will be translated into individualized educational prescriptions. For majors enrolled in Special Education curricula and to be taken concurrently with SPED 534. Prerequisites: Consent of department.

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 techniques 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 educational programs. Prerequisite: Concurrent enrollment in SPED 533 and consent of department.

536 Contemporary Issues in Special Education: Honors Seminar 1 hr.

A course especially designed for selected undergraduate majors in special education curricula. Emphasis will be placed on theoretical discussion of social, philosophical, economic, and educational problems related to the education of exceptional children and youth. Prerequisites: SPED 530, 531, and faculty approval of the applicant.

542 Introduction of the Severely Impaired 3 hrs.

This course is designed to present knowledge about the observation of severely impaired individuals. Included in this course is knowledge associated with the nature and needs of the severely impaired and educational, social, and educational community, and parent/family aspects. Participation with severely impaired individuals will be included as an integral part of the course. Consent of department.

543 Nature and Needs of the Crippled and Homebound 4 hrs.

Study of educational, psychological, and therapeutic needs of crippled persons and the role of authorities in meeting these needs. Prerequisite: SPED 530 or equivalent, and consent of the department.

544 Educating the Severely Impaired 3 hrs.

This course consists of the development of skills necessary for educating the severely impaired. Specific skills will be developed in the area of assessment, prescription, implementation, and evaluation of educational programs for the severely impaired. A major component of this course is practical experience with severely impaired individuals on a one-to-one and on a group basis. This component will be highly interrelated with the skill development component. Consent of department.

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 continuum of secondary and post-school special education programs. Focus will be 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 will be discussed.

588 Behavior Disorders in School-Aged Learners 3 hrs.

Deals with the psychosocial educational 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 will be reviewed. The characteristics, causes, diagnosis, and treatment of the effects of such conditions as psycho-neurosis, mental subnormality, juvenile delinquency, psychosis, learning disability, and social disadvantage will be examined in terms of their educational implications. Therapeutic, environmental, and classroom interventions will be presented and strategies for prevention will be analyzed. Prerequisites: SPED 530 or equivalent and consent of department.

599 Programs and Intervention Strategies for the Socially and Emotionally Maladjusted 4 hrs.

This course, open only to majors in Special Education curricula, will emphasize 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 will be reviewed and discussed. Prerequisites: SPED 530 or equivalent and consent of department.

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.

Open to Graduate Students Only

620 Advanced Assessment of the Exceptional Learner 2 hrs.

This course is designed to equip graduate students in special education with advanced assessment techniques for mild and moderately handicapped learners of school age. Major emphasis is the interpretation of norm-referenced tests and the construction and interpretation of criterion-referenced tests. Prerequisite: Consent of department.

621 Curriculum Development for Exceptional Learners 2 hrs.

This course is designed to provide experienced special education personnel with knowledge and skill in the conceptualization, construction, adaptation, and evaluation of instructional programs for handicapped learners in both self-contained and resource type programs. Assessment and prescriptive data generated from simulated case studies.
utilized in SPED 620 will form the basis for the review and selection of specialized methods and materials. Prerequisite: Consent of department.

622 Development and Assessment of Preprimary Exceptional Children 4 hrs.
This course is designed to provide teachers with an in-depth understanding of normal and abnormal developmental patterns of preprimary children (ages 0-5) as related to mental subnormality, neurologic dysfunction, communication disorders, physical and sensory impairments, and emotional disturbance. Emphasis will be placed on developmental assessment and the collecting and reporting of diagnostic information. Prerequisite: Consent of department.

623 Curriculum and Methods for Preprimary Exceptional Children 4 hrs.
This course is designed to provide teachers with skills in translating diagnostic information into a meaningful educational plan for children 0-5 C.A. Emphasis will be placed on situation specific teaching roles as well as curricular and methodologic strategies in preprimary special education. Prerequisite: Consent of department.

624 Fundamentals of Learning Disabilities 2 hrs.
The course focuses on basic knowledge in the area of learning disabilities. Historical perspectives, definitions, and major issues will be explored. Service delivery systems and evaluation procedures will be examined and evaluated. Prerequisite: Consent of department.

630 Clinical Practice in Special Education 3 hrs.
This course serves as a culminating, practical experience within the Master Clinical Teacher program. Students will apply the clinical teaching model in practical situations with exceptional learners. In addition, students will demonstrate supervisory and interdisciplinary communication skills associated with a teacher-consultant role. This course is offered on a Credit/No Credit basis. Prerequisite: Consent of department.

633 Education of Gifted and Talented Children and Youth 2 hrs.
This course is designed to develop a student's understandings of the appreciation of the abilities, interests, talents, and problems of gifted children and youth. Attention will be given to methods and criteria used in identifying gifted, talented, and creative individuals. Through the use of available research data, students will be required to complete a critical evaluation of educational provisions including segregation, acceleration, and enrichment. Personal, social, and cultural factors which directly or indirectly influence the growth and development of these individuals will be considered. Prerequisite: Consent of department.

634 Advanced Theory and Practice in Learning Disabilities 2 hrs.
This course will examine several theoretical perspectives which attempt to explain why learning disabled children fail to learn. Under each perspective, selected theorists will be studied in terms of their specific theory and its application to the clinical teaching model. Emphasis will be placed upon remediation methodology derived from each theory. Prerequisite: SPED 533, 534, and consent of department.

635 Counseling Parents of Exceptional Children and Youth 3 hrs.
This course explores the dynamics of parental reactions to their handicapped children and youth. Techniques of dealing with stress situations in the home, in the school, and in the community are developed. The students are given opportunities for contact with parents of exceptional children. Attention will be given to the following topics: Parent's rights, the advocate relationship, parent education, life consultation, and techniques of interviewing and interpretation. Prerequisite: Consent of department.

636 Topical Seminar in Special Education 2 hrs.
To provide a survey or in-depth coverage of topics directly related to the education of exceptional children and youth. May be repeated for credit. Prerequisite: Consent of department.

637 Research and Evaluation Techniques in Special Education 4 hrs.
Through various class activities and the use of simulations, students completing this course will acquire skills and knowledge of research and evaluation in the areas of: the role of research and evaluation in special education, the use of the scientific approach, research and evaluation designs, observation and measurement, statistical analysis, interpretation of research and evaluation reports, and report writing. Prerequisite: Consent of department.

638 The Application of Behavior Theory to Classroom Teaching 3 hrs.
Emphasizes the implications of the principles of behavior theory for classroom teaching techniques, particularly with exceptional children. Introduction to general and specific methods for generating, strengthening, and maintaining desirable behavior, and methods for weakening undesirable behavior. Both academic skills and non-academic behaviors will be included. Normal and abnormal behaviors will be discussed. Direct experimentation in modifying the behavior of a school-age child will be arranged. Prerequisite: Consent of department.

640 Organization and Administration of Special Classes and Services for the Handicapped 2 hrs.
Principles and practices of organization and administration of special programs at state, county, and local levels will be considered, including factors of state aid. Prerequisite: Consent of department.

641 Supervision of Special Education Programs and Services 3 hrs.
This course is designed to provide the experienced special educator with specific knowledges and skills necessary for supervising personnel who are providing direct services to exceptional learners. Attention will be given to general program and personnel factors. Emphasis will be given to those procedures utilized in selecting personnel, identifying resources for program development and support, facilitating change in teacher behavior, and evaluating the effectiveness of program operations and personnel. To demonstrate the competencies in this course, the student will conduct an in-terview with a supervisor in the field and prepare a written and oral report. Successful completion of a comprehensive examination over terms and concepts is also required. Prerequisite: Consent of department.

642 Developing Techniques for In-Service Training in Special Education 2 hrs.
Designed to inform students of the issues and problems involved in developing in-service education and to provide students an opportunity to design and present an in-service program for critique. Determining the needs of a given target population and an examination of delivery systems currently in use will be emphasized.

643 Legal and Financial Aspects of Special Education 3 hrs.
The current legislative and financial base for special education (national, state, and local levels) will be examined and utilized in simulating, real-life situations for the development and modification of special education programs. This will include the basic concept of budgeting of resources and expenditures. Prerequisite: Consent of department.

650 Seminar on Special Education in Higher Education 3 hrs.
Analyzes issues and problems related to departmental, college and university governance, focuses on procedures utilized in recruitment, selection and employment of faculty, emphasizes the significance of evaluation and accountability of curricula, faculty, administrators, and students, examines trends and issues in the development of professional preparation in special education and ancillary areas, and analyzes the manpower spectrum and the diversity of collegiate special education programs and services offered in the United States and foreign countries. Prerequisite: Consent of department.

656 Advanced Educational Foundations of Special Education 3 hrs.
This course is provided for students who have acquired extensive professional preparation and broad experience in the education of exceptional children and youth. An in-depth knowledge of etiologies and characteristics of exceptionalities will be developed. Students will be required to select one area of exceptionality and complete a comprehensive and exhaustive review of the literature. Attention will be given to historical, social, cultural, economic, and psychological factors which have influenced or may influence the roles, functions, and structure of public schools, institutions, and agencies, and the programs and services provided for handicapped students. To demonstrate competency in this course, students will be required to teach undergraduates, prepare and give oral presentations, and successfully complete a comprehensive written examination. Prerequisite: Consent of department.

659 Application of Learning Theories to Educational Programming for Exceptional Learners 2 hrs.
This course will offer an overview of theories of learning as they apply to exceptional learners. An in-depth analysis of selected theories will be conducted in order to compare and contrast the relationships of each
to the development of long-term goals for handicapped learners. Prerequisite: Consent of department.

661 Consultation Skills for Special Education Personnel
2 hrs.
This course is designed to provide the student with those knowledges and skills related to the consultative role of the special educator. Emphasis will be on models of teacher consultation and the development of those interpersonal skills related to the consultant role. Prerequisite: Consent of department.

674 Directed Teaching in Special Education
3-6 hrs.
This course is a requisite for graduate students who are preparing to teach in special education. The course is preferably taken after directed teaching has been completed in a regular classroom. Graded on a Credit/No Credit basis.

675 Internship in College Teaching
3 hrs.
Designed specifically for students officially admitted to the doctoral program in Special Education who are required to demonstrate ability to teach in a formal and informal setting. The student will be expected to evidence ability to plan and execute instructional tasks, develop and apply appropriate evaluative techniques, and interpret students' performances. Competence will be demonstrated in academic advising, supervising undergraduate students enrolled in practicum, and directing students engaged in independent study. Prerequisite: Consent of department.

688 Classroom Management
2 hrs.
This course deals with techniques for the physical, instructional, logistic, and behavioral management of classrooms. Its emphasis will focus on three major topics: (1) instructional management systems, (2) behavior management systems, and (3) self-monitoring systems. Prerequisite: Consent of department.

Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

710 Independent Research
2-6 hrs.
712 Professional Field Experience
2-12 hrs.
730 Doctoral Dissertation
15 hrs.
Agriculture (AGR)

Baker, Head; Associate Professor Benne, Assistant Professor Houdek

Open To Upperclass and Graduate Students

520 Soil Science (3-0)
3 hrs.
Treats soil as a natural resource and investigates how soil formation, composition, and classification are related to various physical, chemical, and biological factors in the environment. Consideration is given to soil fertility, water retention, plant growth, and land use. Prerequisite: AGR 320 or approval of instructor.

Distributive Education (D ED)

Dannenberg, Chairperson; Professor Humberg.

Open To Upperclass and Graduate Students

500 Seminar in Distributive Education (3-0)
2-4 hrs.
This seminar is especially recommended for seniors and graduates in the Distributive Education Department.

570 Organization and Operation of Distributive Education (2-0)
2 hrs.
Deals with the organization and operation of distributive education in relation to the total educational program. It is concerned with preparatory, cooperative, and adult programs. Consideration is given to advisory committees and local, state, and federal relationships.

572 Teaching Techniques and Materials in Distributive Education (3-0)
3 hrs.
This course deals with the methods and techniques used in teaching related subjects to students on cooperative work-study programs, special emphasis will be given to group and individual methods of instruction.

573 Coordination Techniques in Cooperative Education (3-0)
3 hrs.
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 the school, business, and home, and participation activities in the community, especially adapted to prospective coordinators.

