2000–2002 Academic Calendar

Fall Semester, 2000
August 28, Monday
Advising Day; Classes Begin at 4:00 p.m.
September 4, Monday
Labor Day Recess
October 13, Friday
Spirit Day Recess
October 21, Saturday
Halloween
See Schedule of Course Offerings
See Schedule of Course Offerings
Final Day to Drop Classes Without Academic Penalty
November 10, Friday
Approved Theses, Projects, and Dissertations due in The Graduate College for December Graduation
November 15, Wednesday
Final Day to Apply for December 2000 Graduation*
November 22, Wednesday
Thanksgiving Recess Begins at Noon
November 27, Monday
Classes Resume
December 4–8
Final Examination Week
December 9, Saturday
Commencement

Winter Semester, 2001
January 2, Tuesday
Advising Day; Classes Begin at 4:00 p.m.
See Schedule of Course Offerings
Registration Drop/Add Closes
See Schedule of Course Offerings
Final Day to Drop Classes Without Academic Penalty
January 15, Monday
MLK Day Recess, Convocation, and Activities
February 15, Thursday
Applications due for Fellowships and Associateships
February 26, Monday
Semester Recess
March 5, Monday
Classes Resume
March 15, Thursday
Final Day to Apply for April 2001 Graduation*
March 23, Friday
Approved Theses, Projects, and Dissertations due in The Graduate College for April Graduation
April 16–20
Final Examination Week
April 21, Saturday
Commencement

Spring Session, 2001
April 30, Monday
Classes Begin
See Schedule of Course Offerings
Registration Drop/Add Closes
See Schedule of Course Offerings
Final Day to Drop Classes Without Academic Penalty
May 15, Tuesday
Final Day to Apply for June 2001 Graduation*
May 25, Friday
Approved Theses, Projects, and Dissertations due in The Graduate College for June Graduation
May 28, Monday
Memorial Day Recess
June 20, Wednesday
Session Ends at Noon
June 23, Saturday
Commencement

Summer Session, 2001
June 20, Wednesday
Classes Begin at Noon
July 4, Wednesday
Independence Day Recess
See Schedule of Course Offerings
Registration Drop/Add Closes
See Schedule of Course Offerings
Final Day to Drop Classes Without Academic Penalty
July 13, Friday
Approved Theses, Projects, and Dissertations due in The Graduate College for August Graduation
July 16, Monday
Final Day to Apply for August 2001 Graduation*
August 10, Friday
Session Ends—No Commencement Exercises

Fall Semester, 2001
August 27, Monday
Advising Day; Classes Begin at 4:00 p.m.
September 3, Monday
Labor Day Recess
October, Friday of week preceding week of Homecoming
Spirit Day Recess
October, Saturday to be announced Homecoming
See Schedule of Course Offerings
Registration Drop/Add Closes
See Schedule of Course Offerings
Final Day to Drop Classes Without Academic Penalty
November 9, Friday
Approved Theses, Projects, and Dissertations due in The Graduate College for December Graduation
November 15, Thursday
Final Day to Apply for December 2001 Graduation*
November 21, Wednesday
Thanksgiving Recess Begins at Noon
November 26, Monday
Classes Resume
December 3–7
Final Examination Week
December 8, Saturday
Commencement

Winter Semester 2002
January 7, Monday
Advising Day; Classes Begin at 4:00 p.m.
See Schedule of Course Offerings
Registration Drop/Add Closes
See Schedule of Course Offerings
Final Day to Drop Classes Without Academic Penalty
January 21, Monday
MLK Day Recess, Convocation, and Activities
February 15, Friday
Applications due for Fellowships and Associateships
March 4, Monday
Semester Recess
March 11, Monday
Classes Resume
March 15, Friday
Final Day to Apply for April 2002 Graduation*
March 29, Friday
Approved Theses, Projects, and Dissertations due in The Graduate College for April Graduation

Spring Session, 2002
May 6, Monday
Classes Begin
See Schedule of Course Offerings
Registration Drop/Add Closes
See Schedule of Course Offerings
Final Day to Drop Classes Without Academic Penalty
May 15, Wednesday
Final Day to Apply for June 2002 Graduation*
May 27, Monday
Memorial Day Recess
May 31, Friday
Approved Theses, Projects, and Dissertations due in The Graduate College for June Graduation
June 26, Wednesday
Session Ends at Noon
June 29, Saturday
Commencement