596 Independent Study
2-6 hrs.
A program of independent study to provide the unusually qualified student with the opportunity to develop and complete a project which will meet his/her needs and interests in distribution, under the guidance of a departmental faculty member. Two hours credit per semester, accumulative to six hours. Enrollment beyond the first semester may be either for the same project or for a new one. Prerequisite: Consent of instructor.

598 Readings in Distributive Education
1-3 hrs.
Directed, individual study of topics and areas of interest which are not otherwise treated in departmental courses. Prerequisite: Consent of department chairperson.

Open to Graduate Students Only

671 Curriculum Development in Distributive Education (2-0)
2 hrs.
This course provides for mastery of the techniques and skills necessary for curriculum development in the high school, community college, area vocational center, and adult education programs. Recommended for cooperative teacher coordinators.

Open to Graduate Students Only—Please refer to The Graduate College section for course description.

710 Independent Research
2-6 hrs.

Electrical Engineering (EE)

Hesselberth, Chairperson; Professors Davis, VanderKooi, Associate Professor Aag, Assistant Professor Johnson.

Open to Upperclass and Graduate Students

501 Introductory Power Systems (3-0)
3 hrs.
An introduction to electrical power systems for non-electrical engineering students. Prerequisites: EE 211, Math 374.

530 Power System Analysis I (3-0)
3 hrs.
Modern systems: control, optimization, network theories, matrix language, computer methods, steady state. Prerequisite: EE 430.

561 Electromagnetic Fields (3-0)
3 hrs.
Time-varying electromagnetic fields with applications to wave guides and antennas. Prerequisite: EE 361 and 371.
Open to Graduate Students Only

605 Microcomputer Systems (2-3)
3 hrs.
Analysis and design of microcomputer-based systems with emphasis on applications.
Prerequisite: A computer programming course.

610 Network Synthesis (3-0)
3 hrs.
Synthesis of active and passive networks.
Prerequisite: EE 310

630 Power Systems Analysis II (3-0)
3 hrs.
Continuation of EE 530, with emphasis on transient analysis of power systems. Prere-

636 Teaching for Independent Living (2-3)
4 hrs.
Provides a practical background and a basic understanding of skills and problems of the
homebound and visually impaired.

648 Adult Education in Homemaking (2-0)
2 hrs.
Influence of developmental needs of adults and changes in society affecting families in
developing adult programs in homemaking education.

650 Advanced Study of Home Management (2-0)
2 hrs.
Student may enroll more than once. Maximum credit not to exceed four hours.

660 Clothing Techniques (2-2)
2 hrs.
Meets the needs of the advanced student in clothing construction techniques.

664 Seminar in Home Economics Education (2-0)
3 hrs.
Investigation and discussion of current research and literature in textiles and clothing.
Repeatable if topic varies.

695 Special Topics in Electrical Engineering
1-4 hrs.
Covers special topics not included in regular classes. May be repeated for credit with a
different topic. Consent of instructor.

700 Problems in Nutrition (3-0)
3 hrs.
A discussion of current problems in nutrition. Not open to dietetics majors. HEC 210 or
equivalent.

702 Tailoring Techniques (2-2)
2 hrs.
Specialized tailoring techniques in coats and suits. Problems in the use and performance
of new textiles in clothing.

704 Studies in Textiles and Clothing (2-0)
2 hrs.
Concentrated study of specifics within these fields relating to the interests of the
students. Can be repeated if topic is dif-

706 Seminar in Home Management (2-0)
2 hrs.
Utilization of case studies and research fin-
dings for the purpose of analyzing and
understanding home management.

708 Seminar in Textiles and Clothing (2-0)
2 hrs.
Investigation and discussion of the current
research and literature in textiles and
clothing. Repeatable if topic varies.

710 Nutrition in the Life Cycle (2-0)
2 hrs.
Concentrated study of nutritional needs
throughout the life cycle. Emphasis on (1)
maternal and child nutrition, (2) adolescent
and young adult nutrition, and (3) aging and
nutrition on a three-year rotation basis. Stu-
dent can enroll for any stage or for each
stage in subsequent semesters. HEC 409 or
500.

712 Seminar in Foods and Nutrition (2-0)
2 hrs.
Investigation and discussion of the current
research and literature in foods and nutri-
tion.

714 Nutrient Metabolism I (2-0)
2 hrs.
Study of the functions, requirements, and in-
terrelationships in metabolism of energy,
protein, carbohydrate, and lipids.

715 Nutrient Metabolism II (2-0)
2 hrs.
Study of the functions, requirements, and in-
terrelationships in metabolism of vitamins
and minerals.

716 Consumer Education (2-0)
2 hrs.
Marketing problems and consumer credit.
Students work on individual problems which
concern the techniques of buying consumer
goods.

618 Teaching of Specific Subjects in Home Economics (2-0)
3 hrs.
Intensive study of problems in the specializ-
ed areas of Foods and Nutrition, Home Furn-
ishings, Textiles and Clothing, Methods,
etc. May enroll more than once. Maximum
credit not to exceed four hours.

622 Vocational Laboratory Experiences (2-3)
A supervised experience program in a specific occupational area. Prerequisite:
HEC 642 or permission of instructor.

636 Teaching for Independent Living (2-3)
4 hrs.
Provides a practical background and a basic understanding of skills and problems of the
homebound and visually impaired.

648 Adult Education in Homemaking (2-0)
2 hrs.
Influence of developmental needs of adults and changes in society affecting families in
developing adult programs in homemaking education.

650 Advanced Study of Home Management (2-0)
2 hrs.
Student may enroll more than once. Maximum credit not to exceed four hours.

664 Seminar in Home Economics Education (2-0)
3 hrs.
Investigation and discussion of current research and literature in family relationship-
ships.

664 Seminar in Home Economics Education (2-0)
3 hrs.
Investigation and discussion of current research and literature in Home Economics
education.
666 Studies in Home Economics Education (2-0)  
2-6 hrs.  
Investigation of certain areas in Home Economics education selected to meet individual needs of the students. May be taken more than once if subject matter is different. Maximum credit is six hours.  
Open to Graduate Students Only—Please refer to the Graduate College section for course descriptions.  
700 Master's Thesis  
6 hrs.  
710 Independent Research  
2-6 hrs.

Industrial Engineering (IEGM)  
Wolf, Chairperson; Professors Fitch, Groulx, Proctor, Rayl, Scott, Associate Professors Bafna, Bougher, Oglyant; Assistant Professor White.

Industrial Engineering and Manufacturing Administration  
Open to Upperclass and Graduate Students  
500 Labor Management Relations (3-0)  
3 hrs.  
Interplay among government agencies, labor organizations, and management. Particular emphasis is placed on collective bargaining procedures, issues, and applications through case studies. Prerequisite: IEGM 403.  
502 Industrial Supervision (3-0)  
3 hrs.  
The supervisor's duties, obligations, and responsibilities in his/her industrial role. The practical application of behavioral science principles to the industrial environment. Not open to students with credit in IEGM 402.  
505 Advanced Methods Engineering (3-0)  
3 hrs.  
Synthesis of effective work methods using a predetermined basic motion time system. Methods-Time Measurement, standard data system development, and administration. Prerequisites: IEGM 305.  
508 Advanced Quality Control (3-0)  
3 hrs.  
Analysis and application of new concepts in the fields of quality control. Tests of significance, probability studies, and other uses of statistics as applied to quality control. Prerequisite: IEGM 318 or 328.  
518 Engineering Valuation and Depreciation (3-0)  
3 hrs.  
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: IEGM 310.  
542 Human Factors Engineering (2-3)  
3 hrs.  
A survey of research on the adaptation of equipment, products, and environment to human use. Prerequisite: Permission of instructor. (Cross-listed with PSY 542.)  
545 Health Care Systems Improvement (3-0)  
3 hrs.  
The work simplification philosophy and strategy as applied to health care systems. Techniques for systems and methods improvement. A field clinical systems improvement project is required. Not open to students with credit in IEGM 305. Prerequisite: Undergraduate standing.  
Open to Graduate Students Only  
600 Concepts and Principles for Manufacturing Administration (3-0)  
3 hrs.  
To study the concepts of supervision with particular design for those who have had little or no previous academic orientation to the principles, concepts, and philosophy of industrial supervision. Not open to those with credit in IEGM 402 or 502.  
601 Engineering Seminar (1-0)  
1 hr.  
A seminar concerned with current topics in engineering with emphasis on application of engineering principles and professionalism. May be repeated for up to three hours. Prerequisite: Permission of instructor.  
604 Facilities Planning and Design (3-0)  
3 hrs.  
An analytical approach to the planning and design of manufacturing facilities and material handling systems. Prerequisite: IEGM 404.  
606 Capital Budgeting for Engineers (3-0)  
3 hrs.  
Concepts, principles, and techniques of making decisions pertaining to the acquisition and retirement of capital goods by industry and government. Topics include the time value of money, basic economic decision models, effect of taxation and depreciation on economic decision and capital allocation. Not open to those with credit in IEGM 310.  
608 Reliability Engineering (3-0)  
3 hrs.  
The formulation of mathematical models for reliability allocation and redundancy. Topics include time dependent and time independent prediction measures for both maintained and non-maintained systems. Prerequisite: MATH 360 or 362.  
610 Linear Programming for Engineers (3-0)  
3 hrs.  
The formulation of linear mathematical models as applied to engineering problems. Solutions to linear programming problems are obtained by using appropriate algorithms. Sensitivity analysis techniques are presented and the significance of changes in the model are studied. Prerequisite: MATH 129.  
611 Operations Research for Engineers (3-0)  
3 hrs.  
Concepts and techniques of operations research with emphasis on industrial applications. Topics include queuing theory, inventory models, Monte Carlo simulation, game theory, and dynamic programming. Linear programming is not included, see IEGM 610. Prerequisite: MATH 360.  
622 Industrial Supervision Seminar (3-0)  
3 hrs.  
An analysis of the writings, literature, and philosophy concerning line supervision and employee direction in manufacturing industries.  
624 Supervision of Industrial Training (3-0)  
3 hrs.  
The philosophy and responsibilities of the Industrial Training Director. Techniques and methods of evaluating training in industry. Administrative procedures to develop training programs in apprenticeships, supervisory training, supervisory training, on-the-job training, and other concepts of industrial training.  
626 Public Sector Labor Relations (3-0)  
3 hrs.  
Collective bargaining in the federal, state, and local governments.  
640 Introduction to Manufacturing Administration (3-0)  
3 hrs.  
An introduction to the Master's in Manufacturing Administration program, including a discussion of computer applications, preparation of short reports and personal and societal concerns of technically educated professional employees.  
657 Studies in Industrial Engineering (3-0)  
3 hrs.  
Advanced work organized around topics of current interest in engineering and technology. The specific topic will be shown in the course title when scheduled. May be repeated for credit with a different topic. Prerequisite: Permission of instructor.  
695 Advanced Topics in Industrial Engineering  
1-4 hrs.  
A specialized course dealing, each time it is scheduled, with some particular advanced aspect of Industrial Engineering not usually included in other course offerings. Topic announced in semester or schedule of classes. May be repeated for credit with a different topic. Prerequisite: Permission of instructor.  
697 Problems in Industrial Engineering  
1-6 hrs.  
Special problems of individual need or interest under the direction of a member of the graduate faculty. May be elected with approval of department chairperson and faculty member. Application must be submitted and approved prior to the election of the course. May be repeated up to maximum of six hours.

Industrial Technology and Education (ITE)  
Feiner, Chair. Professors Bruce, Byle, Hutchings, Lindbeck, Rayford, Risher, Associate Professors Alkins, Darlington, Hall, Fillingham, Schwanske.

Open to Upperclass and Graduate Students  
500 Furniture Production (1-3)  
2 hrs.  
Production of furniture, including the development of tooling and jig and fixture design for mass production of furniture. Prerequisite: ITE 200.  
502 Wood Technology (1-3)  
2 hrs.  
Experience in and study of cellulosic materials and their use in construction and manufacture, including characteristics of lumber, hand made wood products, the
materials related to the fabrication of wood products. Applied research, and testing
Prerequisite: ITE 100

505 Problems in Woodworking (2-2)
2 hrs.
Advanced laboratory experiences in woodworking. Content selection, project building and new techniques covered. Written reports based on current literature required. Areas covered dependent on individual needs.

509 Estimating and Scheduling for Building Construction (2-3)
3 hrs.
Covers organization and management of firms involved in residential and light commercial construction. Includes methods of estimating and cost control. Also, techniques of planning, scheduling, and control of construction projects. Prerequisites: ITE 305, 406, 407

520 Architectural Graphics (1-5)
3 hrs.
A graphic study of architectural details and construction methods of frame and masonry veneer residential dwellings. Emphasis placed on residential planning and design principles. Design of a single-family dwelling, including preliminary studies, floor plans, elevations, all necessary details, plot plan, specifications required. Drawings will be reproduced. Prerequisites: ITE 120, or equivalent, and 305 (can be taken simultaneously).

522 Laboratory Practices in Drafting (1-3)
2 hrs.
Methods and problems of teaching drafting and graphics on the secondary level. Emphasis placed on review of secondary and collegiate texts, resource materials, problem design, and drawings. Prerequisite: Twelve hours in drafting and junior classification.

523 Advanced Drafting Practice (1-3)
2 hrs.
Advanced laboratory experiences in mechanical, architectural, and machine drawing in conjunction with study of current technical literature. Written reports required. Advanced instruction in engineering drawing and descriptive geometry included.

524 Commercial Architectural Design (1-3)
2 hrs.
Basic experience in designing light commercial structures. Emphasis placed on planning, traffic flow, exterior design, materials, and structural details. Prerequisite: ITE 520 or equivalent.

525 Architectural Perspective and Rendering (1-3)
2 hrs.
Intensive study of angular and parallel perspective. Emphasis placed on entourage and rendering techniques in preparing architectural presentation drawings.

530 Research in Machine Shop Practices (1-3)
2 hrs.
For teachers who study and develop advanced techniques in machine technology.

538 Problems in Metalworking (1-3)
2 hrs.
Practical laboratory experiences in forging, foundry, heat treating, machine shop, and arc and acetylene welding. Emphasis on methods of selecting and developing course materials for junior and senior high school students. Course content adapted to meet individual needs. Prerequisite: ITE 234

545 Safety Practices and Compliance (2-0)
2 hrs.
Accident prevention, safeguarding and safe operation of industrial equipment emphasized. OSHA and MISOHA legal responsibility and compliance treated.

547 Modern Technological Practices (0-4)
2-6 hours.
Study, development and application of construction, industry and printing management techniques. Technical short courses offered by industry may be utilized. May be elected in two hour blocks to a maximum of six hours.

548 Modern Technological Practices (2-6 hrs.
Continuation of ITE 547.

551 Half-tone Photo Processes (1-5)
3 hrs.
Emphasis on halftone reproduction and related photo techniques. Postulation, dotations, basic costs and mechanical dropouts will be included. Color separation processes will be investigated. Prerequisite: ITE 350.

552 Estimating (2-0)
2 hrs.
Continuation of Estimating 452. Special emphasis on use of Printing Industry Production Standards in pricing printed materials. Prerequisite: ITE 452.

553 Printing Production Management (3-0)
3 hrs.
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.

560 Problems in Electricity/Electronics (1-3)
2 hrs.
Course is designed to select specific areas in electricity/electronics and study in depth current developments and industrial practices in these areas.

561 Industrial Practicals in Electricity/Electronics (1-3)
2 hrs.
Opportunity to analyze and interpret current developments in electricity and electronics. Research of a specific area and a report are required.

570 Arts and Crafts Techniques (1-3)
2 hrs.
Advanced laboratory experiences in internal plastic carving, leather work, model work, and related crafts in conjunction with study of current technical literature in these areas. Written reports will be required. Course content adapted to individual needs.

572 Metric Conversion (2-0)
2 hrs.
Study of origins and development of the modern metric system and of problems involved in changeover from customary inch-pound system to the metric system of measurement. Course includes application with base ten system, and basic and derived units of the modern international metric measuring system.

573 Mechanics and Conditioning of Equipment (1-3)
2 hrs.
Installation, adjustment, preventive maintenance, and conditioning of power equipment and tool maintenance included.

Emphasis on relationship between proper installation and condition to efficient machine operation.

575 General Industrial Arts Laboratory Organization (1-3)
2 hrs.
Experience in drawing, woodworking, metalworking, electricity, and craftwork required. Includes selection, development, and preparation of instructional materials and institutional media for multiple activity instruction at junior and senior high school levels. Prerequisite: ITE 342 and 344. (344 can be taken concurrently.)

576 Plastics Technology (1-3)
2 hrs.
Comprehensive study of plastic materials and processes and applications of thermoplastic, thermosetting, and selected synthetic materials. Product development emphasizes vacuum forming, compression, extrusion, injection, blow molding, lamination, casting, reinforcing, foaming, coating, and general fabrication.

582 Applied Fluid Power (1-3)
2 hrs.
Deals with fluid power development transmission and control systems. Laboratory experience required application of fluid power to manual or electrically powered machines.

588 Power Laboratory Techniques (1-3)
2 hrs.
Advanced course treating recent applications of energy and power. Emphasis on laboratory planning and equipping, and instructional material evaluation and application to instruction. Prerequisite: ITE 180, or consent.

590 Industrial Arts for the Elementary School (1-3)
2 hrs.
Deals with problems of organizing, correlating, and teaching construction activities in elementary grades. Course materials, techniques, and materials in industrial and craft areas emphasized through development of teaching unit. Offered only through Continuing Education.

593 Arts and Crafts (1-3)
2 hrs.
Covers craft techniques in sketching, leather, wood, and related experiences. Emphasis on procedures, methods, and materials.

596 Consumer Automobile Principles (1-2)
2 hrs.
A course in the methods and problems of providing automobile users with basic information on selecting, purchasing, and maintaining a personal motor vehicle. Designed primarily for driver education and highway safety instructors. Not open to students with credit in TRAN 121, 221, 222, 224, 322, 326, or 421.

598 Readings in Education/Technology (2-4)
2 hrs.
Directed individual or small group study of topics or areas not otherwise treated in departmental courses. Head of department consent required.
671 Industrial Materials (2-0) 2 hrs. Study of basic structures of wood, plastic, metallic, ceramic, and allied materials. Relation of properties of materials to structure included. Laboratory and testing experiences required.

697 Technical Problems 1-3 hrs. For qualified graduate students to pursue technical problems of individual need or interest under direction of a Graduate Faculty member. Approval of Head, Industrial Education Department and Graduate Faculty member required. Applicants must have permanent graduate program filed. Applications must be approved prior to registration for course. Course is repeatable to maximum of three semester hours credits.

Open to Graduate Students Only—Please refer to The Graduate College Section for course descriptions.

700 Master's Thesis 6 hrs.

710 Independent Research 2-6 hrs.

712 Professional Field Experience 2-12 hrs.

Vocational Courses
The following courses are designed for professional preparation in all Vocational-Technical Education programs including those in Distributive Education, Home Economics, Industrial Education, Agriculture, Vocational-Technical Education, and Business Education teaching curricula.

Open to Upperclass and Graduate Students

512 Principles of Vocational Education 3 hrs. The place and function of the practical arts and vocational education in the modern school; fundamental principles upon which this work is based. For teachers of agriculture, business, distributive education, home economics, industrial subjects, office subjects, and administrators. For upperclass and graduate students.


514 Workshop in Vocational-Technical Education 1-3 hrs. Designed to assist vocational education personnel in meeting new educational programs. Standards of quality mandated by the vocational-technical education service. Workshop topics will vary to meet educational 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.

Open to Graduate Students Only

611 Philosophy of Vocational Education (2-0) 2 hrs. Development of American vocational education philosophy, policy, and practice. Consideration given historic, economic, and social influences on vocational and career education philosophy and practice analyzed in relation to education and labor market problems.

614 Administration and Supervision of Practical Arts and Vocational Education (2-0) 2 hrs. Emphasizes functions of administration and supervision, and problems involved in organizing and operating vocational-technical education programs. For administrators and supervisors of vocational education programs and those preparing for such positions.

615 Trends in Technology and Employment (2-0) 2 hrs. Major occupational shifts resulting from recent advances in science and technology. The changing nature of the labor force, economic and sociological implications of automation and atomic power.

617 Seminar in Vocational Education 2-6 hrs. An intensive study of problems related to vocational education. Topics vary from semester to semester, and a student may take more than one topic. See schedule for specific topical offerings and credit hours in any one semester or session. Typical topics offered include: (a) Research in Vocational Education, (b) Vocational Course Development. For teachers, coordinators, and administrators who have completed at least fifteen hours of graduate credit.

Mechanical Engineering (ME)

Henry, Chairperson. Professors Hameinka, Johnson, Nantz; Associate Professors Gill, House, Pridgen, Ryan, Schubert, Sharma, Uribr, Williams.

Open to Upperclass and Graduate Students

521 Welding Design Analysis (3-0) 3 hrs. Winter-Odd Yrs. Production methods and design using modern techniques of electron beam welding, inertia welding, and application of lasers for welding. Use of various protective enclosures, plasma arc welding, automated electronic welding, weld testing techniques. Prerequisites: ME 221, 270, 353.

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.

533 Industrial Ventilation (3-0) 3 hrs. Design and testing of systems to control air quality in laboratories and industrial environments. Prerequisite: ME 356 or consent.

553 Advanced Product Design (3-0) 3 hrs. An engineering design project from concept to adoption. Static and dynamic analysis. Mechanical systems design and layout. Prerequisites: ME 360, 453.

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 355, MATH 374.
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
573 Engineering Materials (3-0)
3 hrs. Spring-Odd Yrs.
Material selection for resistance to both load
and environment. Design parameters for
material selection and various metal
systems, corrosion, service failures and
mechanical behavior or engineering alloys at
high and low temperatures. Prerequisite: ME 373.
564 Casting Design (2-3)
3 hrs. Fall
Engineering design of castings based on
stress analysis and capabilities of production
casting processes. Prerequisites: ME 280.
256
Open to Graduate Students Only
560 Advanced Pulp and Paper Engineering (3-0)
3 hrs. Fall-Odd Yrs.
A unified consideration of the pulp and paper
plant and its sub-systems, stressing
operating efficiencies from the engineering
viewpoint. Includes design considerations,
material and energy balances, power
distribution, evaluation of equipment perfor-
mancc, and typical operating costs. Prere-
quizes: PAPR 203, 204, and 307 (or
equivalent).
560 Advanced Pulp and Paper Engineering
3 hrs.
A specialized course dealing with some par-
ticular advanced area of Mechanical
Engineering. Variable Topics
1-4 hrs.
A specialized course dealing with some par-
ticular advanced area of Mechanical
Engineering not included in other course of-
terings. May be repeated for credit with a
different topic up to six credits. Prerequisite:
Consent of instructor.
697 Problems in Mechanical Engineering
1-6 hrs. Fall, Winter, Spring, Summer
Special problems of individual need or in-
terest under the direction of a member of
the graduate faculty. May be elected with
approval of department chairperson and
faculty member. Application must be submit-
ted and approved prior to the election of
the course. May be repeated up to maximum
of six hours.

**Paper Science and Engineering (PAPR)**

Valley, Head; Gottesman Professor Janes;
Associate Professors Fisher, Kline,
Petersen.

Open to Upperclass and Graduate Students
530 Polymer and Surface Chemistry
3 hrs.
A study of the molecular structure and
polymerization reactions of high molecular
weight compounds in relation to mechanical
and theoretical behavior and chemical prop-
erties. Methods for characterization of bulk
and solution properties of polymers are con-
sidered in detail. Prerequisite: CHEM 361 or
365 or equivalent.
560 Advanced Pulp and Paper Engineering
3 hrs.
A unified consideration of the pulp and paper
plant and its sub-systems, stressing
operating efficiencies from the engineering
viewpoint. Includes design considerations,
material and energy balances, power
distribution, evaluation of equipment perfor-
mancc, and typical operating costs. Prere-
quizes: PAPR 203, 204, and 307 (or
equivalent).

**600 Surface and Colloid Chemistry (2-3)**
3 hrs.
Intermolecular forces are considered in
detail to build a sound background for con-
sideration of surface and colloidal behavior
of matter. The thermodynamics of interfaces
and surfaces is covered in detail considering
the topics of absorption, surface films, wet-
ting, capillary penetration, and diffusion.
Colloidal topics covered include areas such as
ionic boundary layers, electrokinetic poten-
tial, swelling and shrinkage of gels, ion ex-
change, surface active agents, detergency,
and retention of particles.