Summer Session, 2002
June 26, Wednesday
Classes Begin at Noon
July 4, Thursday
Independence Day Recess
See Schedule of Course Offerings
Registration Drop/Add Closes
See Schedule of Course Offerings
Final Day to Drop Classes Without Academic Penalty
July 15, Monday
Final Day to Apply for August 2002 Graduation*
July 19, Friday
Approved Theses, Projects, and Dissertations due in The Graduate College for August Graduation
August 16, Friday
Session Ends—No Commencement Exercises

*Graduation Fee and Application Deadline
Fall Semester Graduation (December)
$30.00 Application Deadline: August 1
$50.00 Application Deadline: November 15
Winter Semester Graduation (April)
$30.00 Application Deadline: December 1
$50.00 Application Deadline: March 15
Spring Session Graduation (June)
$30.00 Application Deadline: April 1
$50.00 Application Deadline: July 15

NOTE: This Academic Calendar is Subject to Change Without Notice.
Vol. 95, No. 3, June 2000
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It is the policy and commitment of Western Michigan University not to discriminate on the basis of race, sex, age, color, national origin, height, weight, marital status, familial status, sexual orientation, religion, disability, or veteran status in its educational programs, student programs, admissions, or employment policies. Western Michigan University complies with all requirements of Title VII of the Civil Rights Act of 1964, Title IX of the 1972 Amendments, Executive Order 11246 as amended, Americans with Disabilities Act of 1990 as amended, and Section 504 of the Rehabilitation Act of 1973, and all other applicable state and federal laws and regulations.

2000 – 2002
Graduate Catalog
Kalamazoo, Michigan

The provisions of this catalog, any other catalog, policy, rules, codes, guidelines, or information issued by the University (collectively "requirements") shall not be considered to be a contractual or otherwise binding obligation of the University. Changes in administration and instruction may be made after the publication date of this catalog. The University reserves the right to withdraw, revoke, and/or cancel an admission decision for any reason, and at any time, it deems warranted. This right shall also apply in instances when the University acquires information about an applicant or student after an admission decision is made. The University reserves the right to change, delete, or add to requirements, procedures, and/or other provisions at any time without prior notice. Such changes may include, but not be limited to, modification or discontinuance of programs, as well as modification or discontinuance of specific courses. In the event such action is taken, students affected will be advised by their units of the options available to them to complete their degrees. The University will assist students in finding alternate ways to complete programs or course work. The University further reserves all rights regarding dismissals, suspensions, withdrawals, denials of requests or applications, cancellations or revocations of admissions, impositions of holds on records of students, and other administrative decisions, at all times.

Academic calendars are subject to change without notice.

Western Michigan University retains the right to rescind any WMU degree which was obtained improperly, including but not limited to, as a result of misrepresentations, incomplete or false information, and/or in violation of University requirements. Before making any final decision to rescind a degree, however, the University will afford the student an opportunity to be heard in accordance with University requirements in effect at the time of the discovery of the alleged offense. Becoming a student at Western Michigan University signifies the student's agreement to comply with all requirements of the University whenever approved.

ABOUT WESTERN MICHIGAN UNIVERSITY

Location
Western Michigan University is a state-assisted, co-educational institution located in Kalamazoo, midway between Chicago and Detroit. Three major highways, Amtrak, commercial airlines, and numerous bus routes connect the city with other midwestern cities. The population of Kalamazoo is 81,000. Kalamazoo County has a population of 283,000.

Founded
1903

President
Elson Floyd, Ph.D.

Academic Divisions
College of Arts and Sciences
Haworth College of Business
College of Aviation
College of Engineering and Applied Sciences
College of Education
College of Fine Arts
College of Health and Human Services
The Division of Continuing Education
The Graduate College
The Honors College

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

Educational Goals
To help each student develop the ability to think critically and objectively, to locate and assess information, and to communicate clearly and effectively in speaking and in writing, to expose each student to the knowledge and insights essential to significant participation in our increasingly technological, interdependent, and rapidly changing world; to assure that each student has the opportunity to examine the central role of ethics and values in the shaping of meaningful lives; to structure the learning experience so that students can appreciate and understand the importance and consequences of our diverse cultural and ethnic heritage; to instill in students a lifelong love of learning and a desire for involvement in the world of learning; and to enable students to acquire mastery of a field of inquiry or profession sufficient for an understanding of its methods, its subject matter, and its future in our world.
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Western Michigan University has identified five major goals to guide its development during the decade of the 1990s:

1. Offer instructional programs of academic excellence reflecting the high quality of the faculty and students, the depth and breadth of the curriculum and co-curriculum emphasizing personal growth and development, the enhanced facilities and learning resources, and the continuing assessment of learning and the learning process.