620 Paper, Printing, and Ink (2-3)
3 hrs.
A detailed analysis of the interrelationships
of paper and the printing process. Printing
problems and quality are considered as they
are influenced by paper, coating, ink, and
press conditions and operations.

640 Coating Rheology (2-3)
3 hrs.
The theories of flow of non-Newtonian li-
quids are discussed as they apply to
pigmented coating systems. Further theories
are formulated and evaluated in the lab to
attempt to explain the behavior of coating
under the shear conditions found in coating
application systems.

660 Mechanics and Optics of Paper and
Fibers (2-3)
3 hrs.
The mechanics and optics of individual
fibers and fiber networks will be considered
from both theoretical and measurement
standpoints. Stress-strain-analysis, theory of
elasticity and flow, statics, reflection, ab-
sorption, transmission, and light scattering of
these systems will be covered.

680 High Polymer Topics (3-0)
3 hrs.
The physical chemistry, engineering proper-
ties, and behavior of synthetic and natural
polymers and their solutions are presented.
Methods of characterization and significance
of molecular parameters are included.
Art (ART)

Professors Deluca, Engstrom, Johnston, Keaveny, Link, Meyer, Mohr, Rizzolo, Robert; Associate Professors Argyropoulos, Carney, Chressanthis, Frattalone, Gammon, King, Lowder, Mengin, Methaney, Moulton, Neu, Rhodes; Assistant Professors Mason, Naftel.

Open to Upperclass and Graduate Students

510 Advanced Drawing
3 hrs.
Drawing as the study of form and as a conclusive aesthetic statement. Prerequisite: ART 410 or equivalent experience. Repeatable for credit.

520 Independent Study in Art History
2-3 hrs.
Problems in art history from ancient times to the present selected by the individual student in consultation with the instructor. Prerequisites: ART 220, 221, and a 500-level course in the area of interest; permission of instructor. Repeatable for credit.

521 Topics in Art History: Variable Topics
3 hrs.
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 and 221 or equivalent for Art majors, none for other students. Repeatable for credit under a different title.

525 Seminar in Art
2 hrs.
Investigation and discussion in contemporary philosophies of art and their relationship to each student’s work. Graded on a Credit/No Credit basis. Prerequisite: Junior Art major.

529 Advanced Ceramics
3 hrs.
Advanced work in ceramics including glaze calculation. Prerequisite: ART 430 or equivalent experience.

530 Advanced Ceramics
1-6 hrs.
Advanced work in ceramics on an independent basis. Prerequisite: ART 529 or equivalent experience. Repeatable for credit.

531 Sculpture
3 hrs.
Advanced work in sculpture. Emphasis on bronze and aluminum casting and related techniques. Prerequisites: ART 340, 431, or equivalent experience. Repeatable for credit.

534 Textiles
3 hrs.
Advanced work in textile design. Prerequisites: ART 434 or equivalent experience. Repeatable for credit.

Art (ART)

535 Multi-Media Art
3 hrs.
Various forms of art that deviate from the conventional media, such as light, kinetic, and performance art. Prerequisite: ART 435 or permission of instructor. Repeatable for credit.

538 Jewelry
3 hrs.
Advanced work in jewelry processes. Prerequisite: ART 438 or equivalent experience. Repeatable for credit.

539 Metalsmithing
3 hrs.
Advanced work in metalsmithing. Prerequisite: ART 439 or equivalent experience. Repeatable for credit.

540 Painting IV
3 hrs.
Advanced painting. Prerequisite: ART 410 (or concurrently), 440, or equivalent experience. Repeatable for credit.

541 Printmaking Workshop
1-6 hrs.
An advanced seminar 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 400 level printmaking course. Repeatable for credit.

542 Watercolor
3 hrs.
Continuation of advanced water color techniques with emphasis on experimentation. Prerequisites: ART 240, 442, or equivalent experience. Repeatable for credit.

545 Graphic Design
3 hrs.
Advanced work in graphic design. Prerequisite: ART 445 or equivalent experience. Repeatable for credit.

548 Photography IV
3-6 hrs.
Professional development through research in advanced projects. Prerequisite: ART 448 or equivalent experience. Repeatable for credit.

552 Preparation for Art Teaching
3 hrs.
A course designed to investigate the current problems and 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); the phenomena of perceptual learning; the actual construction of an operant art curriculum for the elementary, middle, and high school programs. Emphasis is placed upon developing professional viability. Prerequisite: Art 452 and art major status.
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.) Prerequisite: 252, 352, 452, 552, and permission of the art education chairperson. This course is open to graduate and non-degree level students.

560 Arts Education for the Elementary Teacher 3 hrs.
A studio course designed for the elementary classroom teacher to provide experiences in qualitative elementary arts and integrated arts programming in the elementary public school. Repeatable for credit.

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.

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 cent.).

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.

586 History of Baroque Art 3 hrs.
Art of the late sixteenth, seventeenth, and early eighteenth centuries. Major artists and architects discussed are: Caravaggio, the Carracci, Rembrandt, Rubens, Poussin, Velasquez, Bemini, Borromini and Neumann.

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.

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. Prerequisites: ART 220 and 221 for Art majors and minors; none for other students.

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 art, and conceptual art. Prerequisites: ART 220 and 221 for Art majors and minors; none for other students.

591 History of Prints 3 hrs.
Major developments in printmaking, including origins of woodcut and engraving. Renaissance and baroque master etchers and engravers (Durer and Rembrandt).

Lithography in the nineteenth century (Delacroix, Daumier, Toulouse-Lautrec). Twentieth-century printmaking. Prerequisites: ART 220 and 221 for Art majors and minors; none for other students.

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 and sculpture, with emphasis on the work of Stuart, Cole, Bingham, Homer, Eakins, Ryder, Saint-Gaudens, Marin, Pollock, David Smith, and recent developments.

594 History of Afro-American Art 3 hrs.
Painting and sculpture in the United States by Americans of African ancestry from the Colonial period to the present. Includes examination of the African art background and the continuation of African art traditions and skills in America. Prerequisites: ART 220 and 221 for art majors; none for other students; Junior standing required.

597 History of Modern Architecture 3 hrs.
Major developments in architecture since 1750 with emphasis on late 19th or 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. Prerequisite: ART 220 and 221 for Art majors and minors; none for other students.

Open to Graduate Students Only

610 Advanced Drawing 1-6 hrs.
Graduate level work in drawing. Prerequisite: ART 510. Repeatable for credit.

613 Graduating Presentation 2 hrs.
Preparation and presentation of graduating exhibition, portfolio, and oral examination or written thesis, with the assistance of the student's major adviser. Evaluated by a departmental reviewing committee. Prerequisite: Last year of graduate study.

620 Independent Study in Art History 1-3 hrs.
Problems in art history from ancient times to the present selected by the individual student in consultation with the instructor. Prerequisites: ART 220, 221, and a 500-level course in the area of interest or the equivalent; permission of instructor. Repeatable for credit.

625 Seminar in Art 2 hrs.
Investigation and discussion of contemporary philosophies of art and their relationship to each student's work. Graded on a Credit/No Credit basis.

630 Advanced Ceramics 1-6 hrs.
Graduate level work in ceramics. Prerequisite: ART 530. Repeatable for credit.

631 Advanced Sculpture 1-6 hrs.
Graduate level work in sculpture. Prerequisite: ART 531. Repeatable for credit.

634 Advanced Textile Design 1-6 hrs.
Graduate level work in textile design. Prerequisite: ART 534. Repeatable for credit.

635 Advanced Multi-Media Art 1-6 hrs.
Graduate level work in Multi-Media Art. Prerequisite: ART 535. Repeatable for credit.

638 Advanced Jewelry 1-6 hrs.
Graduate level work in jewelry. Prerequisite: ART 538. Repeatable for credit.

639 Advanced Metalsmithing 1-6 hrs.
Graduate level work in hand-hammered metal. Prerequisite: ART 539. Repeatable for credit.

640 Advanced Painting 1-6 hrs.
Graduate level work in painting. Prerequisite: ART 540. Repeatable for credit.

641 Print Workshop Seminar 1-6 hrs.
Advanced research in development of personal concept, method, and uses of graphic processes. Emphasis on personal expression; exploration toward an individual and mature imagery. Prerequisite: ART 541.

642 Advanced Watercolor 1-6 hrs.
Graduate level work in watercolor. Prerequisite: ART 542. Repeatable for credit.

645 Advanced Graphic Design 1-6 hrs.
Graduate level work in graphic design. Prerequisite: ART 545. Repeatable for credit.

648 Advanced Photography 1-6 hrs.
Graduate level work in photography. Prerequisite: ART 548 or equivalent experience. Repeatable for credit.

655 Workshop in Art for Secondary Teachers 2 hrs.
A course designed to help the secondary teacher with no professional training in art or art education to better understand the child at this level and to help him/her in his/her creative mental growth through art activities.

656 Art Teaching Seminar 3 hrs.
This course examines current issues and directions in Art Teaching. Content centers on extensive reading as related to relevant issues: presentations of papers by course participants; discussions and guest speakers.

657 Issues in Art Teaching 3 hrs.
(a) Creative Problem Solving: This topic will study creative problem solving and problem solving techniques as they relate to Art Teaching. Course work centers on examination of creative problem solving through various subject areas and studio related activities. Repeatable for credit.

(b) Inter Arts: This topic is designed for the public school Art teacher, to study the inter-relationship of the Arts and how both historical and studio programs can be developed and supported through team planning/teaching and audiovisual/video operation. Repeatable for credit.

(c) Relating Art: This topic is designed for teachers of the arts to study cognitive and affective inter-relationships of Art, Music, Dance, Drama or Poetry as educative values. Performance skills are taught using the technical vehicles of coordination, correlation, translation, and integration through
both historical review and direct form making. Repeatable for credit.
d. Research in Art Teaching: This topic reviews current research in Art Teaching directed towards classroom application. The course will consist of presentations and discussions on published research and will lead to written proposals for in-the-field studies. Repeatable for credit.
e. Studio Problems for the Schools: This topic explores varied media and materials with application for use in school situations. Assigned projects will be given along with the opportunity for students to investigate areas in which they can improve and update their skills and knowledge. Consideration will be given to new and recent materials and media.

658 Art Education Research
1-6 hrs.
To examine historical and contemporary philosophies in art education in order to familiarize the student with current methods of research in the field. Whenever appropriate, opportunity will be given to students to do pilot research in an area of their own needs and interests. Repeatable for credit.

659 Advanced Art Education
3 hrs.
An examination of some of the unique aspects of teaching art in the public schools. New materials, special and general materials sources, bibliographic resources, and related references are gathered and explored. Field trips will be developed to expose students to potential community resources in art, and discussions will examine current literature, trends and techniques in art education. (A lecture-lab).

660 Related Arts
3 hrs.
A course that explores the art teacher’s role in contemporary and experimental procedures in the teaching of the arts in the public schools. Some factors to be examined are team teaching, team learning and planning. Audio-visual/(video) support, the individual school situation, and its personnel.

Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

700 Master’s Thesis
6 hrs.
710 Independent Research
2-6 hrs.

Dance (DANC)
Cornell, Chairperson: Professors Gamble and Stillwell; Assistant Professors Mills, Thomas.

Open to Upperclass and Graduate Students
500 Special Studies in Dance History
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: DANC 300.

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 hrs. Prerequisite: Adviser consent.

540 University Dancers
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 only.

548 Dance and the Related Arts
3 hrs.
Related study of cross-sections of art disciplines at various points in the historical development of man. Assumes prior knowledge of historical and philosophical development of at least one of the disciplines. Prerequisite: DANC 500, 525, or consent of adviser.

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 either DANC 330 or DANC 630. May be repeated for credit. Prerequisite: Audition or consent of company director.

560 Performance Variable
An experience in student or faculty-choreographed dance works, in projects not encompassing 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.

570 University Ballet Theatre (UBT)
2 hrs.
UTB is a major performing ensemble of the Department of Dance. Ballet dancers will have experience performing and rehearsing in a professional company environment. Members and apprentices must attend DANC 310 or DANC 610. Repeatable for credit. Prerequisite: Audition or consent of Ballet Director.

582 Graduating Presentation
1-3 hrs.
Preparation and presentation of an advanced project in dance, to be either a written paper or the performance or choreography of a major dance work. An oral examination is included. To be taken by B.F.A. candidates in their senior year. Prerequisite: Consent of adviser.

588 Dance Production
2 hrs.
The study of the production aspects of dance including sound, lighting, costing, makeup and stage management. Practical applications will include first-hand experience in creating tape collages with special effects, designing lighting, costumes and make-up.

589 Dance Management
2 hrs.
Course covers Front of House aspects of management and publicity, budget, programming, organization of elements involved in company management and grantmanship. Practical application of these principles will be evaluated wherever possible.

598 Readings in Dance
1-4 hrs.
Advanced students with good academic standing may elect to pursue independently a program of readings in areas of special interest. Prerequisite: Approved application required.

599 Non-reading Independent Study in Dance
1-4 hrs.
Advanced students with good standing may elect to pursue independently 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.

Open to Graduate Students Only

600 Practicum
2 hrs.
An in-depth experience in the area of dance technique, dance performance, dance production, or choreography at a high level of proficiency not normally available as a separate course. Included is the possible study off campus with a professional dancer in ballet, jazz, or contemporary dance within a continuous period of time equal to one-third of a semester. May be repeated for credit. Approved application required.

610 Ballet Ensemble
2 hrs.
A course designed to give the advanced dance student an intensive experience in the maintenance of proficient technique and ensemble performance in the classical ballet style. Four hours are required for the M.A. candidate who takes ballet as his/her ensemble choice. May be repeated for credit. Prerequisite: By performance audition.

620 Jazz Ensemble
2 hrs.
A course designed to give the advanced dance student an intensive experience in the maintenance of proficient technique and ensemble performance in the jazz style. Four hours are required for the M.A. candidate who takes jazz as his/her ensemble choice. May be repeated for credit. Prerequisite: By performance audition.

625 Special Studies in Choreography
2-3 hrs.
Selective study within a broad range of aspects of choreography with emphasis on concepts, theory, and advanced skills. Prerequisite: Consent of graduate adviser. Possible topics include:
a. Choreography for the Musical Theatre
b. Choreography for the Opera
c. Multi-Media Choreography
d. Choreography for the Unusual Architectural Environment

574 Improvisational Approach to Staging and Composition
f. Choreography for New Sound Structures

630 Modern Ensemble
2 hrs.
A course designed to give the advanced dance student an intensive experience in the maintenance of proficient technique and ensemble performance in the contemporary dance form. Four hours are required for the M.A. candidate who takes contemporary dance as his/her ensemble choice. May be repeated for credit. Prerequisite: By performance audition.
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. Pre-requisite: DANC 588 or consent of graduate adviser.

517 Collegium Musicum 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 enrolled Music History majors. Graduate students may count not more than two hours of this course for graduation. Membership by audition.

518 Improvisation 2 hrs.
A course in the fundamentals of instrumentonal 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. Pre-requisite: MUS 161.

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 the instructor.

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. Pre-requisite: MUS 530.

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. Pre-requisite: MUS 331.

5330 College New Music Ensemble 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.

542 Studies in Music Education 2 hrs.
Topics 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 four credits.
- Research in the Psychology of Music 2 hrs.
Development and employment of research methods and techniques applied to the psychology of music. Experimental projects will be required in areas dealing with music/or musical behavior. Pre-requisite: MUS 380.

544 Music Education Materials: Variable Topics 2 hrs.
A study of the theoretical bases for, and practice in, analyzing and evaluating music for use in music education programs. This course may be repeated for a maximum of four credits.

545 Music Theatre Productions 2 hrs.
A course in the techniques of acting, singing, dancing, and producing of musical theatre. Students will be divided into small groups, each group having been assigned to produce scenes or acts from the standard musical theatre repertory. Assignments in these groups will include choreographing, blocking action, directing the music, performing, stagecraft, and other activities essential to the production. Pre-requisite: Junior standing.

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, scoring practices, calligraphy, and contemporary trends within the medium. Pre-requisite: MUS 161 with grade of C or better.

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, voices and percussion in relation to traditional and contemporary trends within the medium. Pre-requisite: MUS 555 and MUS 264, or MUS 555 and MUS 264 concurrently.

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. Pre-requisite: 161, C or better.

559 Jazz Improvisation II 2 hrs.
A study and directed application of advanced techniques of jazz improvisation including chord extension, voicing, inversions and substitutions, chord function applied to applications and complex scales and their applications. All students will be required to develop aural and performance skills relative to those theory skills. Pre-requisite: 558, C or better.
560 Counterpoint 2 hrs.
A study of the contrapuntal techniques of the 16th, 17th, and 18th centuries. Written assignments are closely correlated with the contrapuntal styles of significant composers. Prerequisite: MUS 161 with grade of C or better.

561 Counterpoint 2 hrs.
A continuation of MUS 560. Prerequisite: MUS 560.

562 Advanced Composition 2 hrs.
A study of twentieth century techniques in composition with original work in vocal and instrumental forms. Prerequisite: MUS 362.

563 Advanced Composition 2 hrs.
A continuation of MUS 562. Prerequisite: MUS 562.

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.

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.

568 Orchestration 2 hrs.
A continuation of MUS 567. Prerequisite: MUS 567.

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.

571 Introduction to Musicology 3 hrs.
A continuation of MUS 570.

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. Handel. Special attention to the development of style from monody through harmonic polyphony. Prerequisite: MUS 270 and 271.

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 271.

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. Prerequisites: MUS 270 and 271.

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.

576 Musicology and Research 2 hrs.
A continuation of MUS 575. Prerequisite: MUS 575.

577 Symphonic Literature 2 hrs.
A survey of music written for symphony orchestra during the Classic and Romantic periods.

578 Chamber Music Literature 2 hrs.
A survey of chamber music literature of the Classic and Romantic periods.

579 Operatic Literature 2 hrs.
A survey of opera from 1600 to the present.

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 271.

581 Choral Music Literature 3 hrs.
A survey of choral music (mass, motet, anthem, cantata, oratorio) from the Renaissance through the Romantic period.

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.

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.

590 Studies in Pedagogy 1-4 hrs.
Topics to be announced. Selection will be made from the following: Piano Pedagogy, Vocal Pedagogy, String Pedagogy, Brass Pedagogy, Woodwind Pedagogy, Pedagogy of Teaching Theory, or similar topics. May be repeated for credit. Prerequisite: 300 level applied voice or permission of instructor.

593 Piano Technology 1 hr.
An introduction to piano technology in which various aspects of the technician's art are investigated. Important topics covered include mechanics of the musical scale, art of tuning in equal temperament, and construction of modern grand and vertical pianos. The course is designed to give the student valuable insights into the field of piano technology in order that he or she might intelligently purchase and care for this instrument. Not intended to train tuners.

594 Electronic Media 2 hrs.
The purpose of this course is to expose the student to the equipment used in various recording situations and its operation, as well as discussing the artistic use of this equipment. Although predomnately a technique course, areas which affect the creative aspects of the final recording will be discussed (such as microphone placement, tasteless vs. inappropriate editing, etc.). In addition to the recording aspects, other electronic instruments used in performances will be surveyed, including synthesizers of various types (both keyboard and non-keyboard) and traditional electronic instruments (guitars, electronic organs, electronic pianos, and various sound modification devices).

597 Projects in Music 1-4 hrs.
A program of independent study to provide the unusually qualified music 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 project must come from the student and must be approved by the faculty member proposed to supervise the study. Prerequisite: Application approved by Department.

598 Readings in Music 1-4 hrs.
Graduate students may enroll in this course after consultation with the graduate adviser.

600 Applied Music 1-4 hrs.
Private lessons for the graduate student in the major performance area. Includes conducting.

610 Introduction to Research in Music 3 hrs.
A course in the general methods and techniques of research in the field of music. Students will complete a comprehensive bibliography, an annotated bibliography, and a research paper in the area of concentration of their graduate program of study.

617 Opera Workshop 2 hrs.
A production experience in 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.

Topics will be chosen from the following: Eighteenth Century, Nineteenth Century, Twentieth Century, and selected Chamber Literature. The course may be repeated for credit. Prerequisite: Admission to the Applied String Curriculum or permission of the instructor.

640 Band Techniques and Organization 2 hrs.
641 Choral Techniques and Organization 2 hrs.
The study of choral activities in relation to organization, repertoire, style, diction, singing technique, balance, blend, tone quality, phrasing, rehearsal technique, and conducting.

642 Philosophy of Music Education 2 hrs.
Designed to acquaint the student with aesthetic and pragmatic thinking regarding the nature and value of music, and to provide a rationale for curricular development and teacher behavior.

650 Seminar in Music Education 2 hrs.
Each participant will be expected to develop a project which is of interest to him or her, but each project will be subject to group discussion, review, and analysis. The lectures and reading will deal with the entire field of music education.

658 Techniques of Research in Music Education 2 hrs.
Available research in music education will be analyzed as to method and technique. Outlines will be submitted for proposed studies involving the techniques thus discovered, and one will be developed.

659 The Teaching of Applied Music 2 hrs.
Survey of teaching problems involved in music of various periods and styles. Critical analysis of performances in student's major performance medium, as well as other media, will be required. Pedagogical problems of teaching both secondary and university age level students will be considered.

660 Advanced Counterpoint 2 hrs.
Contrapuntal techniques of the 16th, 17th, 18th, 19th, and 20th centuries. Written assignments are closely correlated with analysis of the contrapuntal styles of significant composers. May be repeated for credit. Prerequisite: MUS 561.

661 Modal Counterpoint 2 hrs.
A study of modal counterpoint as exemplified by the composers of the 16th century. Practical application through written assignments in the style of the period. Prerequisite: Graduate standing in music.

662 Seminar in Composition 2 hrs.
The completion of an original composition of larger scope in any medium, accompanied by analysis of advanced works and reading assignments. May be repeated for credit. Prerequisite: MUS 563.

664 Form in Music 2 hrs.
A survey of the musical forms, large and small, used from the Baroque period to the present day. Analysis of both structure and texture of representative works of the various periods and styles.

665 Band Arranging 2 hrs.
Instruction in scoring for small wind instrument ensembles and the band. Opportunity will be provided to hear the results of each student's work.

666 The Teaching of Theory 2 hrs.
Analysis of various techniques, philosophies, and materials used in teaching theory and their relative strengths and weaknesses. Application of what we know about the learning processes to theory and the practical application of theory to all musical study.

667 Advanced Orchestration 2 hrs.
Scoring projects for full orchestra, solo and orchestra, and chorus and orchestra. Analysis of the orchestral techniques of 20th century composers. Projects employing the orchestral techniques of the avant-garde. May be repeated for credit. Prerequisite: MUS 568.

670 Seminar in Musicology 1 hr.
Research projects from all areas of the history of music. Each student will present his or her findings both as a formally written paper and as a seminar report. Emphasis will be placed on writing style, manner of presentation, scholarship, and validity of conclusions.

671 Seminar in Musicology 1 hr.
A continuation of MUS 670.

672 Medieval Music 3 hrs.
The history of music in Western Europe from Gregorian Chant through the 14th century. Special attention will be given to problems of musical notation and how they relate to musical style. Projects will involve the transcription of music from older notational systems to modern notation.

673 Renaissance Music 3 hrs.
The history of music in Western Europe during the 15th and 16th centuries. Special attention will be given to problems of musical notation and how they relate to musical style. Projects will involve the transcription of music from older notational systems to modern notation.

674 Contemporary Music 2 hrs.
A survey of trends in European music and music of the Americas from about 1910 to the present day.

679 Composers 2 hrs.
An investigation of the life and works of a significant composer. The particular composer selected for study during a given semester will be indicated in the schedule of classes. The course may be repeated for credit when dealing with a different composer.

680 Seminar in Music Therapy 2 hrs.
A course designed to permit the student to explore selected areas of music therapy, i.e., therapeutic techniques, evaluation procedures, or the role of music therapy in a variety of settings (hospital, school, community). A project is required, which will be subject to group analysis and discussion. The course may be repeated for credit.

681 Research in Musical Behavior 2 hrs.
Development and employment of research methods and techniques to the psychology of music and/or music education. Students enrolled in this course will be responsible for an experimental research project which, in the case of music education students, will satisfy the "terminal project" requirement (MUS 691). When this course is the culminating project for the master's degree, an oral examination on the project and related areas is an integral part of the requirements. Prerequisite: MUS 610 or ED 601.

682 Seminar in Music Therapy 2 hrs.
A course for teaching assistants which provides for faculty instruction, observation, and supervision in the area of the teaching assignment. The course shall be taken during the first semester of appointment.