2. Increase the graduate enrollment, expand external support for research, facilitate scholarship and creative activity, and reward professional accomplishments of faculty, staff, and students.

3. Assist regional and state economic development through on- and off-campus instruction, applied research centers, and technical assistance to business, industry, government, and the schools.

4. Meet the needs of the citizenry by providing leadership and sponsorship of and participation in cultural events and civic activities.

5. Increase the diversity of the student body, faculty, and staff and enhance the multicultural nature of the University community.

Founded in 1903 as a normal school for preparing elementary and secondary school teachers and designated in 1957 as the state's fourth public university, Western Michigan University has earned recognition by the Michigan Legislature as a graduate-intensive university and by the Carnegie Foundation for the Advancement of Teaching as a Doctoral I University. The University shares with other higher education institutions the mission to discover, disseminate, extend, and preserve knowledge and culture. In fulfilling this responsibility, University instructional programs strive to increase students' capacity for intellectual growth and achievement, instill a commitment to learning and service to society, and meet the needs of an increasingly diverse student population. The University's research mission requires the faculty and students to create new knowledge and to address social needs and concerns. The University serves the region as a major information and technology resource and plays a critical role in cultural, social, and economic development and enrichment. The University strives for excellence in its endeavors and continually evaluates its efforts to assure that objective.

Western Michigan University offers a full array of undergraduate programs in the fine arts, humanities, social and natural sciences, and the professions; master's programs through each of its department and schools; and doctoral programs in selected fields. The colleges share the University's traditional commitment to the preparation of teachers. Education programs provide students the opportunity to gain academic knowledge and develop the ability to apply that knowledge based on considered ethical choices, and seek to produce graduates who will think critically, communicate effectively, and participate meaningfully in a rapidly changing world. The general education program emphasizes a diverse cultural and ethnic heritage and the importance of a global perspective. Academic major programs require students to master a field of inquiry, discipline, or profession sufficient to an understanding of its methods, subject matter, and future in service to society.

Western Michigan University has distinctive strengths in its graduate and professional programs based on strong foundations in liberal and general education. The University has attracted and retains an outstanding faculty, and several of its departments have achieved national and international recognition. Faculty and program quality together provide a basis for responding positively to the challenges and opportunities of the future.

The University's commitment to the discovery and dissemination of new knowledge and insight facilitates and rewards faculty and student research, scholarship, and creative activity. The University extends its resources to the community through fine arts programming, on-site delivery of educational programs, student service and internship assistance, health-related clinical services, technology transfer, technical support, and applied research programs. The University deliberately seeks student, staff, and faculty populations characterized by a diversity that reflects society at large and meets student needs through cultural, academic, and financial support and enrichment programs designed to promote student persistence, independence, and success.

The University provides to students a balanced educational experience, including co-curricular activities that contribute to personal growth and help to develop leadership skills. Student organizations, campus residence hall life, artistic events, multicultural programs, intercollegiate athletics, and intramural activities together with formal academic endeavor constitute the University environment. Western Michigan University fosters and develops ethical behavior among administrators, faculty, staff, and students. Faculty and student governance structures rest upon the principles of academic freedom and professional ethics consistent with the responsibilities of an academic community.

Approved by Board of Trustees February 20, 1970; amended June 13, 1980; June 25, 1982; and April 27, 1990.
ADMISSION PROCEDURES

A person planning to earn a degree or a graduate certificate beyond the baccalaureate needs to be admitted to the University as a nondegree student. The admission procedures for U.S. citizens and non-U.S. citizens are different, however, as described immediately below. To avoid delay in the processing of an application, U.S. citizens and permanent residents should obtain information and application materials by mail from the Office of Admissions and Orientation, Graduate Division, Western Michigan University, Kalamazoo, Michigan 49008-5176 OR by FAX (616 387-5899) or may download the Graduate Division and follow the Graduate Degree Program Applicant, Western Michigan University, Kalamazoo, Michigan 49008-5176 OR by FAX (616 387-5899) or may download the application available on the Western Michigan University web page (http://www.wmich.edu/admi/gradapp/).

Potential applicants on non-immigrant or temporary visas should request information and application materials by mail from the Office of International Student Services. A 411 Ellsworth Hall, Western Michigan University, Kalamazoo, Michigan 49008-5176 OR by FAX (616 387-5899) or may download the materials from the Office's web page (http://www.wmich.edu/oiss/).