689 Music Teaching Practicum 2 hrs.
A course for teaching assistants which provides for faculty instruction, observation, and supervision in the area of the teaching assignment. The course shall be taken during the first semester of appointment.

690 Graduate Recital 2 hrs.
Presentation of a full-length recital in the student's area of concentration (applied music or composition). When this course is the culminating project for the master's degree, an oral examination on the project and related areas is an integral part of the requirement.

691 Special Project in Music Education 2 hrs.
A research project in the area of the teaching of music. The nature of the special project is to be determined in consultation with the Graduate Adviser and appropriate members of the graduate faculty. Projects must be approved prior to registration. When this course is the culminating project for the master's degree, an oral examination on the project and related areas is an integral part of the requirements. May be repeated for credit.

Private Music Study—Open to Graduate Students Only
500 Applied Music 1-2 hrs.
Graduate students who are not majoring in applied music and who do not meet the requirements. May be repeated for a total of not more than three credit hours.

600 Applied Music 1-4 hrs.
Qualified graduate students may study in applied music for a total of four semester hours per semester in the major performance area. Three or more credits requires 60 minutes per week of instruction and necessary practice. May be repeated for credit. Includes private conducting study.

Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

700 Master's Thesis 6 hrs.

710 Independent Research 2-6 hrs.

712 Professional Field Experience 2-12 hrs.
Theatre (THEA)

Williams, Chairperson; Professor Grandstaff; Associate Professors Fleischhacker, Karsten, L. Stillwell, V. Stillwell; Assistant Professor Roehrick.

500 Studies in Theatre: Variable Topics
Variable
Selected topics within the broad range of theatre. Emphasis upon concepts, theory, and advanced skills. Repeatable for credit under a different title. Examples of topics for study include: Advanced Directing; Advanced Make-up; Advanced Technical Theatre; Design for the Theatre; Developmental Theatre Service; Informal Drama for Jr./Sr. High; Story Theatre; Theatre Administration; Theatre Production; Touring Theatre.

540 Acting Studio
3 hrs.
An advanced course in the art of acting with emphasis on the individual needs of the student actor. Repeatable for credit up to six hours. Prerequisite: THEA 340 or consent of instructor.

570 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 study in the fine arts. Prerequisite: THEA 370, 371 or consent of instructor.
Blind Rehabilitation (BLRH)

Kariela, Chairperson; Professors Blasch, Suterko. Associate Professors LaDuke, Weessels; Assistant Professors Luxton, Poncilla.

Open to Upperclass and Graduate Students

588 The Dynamics of Blindness and Rehabilitation
2 hrs.
This course presents an overview of blindness and the blindness service delivery systems. The social, psychological, educational, recreational and vocational effects on blind and on visually impaired adults are emphasized.

589 Inter-Professional Seminar Regarding Blind Multi-Handicapped Persons
1 hr.
This course presents an interdisciplinary approach to the study of multi-handicapping conditions in which blindness is a common denominator.

590 Physiology and Function of the Eye
2 hrs.
The anatomy, structure, and function of the eye, along with various eye diseases and malfunctions, are stressed in this course. The student is familiarized with various eye conditions, and their relationship to rehabilitation practice.

591 Braille and Other Communication Methods
2 hrs.
This course is designed to teach the braille literary code as it applies to Rehabilitation Teaching. Braille teaching methods are also presented.

592 Education of the Blind and Partially Sighted
2 hrs.
This course provides an introduction to the ways in which blindness and visual impairment affect blind children, and an overview of the education systems serving them. History of education of visually handicapped children, the effects of a visual impairment on child development, educational assessment and planning and curriculum adaptation are explored.

594 Principles of Orientation and Mobility
3 hrs.
This course covers an examination and application of the fundamental principles underlying the acquisition and interpretation of sensory information by severely visually impaired individuals.

595 Introduction to Orientation and Mobility
4 hrs.
The content of this course relates to problems of non-visual orientation and mobility. Simulated experiences are provided which emphasize the sensory, conceptual and performance levels needed for independent travel in a variety of environments.

597 Introduction to Cectiunity
2 hrs.
This course deals with assessment and remediation of functional problems encountered by low vision persons. Emphasis is placed on optical, non-optical and electronic aids which increase visual functioning. In addition, the nature and needs of low vision persons and the interprofessional nature of low vision services are stressed.

598 Readings in Blind Rehabilitation
1-4 hrs.
This course is arranged on an individual basis to provide students an opportunity to pursue independently the study of special areas of interest in depth.

599 Gerontology
2 hrs.
This course offers an overview of the demographic, economic, health, social and psychological circumstances of the aging population in the United States, and the related service systems.

Open to Graduate Students Only

664 Principles of Rehabilitation Teaching
3 hrs.
This course is concerned with the development and the current status of rehabilitation teaching as an occupation, with particular emphasis upon the teaching methods and human interrelationships which are essential in instructing visually impaired adults in skills of independent living.

690 Methods and Techniques of Teaching Braille and Other Areas of Communication
3 hrs.
Adaptive communication methods used by visually handicapped persons and the techniques of teaching them are explored in this course. Specifically, braille, handwriting, listening and recording devices, typewriting, and computer technology are presented. This course also includes a supervised practical teaching experience with a visually handicapped person.

695 Practicum in Orientation and Mobility
4 hrs.
This course provides supervised teaching experiences with blind or visually impaired individuals in a variety of settings.

710 Independent Research
2-6 hrs.
This course requires the completion of a creditable research project related to blind rehabilitation, conducted with faculty guidance.

712 Professional Field Experience
2-12 hrs.
This course requires a supervised internship experience in an organization that serves
Health and Human Services (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 between the system and its environment.

512 Health Resources Administration
3 hrs.
This course is an introduction to principles and programs of health resources administration. The course focuses on two major areas: First, in a general introduction concerning the structure 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.

513 Special Studies in Health Care Organization and Delivery
Variable
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, and group medical practice.

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 presents 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 systems as well as the current structure arrangements for carrying out planning in the health area both at the macro and micro levels.

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.

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. Prerequisite: Consent of instructor.

531 Introduction to Holistic Health Care
3 hrs.
The primary purpose of this course is to provide an introduction to the philosophies, theories, and concepts involved in holistic health care. It is meant to serve both as a general educational experience for persons wishing to become familiar with holistic and as essential basic instruction for persons wishing to apply for admission to the graduate specialty program in Holistic Health Care. Prerequisite: Graduate status.

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 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 studies. The specific areas are announced with each semester. Prerequisite: Consent of instructor.

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 skills 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. Prerequisite: Consent of instructor.

570 Field Education
1-6 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, gaining assistance of those professionals currently working in the health and human service area. By permission of instructor.

Open to Graduate Students Only

650 Seminar in Holistic Methods, Part I
3 hrs.
The seminar is taught and provides students with a broad overview of methods which may be utilized in a holistic health care setting. Every one or two sessions a new faculty member representing a different sort of expertise or perspective will guide students through a different holistic method. The seminar provides a principal body of information and some personal experience in the methods which can be used therapeutically by a holistic health care practitioner regardless of the student's principal disciplinary interest of training. Evaluation is by oral and written examinations.

651 Seminar in Holistic Methods, Part II
3 hrs.
A continuation of HHS 650, providing an opportunity for exposure to additional holistic methods utilizing the same format and evaluation system as Part I of the seminar.

662 Program Planning and Development in Gerontology
2 hrs.
This seminar in the gerontology specialization program will explore the process of program planning and development through meetings with national, state, and local funding agencies and meetings with service providers in various kinds of programs for older persons throughout the region. Prerequisite: Permission of Gerontology specialization program advisor.

680 Multidisciplinary Seminar in Gerontology
3 hrs.
A multidisciplinary seminar in gerontology drawing upon staff from various academic and professional departments on the campus as well as from practitioners in the community. Course work and readings will deal with various theoretical and practical aspects of gerontology including policy formulation and implementation with academic emphasis on contributions of various academic fields to the understanding of aging.

Open to Graduate Students Only—Please refer to The Graduate College section for course description.

712 Professional Field Experience
2-12 hrs.

Occupational Therapy (OT)

510 Arts and Crafts for Rehabilitation Teachers of the Blind
2 hrs.
Includes methods and techniques of teaching needlework, ceramics, and leatherwork to visually handicapped adults.

597 Studies in Occupational Therapy
2-4 hrs.
Examines selected topics within the field of Occupational Therapy. Topics considered will vary from semester to semester. May be repeated for credit. Prerequisite: Advanced O.T. major or departmental permission.

Open to Graduate Students Only

610 Professional Issues
3 hrs.
Current and emerging issues will be discussed. Students will take an active part in community, state, or national organizations and legislative processes related to the resolution of a specific issue. Students potential for future professional leadership will be emphasized.
Social Work (SWRK)


All Social Work courses are graded on a Credit/No Credit basis for students in the M.S.W. program. All other students should register for regular credit.

Social Policy

Open to Upperclass and Graduate Students

512 Social Policy and Service Delivery in Selected Problem Areas

3 hrs.

Intensive study in selected fields of service, specializations, and social problem areas. Attention is focused on learning about the major social policy issues associated with the service or problem area. Specific topics will be announced each semester. Prerequisite: Consent of instructor.

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.

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. May not be used as credit towards the M.S.W. degree.

Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

700 Master’s Thesis

6 hrs.

710 Independent Research

2-6 hrs.

712 Professional Field Experience

2-12 hrs.

614 International Social Welfare: Comparative Social Security System

3 hrs.

A comparative analysis of selected characteristics of a group of western and non-western social welfare systems and the differential cultural values and social conditions from which they are derived. Social work practice in the U.S. is compared with counterpart activities in other countries. Prerequisite: SWRK 610 or consent of instructor.

Social and Behavioral Theory

Open to Graduate Students Only

630 Social Change Theory and Community Analysis

3 hrs.

The community as a field of action for social change and decision making is analyzed. Several conceptions of social change and stability are reviewed. The processes of community decision making are examined. A social systems framework is used as the conceptual base for analysis in both areas. Prerequisite: Consent of instructor.

631 Individual Growth and Development

3 hrs.

This course will focus on an understanding of personality, individual functioning, and change throughout the life cycle. Specific emphasis will be placed on biological substrates, the person’s emotional life, and how these factors interrelate with the socialization process and environmental variations. Ethnic and social variations will be explored as they affect personality development. Theoretical approaches may include psychoanalytic ego psychology, cognitive functioning, and learning theories. Concurrent and interrelated with these theories is a focus on “social role concepts” as they affect a social work case assessment and practice interventions. Prerequisite: Consent of instructor.

632 Organizational Theory for Human Service Management

3 hrs.

This course is designed to provide the student with knowledge of and skill in the analysis of organizational operations in the human service agency. The course content covers a general review of major theories of organization with intensive work on the open systems strategy. In addition, selected special areas such as personnel management and interagency relations are covered. Prerequisite: SWRK 650 or consent of instructor.

638 Psychopathology and Social Deviance as Related to Social Work Practice

3 hrs.

This course focuses on the understanding of psychopathology and social deviance with specific emphasis on the interface of biological, psychological, and socio-cultural variables. Emphasis will be placed upon social work assessment and practice interventions. The development of mental illness and emotional disturbance will be examined from several theoretical perspectives which may include psychoanalytic, phenomenological behavior, communications, and symbolic interactional approaches. Societal stigmas and labeling by the family, the community, and social agencies will be explored as they affect various populations, e.g., majority/minority
groups. Research studies from social psychiatry, social psychology, sociology, and anthropology will be discussed, when applicable. Prerequisite: SWRK 651 or consent of instructor.

Social Welfare Research and Technology

Open to Graduate Students Only

The purposes of this course are threefold: (1) to increase student knowledge of the methods of empirical research as a tool for social welfare knowledge building; (2) to improve student capacity for research consumption and utilization in social work practice; (3) to develop elementary skills in the machine processing, analysis, and presentation of data. Classroom instruction includes lecture and discussion plus laboratory sessions designed to familiarize students with data processing, electronic computer, and calculator equipment. Prerequisite: Consent of instructor.

564 Social Welfare Policy, Planning, and Administration Technologies 3 hrs.
The purposes of this course is to provide students with knowledge and beginning skills in a variety of analytical tools and technologies designed to aid in social welfare policy, planning, and administrative operations. Emphasis is given to skill development in the use of various advanced technologies. Prerequisite: SWRK 630 or consent of instructor.