Degree Program Applicant, U.S. Citizen

U.S. citizens who seek admission to a graduate degree program will follow the applicant-managed process described below.

1. Request a Graduate Self-Managed Application from the Office of Admissions and Orientation, Graduate Division. NOTE: Since most graduate programs require materials in addition to the Graduate Self-Managed Application, and since not all departments' additional materials are included with the Graduate Self-Managed Application, applicants are advised to contact the relevant department office or program advisor for such materials.

[Alternatively, access the web pages (http://www.wmich.edu/admi/gradapp/) of the Office of Admissions and Orientation, Graduate Division and follow the instructions for completing the World Wide Web version of the admission application.]

2. Follow exactly the instructions for completion of the Graduate Self-Managed Application and submission of additional, departmental materials. The self-managed application process requires the applicant to take responsibility for gathering all required admission materials and submitting those materials to the appropriate offices before the published admission dates, as follows:

- Materials to be submitted to the Office of Admissions and Orientation in the envelope provided: The one white copy of the application form, the $25 non-refundable application fee, payable to Western Michigan University; one official transcript from every previous undergraduate and graduate institution attended (except WMU); and the self-addressed, stamped graduate admissions postcard. If also required for admission, have official entrance test scores (such as the GRE or GMAT) sent to the Office of Admissions and Orientation by the testing agency.

- Materials to be submitted directly to the graduate department in the envelope provided: The two blue copies of the application form; one official transcript from every previous undergraduate and graduate institution attended (except WMU); the supplemental admission materials as required by department; the self-addressed, stamped department postcard; and any reference forms, if required by department instructions.

3. Applications for admission from U.S. citizens and permanent residents should be submitted to the Office of International Student Services, 411 Ellsworth Hall, Western Michigan University, Kalamazoo, Michigan 49008-5176 OR by FAX (616 387-5899) or may download the application available on the Western Michigan University web page (http://www.wmich.edu/oiss/).

Degree Program Applicant, Non-U.S. Citizen

Applicants on non-immigrant or temporary visas who seek admission to a graduate program will follow the steps described below.

1. Request an International Student Application Form from the Office of International Student Services. NOTE: Since most graduate programs require materials in addition to the International Student Application Form, and since not all departments' additional materials are included with the International Student Application Form, applicants are advised to contact the relevant department office or program advisor for such materials. [Alternatively, access the web pages (http://www.wmich.edu/oiss) of the Office of International Student Services to download the application form and instructions for its completion and submission.]

2. Follow exactly the instructions describing the application procedure and submission of all supplemental materials, including the Statement of Finances form and documentation of proficiency in English.

Statement of Finances: F-1 and J-1 potential or current visa holders must submit a Statement of Finances form and provide proof that they have sufficient financial resources to cover the educational and living expenses incurred by a typical non-resident graduate student. Documentation of English Proficiency: When English is not the official language of the country in which the applicant was educated, the applicant is required to demonstrate proficiency in English. The following tests and scores are accepted at Western Michigan University as measures of English language proficiency. Some graduate programs require a higher score.

- Test of English as a Foreign Language (TOEFL). A score of 500 (173 CBT) is required for restricted enrollment (part-time English study and part-time academics during the first semester) or 550 (213) for unrestricted enrollment.
- Michigan English Language Assessment Battery (MELAB). A score of 75 is required for restricted enrollment or 85 for unrestricted enrollment.
- General Certificate of Education Advanced Level Pass in English with grade of A, B, or C, from one of the five British-based examining boards only, is required for unrestricted enrollment.
- International English Language Testing System (IELTS) using Modules A, B, or C (not the General Training Module). A score of 6.5 is required for restricted enrollment or 7.0 for unrestricted enrollment.
- International Baccalaureate (IB). A grade of 5 in English at the Higher Level is required for unrestricted enrollment.

The College Board's English Language Proficiency Test (ELPT). A score of 950 is required for restricted enrollment or 965 for unrestricted enrollment.

Successful completion of the advanced level and instructor recommendations from CELCIS, WMU's Career English Language Center for International Students.
Materials to be submitted to the Office of International Student Services: The International Student Application Form; a $25 non-refundable application fee, payable to Western Michigan University; the Statement of Finances form; complete and official transcripts of post-secondary studies listing course titles and grades (or copies if not received for each, as well as copies of diplomas, certificates, or degrees earned, translated into English; proof of English language proficiency (see acceptance proofs listed above). If also required for admission, have official entrance test scores (such as the GRE or GMAT) sent to WMU by the testing agency.