568 Consultation, Supervision, and Program Development in Social Treatment 3 hrs.
Consultation and supervision are examined and explicated as basic methods for maximizing program-service effectiveness in social treatment. These methods are interfaced with the processes of program design, development, and evaluation. Program development may include in-service training, the creation of new resources to meet specific community problems, and designing treatment programs, with attention to minority issues or content in all these areas. Prerequisite: SWRK 661 or consent of instructor.

Social Work Practice

Open to Upperclass and Graduate Students

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. Emphasis is placed on the organizing of neighborhood and consumer groups in order to increase social interaction and improve social conditions. Prerequisite: Consent of instructor.

563 Social 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 departments, with consent of instructor.

564 Correctional Process and Techniques 3 hrs.
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 criminological theory and accumulated knowledge of the phenomenon of crime and delinquency. Selected techniques for correctional behavioral modifications are studied in relation to a typology of normative deviancy in terms of both etiology and rehabilitation. Prerequisite: Consent of instructor.

566 Social Services in 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 intervention means are explored. Prerequisite: Consent of instructor.

567 Institutional Correctional Social Work 3 hrs.
Social work treatment within a variety of institutional correctional settings. Prerequisite: Consent of instructor.

568 Social Work in Non-Institutional Correctional Settings 3 hrs.
Social work treatment with probationers, parolees, and other non-institutional services. Prerequisite: Consent of instructor.

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 settings and the staff are associated with or that determine offenders' passage through the juvenile court are examined. Prerequisite: Consent of instructor.

569 Seminar in Social Planning and Administration 3 hrs.
Study of the structure and dynamics of social actions and programs, and the application of behavioral change and environmental modification theory. Emphasis is upon differential formulations of problems for consideration of the applicability of various treatment interventions. Treatment concepts are studied which are judged appropriate for: (1) a range of case situations involving social workers in interaction with specific individuals and groups to achieve changes in individual behavior and adaptation, and in specific interpersonal and group relationships, and (2) the case situations involving problems and disconnections between specific individuals and groups and community institutions. Prerequisite: SWRK 662 or consent of instructor, concurrent with SWRK 676.

567 Seminar in Substance Abuse II 3 hrs.
Continuation of SWRK 663. This course is cross-listed with Biology, Counseling Personnel, Psychology, and Sociology. Graded on a Credit/No Credit basis.

566 Seminar I in Social Treatment 3 hrs.
Study of the structure and dynamics of social actions and programs, and the application of behavioral change and environmental modification theory. Emphasis is upon differential formulations of problems for consideration of the applicability of various treatment interventions. Treatment concepts are studied which are judged appropriate for: (1) a range of case situations involving social workers in interaction with specific individuals and groups to achieve changes in individual behavior and adaptation, and in specific interpersonal and group relationships, and (2) the case situations involving problems and disconnections between specific individuals and groups and community institutions. Prerequisite: SWRK 662 or consent of instructor, concurrent with SWRK 676.

567 Seminar in Social Planning and Administration 3 hrs.
Study of the structure and dynamics of social actions and programs, and the application of behavioral change and environmental modification theory. Emphasis is upon differential formulations of problems for consideration of the applicability of various treatment interventions. Treatment concepts are studied which are judged appropriate for: (1) a range of case situations involving social workers in interaction with specific individuals and groups to achieve changes in individual behavior and adaptation, and in specific interpersonal and group relationships, and (2) the case situations involving problems and disconnections between specific individuals and groups and community institutions. Prerequisite: SWRK 662 or consent of instructor, concurrent with SWRK 676.

571 Theory and Practice of Group Treatment 3 hrs.
Focus of the seminar is on the theory and practice of group work in social treatment settings. Consideration is given to such issues as group dynamics, leadership concepts, direct and indirect interventions, the use of program under various conditions.

661 Introduction to Social Work Practice 3 hrs.
Unique features of the profession of social work are introduced in this beginning practice course. A problem-solving framework is provided as the basis of identifying and analyzing various individual and social problems, developing plans for problem alleviation, carrying out and monitoring of the plan and evaluation of effectiveness. In addition, selected theoretical orientations which offer practice alternatives to the problem-solving approach are identified for the purpose of helping each student conceptualize and develop an approach to practice which is theoretically and professionally sound. The focus throughout the course is on the role and responsibilities of the practitioner. Prerequisite: Concurrent enrollment in SWRK 671 or consent of instructor.

663 Seminar in Substance Abuse I 3 hrs.
An interdisciplinary seminar designed to reflect broadly conceived intervention strategies ranging from prevention to rehabilitation of the addict. The basic training in the principles of intervention and clinical practice will continue to be taught within the student's basic professional discipline. In part, the seminar will be used to elaborate upon the application of these principles to the problems of substance abuse. This course is cross-listed with Biology, Counseling Personnel, Psychology, and Sociology. Open to SPADA students only. Graded on a Credit/No Credit basis.

664 Social Work Practice in Special Areas 3 hrs.
Study of problem solving in specialized areas of social work practice. Focus upon the role of the social work practitioners in assessment, goal establishment, and intervention in the use of various social work methods in different areas of practice. Specific topic will be announced each semester. May be repeated for credit up to a maximum of six hours. Prerequisite: Consent of instructor.

665 Seminar in Social Planning and Administration 3 hrs.
Study of the structure and dynamics of social actions and programs, and the application of behavioral change and environmental modification theory. Emphasis is upon differential formulations of problems for consideration of the applicability of various treatment interventions. Treatment concepts are studied which are judged appropriate for: (1) a range of case situations involving social workers in interaction with specific individuals and groups to achieve changes in individual behavior and adaptation, and in specific interpersonal and group relationships, and (2) the case situations involving problems and disconnections between specific individuals and groups and community institutions. Prerequisite: SWRK 662 or consent of instructor, concurrent with SWRK 676.

667 Seminar I in Social Planning and Administration 3 hrs.
First part of a two-semester seminar dealing with problems in social welfare planning and administration. Emphasis in the first semester is upon planning for improving social welfare conditions through program changes and alterations in institutional arrangements. Organizational and interorganizational planning fields are given attention. Prerequisite: SWRK 677 or consent of instructor, concurrent with SWRK 678.
669 Seminar II in Social Planning and Administration 3 hrs.
Second part of a two-semester seminar dealing with problems in social welfare planning and administration. Analysis of institutional and interdisciplinary issues. Emphasis is placed upon the development of innovative strategies for the structuring and management of social welfare delivery systems. Prerequisite SWRK 667, concurrent with SWRK 670.

670 Seminar in Social Policy Practice 3 hrs.
This course in social welfare policy development and analysis content from other courses in the social welfare planning and administration concentration which introduce: 1) the use of specific tools in policy analysis, and 2) the problems in community and organizational policy change. Policy intervention skills are developed in such areas as the writing of policy and position statements, the giving of expert testimony before legislative and regulatory bodies, analyzing and summarizing legislative bills and/or judicial opinions, and the prescriptive aspects of such activities as forming and leading committees and task forces. Prerequisite: SWRK 669 or consent of instructor.

Field Education
Open to Graduate Students Only

671 Field Education in Social Welfare Problem Solving 3 hrs.
This is the beginning field practice course in the master's program, and it is taken concurrently with SWRK 669. This course focuses on the development of supervisory tasks immediately following graduation. The placement plan and experiences will afford primary emphasis in skill development and in the range of supervisory role tasks and responsibilities. Community or field-based seminars will supplement the field experience. Prerequisite: SWRK 672 or consent of instructor, concurrent with SWRK 669.

677 Field Education in Social Planning and Administration 3 hrs.
Students are provided with direct experience in dealing with problems of community planning for human welfare, and in the administration of service delivery systems. Specialized placement in social welfare organizations or special programs are arranged in accordance with student interests and abilities. Prerequisite: SWRK 672 or consent of instructor, concurrent with SWRK 667.

678 Advanced Field Education in Social Treatment 3 hrs.
Continuation of 676. Students will remain in field placement. Direct social treatment (or supervisory) practice will continue. Added emphasis will be directed to skill development required for the beginning level of competence for social work practice in direct treatment (or supervisory) roles. Attention will be given to the concept of self-responsibility for professional development. Experiences will be offered which provide practice in leadership roles. Campus or field-based seminars will supplement the field experience. Prerequisite: SWRK 667, concurrent with SWRK 668.

679 Advanced Field Education in Social Planning and Administration 3 hrs.
Continuation of Social Work 677. Further emphasis in professional role development for planning and administrative practice. Skill learning assignments will include supervised work in such areas as planning approaches, program development, budgeting, information systems, personnel, management, and the organization of groups for involvement in problem-solving activities. Prerequisite: SWRK 667, concurrent with SWRK 669.

Special Seminars and Projects
Open to Upperclass and Graduate Students

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 policy development. 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.

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.

Individual study in social welfare and social work topics which are not covered in the University's graduate course offerings. Prerequisite: Consent of major adviser and proposed instructor.

Open to Graduate Students Only

688 Field Studies in Research and Practice 6 hrs.
Special group projects and research which are planned, organized, and carried out by faculty and students. The nature of specific projects will vary, but may include experiences in area communities, other national regions, and in foreign countries. The field studies are designed to integrate learning which has taken place during the prior two semesters, provide students with diverse cultural and educational experiences, and further the development of research and practice competency. Prerequisite: Consent of instructor. Graded on Credit/No Credit basis.

Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

710 Independent Research 2-6 hrs.

Speech Pathology and Audiology (SPPA)

Erickson, Chairperson; Professors Bate, Lohr, Stroemia, Associate Professors Clark, Hanley, Hunt, Oas, Seelig, Assistant Professors Lawson, Nelson, Sparks, Wear.

Open to Upperclass and Graduate Students

Research in normal and disordered communication is studied with reference to the scientific method, principles of measurement, instrumentation, and experimental techniques. The course requires that either a laboratory or a clinical research proposal be formulated by each student.

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. Prerequisites: SPPA 204, 205, 206.

551 Neuropathologies of Speech 2 hrs.
This course is concerned primarily with surveying selected communication disorders associated with neuropathologies. Prerequisites: SPPA 200, 203, 205.

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.

554 Speech and Hearing Therapy in the
Schools
2 hrs.
Study of clinical work with speech and hear-
ing handicapped children in the school set-
ting. Prerequisite: SPPA 351, 353, 354, 358.

555 Hearing Measurement
2 hrs.
This course is designed to acquaint the stu-
dent with principles, theories, and methods
of hearing measurement which provide the
basis for clinical audometric procedures.

556 Rehabilitative Audiology
3 hrs.
Orientation to the clinical management of
communication problems associated with
auditory impairment.

557 Educational Audiology
3 hrs.
This course deals with the educational,
psychological, and vocational needs of the
hearing impaired child and the parameters
that affect educational programming.

558 Oral Language Development and
Dysfunction
2 hrs.
This course is designed to provide the stu-
dent preparing to be a classroom or special
teacher with information about the nature of
oral language. Its development, conditions
associated with dysfunction, and the prin-
ciples and methods of treatment for children
with specific speech or language disorders.

559 Selected topics in speech pathology arc
systematically explored through critical
analyses of literature and through individual
study projects. Instrumentation, pro-
cedures, and techniques employed in
perceptual, physical, and physiological
analyses of normal speech and hearing are
among the areas considered. Topics vary
from semester to semester and are announced in advance.
May be repeated.

611 Voice Disorders
3 hrs.
Organic and functional disorders of larynxal
and resonator origin are studied in depth.

612 Stuttering
3 hrs.
Theories and therapies applicable to the
understanding and clinical management of
stuttering are studied in depth.

613 Aphasia in Adults
3 hrs.
This course deals comprehensively with the
identification and treatment of communica-
tion problems in the adult aphasic individual.
Open to Graduate Students Only—Please
refer to The Graduate College section for
course description.

614 Aphasia in Children
3 hrs.
Open to Graduate Students Only—Please
refer to The Graduate College section for
course description.

700 Master's Thesis
6 hrs.

710 Independent Research
2-6 hrs.

712 Professional Field Experience
2-12 hrs.
Librarianship (LIB)

Graduate Offering: Librarianship

Open to Upperclass and Graduate Students

502 Old and Rare Book Collecting 3 hrs.
Study of the history of bookmaking, the descriptive anatomy of manuscripts and books, bindings, paper, print, illustrations, acquisitions and sales, and care and preservation. The book as an artifact, identification of first editions, rare book reference sources, and techniques for ascertaining the monetary value of books are considered.

510 Collection Development 3 hrs.
Introduction to the basic principles of building collections for libraries and information centers. Includes selection and evaluation of materials for individual collections and examines principles and examples of library resource sharing.

512 Reference Services 3 hrs.
Examination of reference sources, print and non-print, their evaluation, and the ways in which they may be used to provide service. Includes reference interview techniques, search strategies, and automated searching.

530 Introduction to Cataloging and Classification 3 hrs.
Introduction of the theories and practices of cataloging and classification. Emphasis on Dewey Decimal Classification, subject cataloging from the Sears and Library of Congress headings, descriptive cataloging of monographs, serials, and non-print materials, filing rules, and OCLC terminal utilization.

535 Introduction to Information Science and Technology 3 hrs.
A survey of information retrieval systems and services. Students are introduced to the development of information science, various storage media, telecommunications, and computer technology.

542 Reading Interests of Young Adults 3 hrs.
Study of the fields of literature suited to the interests of young people. Students are given opportunity, through wide reading, to develop principles and standards for the selection of the book collection. Includes an introduction to methods of stimulating broader reading interests and conducting group book discussions with young people.

546 Storytelling 3 hrs.
Underlying principles of the art of storytelling as a means of developing appreciation of literature and stimulating an interest in reading. Includes content and sources of materials, techniques, and practice in telling stories before groups of children, and planning the story hour program.

590 Studies in Librarianship 1-3 hrs.
Examines specialized topics within the field of library and information science applicable to both undergraduate and graduate students. Topics considered will vary.

598 Readings in Librarianship 1-3 hrs.
Offers a program for the advanced student for independent study in a special area of interest, arranged in consultation with a graduate advisor. Written permission of instructor required.

Open to Graduate Students Only

600 Libraries and Librarianship 3 hrs.
An introduction to librarianship through study of the role and functions of the modern library, its historical development, and the contributions of libraries and the profession to society. Composed of three one-hour units. 600 I—Introduction to Libraries and Librarianship. 600 II—History of Libraries and Librarianship. 600 III—Librarianship as a Profession, to be taken during the last nine hours of the student’s program.

607 Library Experience 2-3 hrs.
An introduction to library activities and services through assignment to a selected library. For each credit hour received, thirty-five hours of supervised library experience are required. May be taken only with permission of the student’s graduate advisor and when an appropriate situation is available. Credit/no credit.

611 Resources in the Humanities 3 hrs.
Examination of the nature of the disciplines and research approaches in the humanities. Includes an analysis of selected traditional and non-traditional forms of bibliographic control with emphasis on searching and problem solving. Prerequisite: LIB 512 or equivalent.

612 Resources in the Social Sciences 3 hrs.
Examination of the characteristics of users of social sciences information and the nature of research methods as they affect access to materials. Includes analysis of selected traditional and non-traditional bibliographic control with emphasis on problem solving and search techniques. Prerequisite: LIB 512 or equivalent.

613 Resources in Science and Technology 3 hrs.
Examination of the characteristics of scientific information users and the scientific method as it affects organization of resources. Analysis of selected traditional and non-traditional forms of bibliographic control is combined with use of alternative methods.
614 Government Publications 3 hrs.
Examination of government publications, their acquisition and organization, and the special problems involved in providing user service. Focus is on United States federal documents.

616 Materials and Methods for School Media Programs, K-12 3 hrs.
Cooperative role of media specialists, teachers, and other school personnel in evaluation, selection, and utilization of media materials and instructional programs. Emphasis and written critical analysis of print and non-print materials combined with effective ways of working in all types of organizational patterns.

617 Reading Guidance for Children 3 hrs.
A study of the developments in children's literature from approximately the 18th century in England and the Colonial period in America to the present, with special emphasis on socio-economic and cultural factors which affect content. Includes principles and techniques in guidance of children's reading interests and in the evaluation of current literature.

618 Media Technology in Libraries 3 hrs.
A study of contemporary media technologies as they apply to libraries and information centers. Students will use a variety of audiovisual equipment and will produce television and slide-tape presentations relevant to library public relations, program development, and service.

622 Library Administration and Management 4 hrs.
An introduction to the theory and principles of management as they relate to the development, implementation, and evaluation of library service and organization. Students investigate and apply major management functions identified with library situations. Participative management techniques are emphasized.

623 Special Library Administration 2 hrs.
A study and investigation of general management theories and principles as they are applied in all categories of special libraries. Emphasis is on contemporary issues, including patterns of organization, program development and evaluation, resource sharing, information delivery systems, and staff utilization. Prerequisite: LIB 622 or equivalent.

624 Library Service to Children and Young Adults 3 hrs.
The function and administration of public library service for children and young adults. Emphasis is on coordination with school libraries and other community agencies; program development in children's and youth adult departments.

625 Public Library Administration 2 hrs.
A study and investigation of general management theories and principles as they are applied in all categories of public libraries. Emphasis is on contemporary issues, including patterns of governance, program development and evaluation, and staff utilization. Prerequisite: LIB 622 or equivalent.

626 Academic Library Administration 2 hrs.
A study and investigation of general management theories and principles as they are applied in all types of academic libraries. Emphasis is on contemporary issues, including patterns of organization, program development and evaluation, resource sharing, automation, staff utilization, and issues in higher education. Prerequisite: LIB 622 or equivalent.

627 School Media Center Administration 2 hrs.
A study and investigation of general management theories and principles as they are applied to school media centers. K-12 Emphasis is on the library media center program, including patterns of organization, program development and evaluation, staff utilization, budgeting, and facilities. Prerequisite: LIB 622 or equivalent.

628 Survey of Special Libraries 3 hrs.
Current developments in services to various clientele of special libraries and information centers. Includes the Alberta L. Brown lecture series.

629 Research Methods in Librarianship 3 hrs.
Introduction to basic techniques of research methodology, descriptive, historical, and experimental. Includes critical evaluation of library studies and their influence on library organization, administration, and services. Opportunity for investigation and analysis of current problems in public, college, school, and special libraries. Prerequisite: Nine hours of Librarianship courses or written permission of instructor.

630 Advanced Cataloging and Classification 3 hrs.
Continuation of Introduction to Cataloging and Classification. LIB 530. Emphasis is also given to development of catalogs and cataloging codes. Library of Congress classification and subject headings, cataloging of rare books, and computerized cataloging. Prerequisite: LIB 530 or permission of instructor.

632 Technical Services Seminar 3 hrs.
Seminar on contemporary issues in the areas of technical services. Topics vary. Prerequisites: LIB 510, LIB 530, or permission of instructor.

634 Library Automation 3 hrs.
A survey of computer technology as it is applied to the performance of operations in libraries and information centers. Includes experience in analysis by flow-charting some programming basics, and the preparation of a feasibility study to automate a library task.

635 Information Storage and Retrieval 3 hrs.
Design of information storage and retrieval systems, with emphasis on automated aspects. Includes consideration of characteristics of media used for the storage of information, and indexing and bibliographical control procedures used in retrieval systems, with emphasis on non-traditional methods. Trends and developments in modern information technology and methods of information dissemination are considered. Prerequisite: LIB 634 or CS 105, taken prior to or concurrently with LIB 635, or permission of the instructor.

636 Indexing, Abstracting, and Automated Language Processing 3 hrs.
A seminar approach to the problems of bibliographical control and the production of copy for secondary publications. Attention is given to indexing with controlled and uncontrolled vocabularies, thesaurus construction, classification, and automated language processing. Practical experience is given in preparing abstracts and indexes from source documents.

637 On-Line Searching of Data Bases 1-3 hrs.
Course covers three topics on online searching of data bases: Topic A. Introduction to on-line systems; consideration of communication networks and computer terminal equipment, and comparison of on-line systems. (1 hour) Topic B. On-line searching using Lockheed's Dialog system. (1 hour) Topic C. Online searching using System Development Corporation's Orbital system. (1 hour) A student may enroll for one, two, or three credit hours. No topic is a prerequisite for another.

644 Adult Reading Interests 3 hrs.
Evaluation of the readings of adult fiction and non-fiction, and their implications for library service, including readers, library programs and services. Prerequisites: Librarianship 5, 6, and 11 (oral review). Prerequisite: Consent of instructor.

645 Library Outreach Services 3 hrs.
A seminar dealing with improvement of library service to the educationally and socially disadvantaged. Public and school library programs of outreach, information and referral, and work of community agencies will be discussed as models for programing at various age levels. Students will observe, participate in, and plan programs relevant to specific phases of library service to the disadvantaged.

650 Advanced Seminar in Librarianship 2-6 hrs.
Examination of specific problems in contemporary library practices. Lectures, field trips, and resource consultation. (Offered irregularly.)

652 Seminar in International Librarianship 3 hrs.
Opportunity to study the development, current status, and programs of library service at the international level in all types of libraries. (Offered irregularly.)

690 Studies in Librarianship 1-6 hrs.
Examination of selected topics within the field of library science. Topics considered will vary from semester to semester. All courses are numbered 690.

Open to Graduate Students Only—Please refer to The Graduate College section for course description.

700 Master's Thesis 6 hrs.

710 Independent Research 2-6 hrs.

712 Professional Field Experience 2-12 hrs.

720 Specialist Project 2-6 hrs.
Graduate Studies (GRAD)

Open to Graduate Students Only

A graduate student should register for 700-level courses in his or her instructor’s department. If the appropriate 700-level course is not offered by that department, the student should seek permission to register for it as a Graduate College (GRAD) course. All 700-level courses are graded on a Credit/No Credit basis.

700 Master’s Thesis
6 hrs.
Candidates for the Master’s degree may elect to write a thesis in their field of specialization under the supervision of a thesis committee. A student may elect this course in units of from two to six hours; however, the election must be made in no more than two units and within a calendar year. An application form (available in all departments) must be submitted to Registration at enrollment time. Prior to enrollment this form must be signed by: 1) the thesis adviser, 2) the department chairperson, 3) the Administrative Assistant for Graduate Programs in The Graduate College. Graded on a Credit/No Credit basis.

710 Independent Research
2-6 hrs.
Designed for highly qualified advanced graduate students, or small groups, who wish to pursue individual studies or projects under the direction of a member of the Graduate Faculty. An application form, signed by the student’s graduate adviser and the faculty supervisor, must be submitted to Registration at the time of enrollment. Graded on a Credit/No Credit basis.

712 Professional Field Experience
2-12 hrs.
Designed for superior graduate students who wish to pursue internships or apprenticeships in off-campus activities in industries or institutions. An application form, signed by the student’s graduate adviser and the faculty supervisor, must be submitted to Registration at the time of enrollment. Graded on a Credit/No Credit basis.

720 Specialist Project
2-6 hrs.
The Specialist project is designed for all units offering the Specialist degree. An application form (available in all departments) must be submitted to Registration at enrollment time. Prior to enrollment this form must be signed by: 1) the project adviser, 2) the department chairperson, 3) the Administrative Assistant for Graduate Programs in The Graduate College. Graded on a Credit/No Credit basis.

725 Doctoral Research Seminar
2-6 hrs.
Units offering doctoral programs may use this number to designate their research seminars. Such seminars may be taken more than once by the student. Permission of instructor on “C” card is required. Graded on a Credit/No Credit basis.

730 Doctoral Dissertation
15 hrs.
The doctoral dissertation is required in all doctoral programs and must reflect an appropriate creative effort on the part of the student. An application form (available in all departments) must be submitted to Registration at enrollment time. Prior to enrollment, this form must be signed by: 1) the committee chairperson, 2) the department chairperson, 3) the Administrative Assistant for Graduate Programs in The Graduate College. Registration for 730 will be in increments of 3 hours. Graded on a Credit/No Credit basis.

735 Graduate Research
2-10 hrs.
Units offering doctoral programs may use this number to designate research projects for their doctoral students. Such projects may be taken more than once by the student. Permission of Instructor on “C” card is required. Graded on a Credit/No Credit basis.
Members

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B.S. National Taiwan (Formosa), M.S. Ph.D. Minnesota
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B.A. Southern Illinois, M.A. Western Michigan, Ph.D. Colorado State
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