Materials to be submitted directly to the graduate program office: Request the certificate program office to provide these materials, and then complete and submit the materials exactly as the instructions require.

3. Applications for admission from non-U.S. citizens who do not have an Alien Registration Card or I-551 Immigrant Visa are not accepted until June 15, 1998. This date is flexible and can be extended upon request to the Office of Admissions and Orientation, Graduate Division.

All Western Michigan University faculty and staff are eligible to apply for admission to tenuretrack appointments and all University master's and specialist programs at the University. WMU faculty members holding similar appointments within the University 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.

Nondegree Applicant, Graduate Certificate Program

An applicant with a bachelor's degree who wishes to gain admission to a graduate certificate program should submit a Graduate Certificate Program Admission Application to the Office of Admissions and Orientation, Graduate Division, along with a non-refundable application fee of $25. The application accompanied by a $25 non-refundable application fee, payable to Western Michigan University, and two official transcripts from each institution attended since high school, except Western Michigan University. Additional, supplemental admissions materials required by the certificate program may also need to be submitted directly to the certificate program office. Request the certificate program office to provide these materials, and then complete and submit the materials exactly as the instructions require.

Nondegree Applicant, Permission to Take Graduate Classes (PTG)

An applicant with a bachelor's degree who wishes to enroll in graduate courses, but does not plan to pursue a degree program or is not eligible for admission to a degree program, may enroll in certain classes with Permission to Take Graduate Classes (PTG) status. This status is granted to a guest or visiting student from another university. PTG status does not constitute an application to receive a degree or certificate program, and the courses taken under this status may not apply to any particular degree or certificate program.

To secure admission with this status, applicants should submit an Application for Permission to Take Graduate Classes (PTG) Status to the Office of Admissions and Orientation, Graduate Division, along with a non-refundable application fee of $25. Applicants who wish to receive credit toward a degree from WMU must send proof of their undergraduate degree when submitting the application. The following credentials (photocopies are permissible) are acceptable verification of the degree: transcript, diploma, teaching certificate, or letter from the registrar of the undergraduate institution. Applications will not be processed without the accompanying credential.

ADMISSION REQUIREMENTS

All applicants are expected to meet the same academic standards required for admission consideration. The minimum academic requirements vary, however, by discipline, and by admission type. For more specific information on each program, read the admission requirements section of the relevant program's listing in this catalog or contact the program's graduate advisor or the department office.

Master's Program Applicant

In addition to the minimum requirements for admission to a master's program listed below, many of the University's twenty-five doctoral programs will ask applicants to submit supplemental materials such as letters of recommendation, standardized test scores (such as the GRE General Test, GRE Subject Test, GMAT, TWE, or the like), or an essay describing the applicant's academic interests and professional goals; to present evidence of having completed specific courses with specific grades or of having specific kinds of work or life experiences; or to hold certain degrees or endorsements or certificates (such as a teaching certificate). For more specific information on each program, read the admission requirements section of the relevant program's listing in this catalog or contact the program's graduate advisor or the department office.

1. Bachelor's degree from an accredited institution, indicated on an official transcript. Grades must be equivalent to a Western Michigan University bachelor's degree. The student who has a bachelor's degree and less than 24 hours of completed graduate work needs at least an overall grade point average of 3.0 in undergraduate work and at least a 3.25 for all completed graduate work.

2. Evidence of having met any additional admission requirements stipulated by the individual doctoral degree program.

Specialist Program Applicant

In addition to the minimum requirements for admission to a specialist program listed below, many of the University's twenty-five doctoral programs will ask applicants to submit three letters of recommendation and an autobiography; to present evidence of having completed specific courses with specific grades or of having specific kinds of work or life experiences; to hold certain endorsements or certificates (such as a teaching certificate); and may require the applicant to schedule a personal interview with departmental faculty. For more specific information on each program, read the admission requirements section of the relevant program's listing in this catalog or contact the program's graduate advisor or the department office.

1. Bachelor's degree from an accredited institution, indicated on an official transcript.

2. Two official transcripts from each institution attended since high school.

3. An essay describing the applicant's academic interests and professional goals; to present evidence of having completed specific courses with specific grades or of having specific kinds of work or life experiences; or to hold certain degrees or endorsements or certificates (such as a teaching certificate). For more specific information on each program, read the admission requirements section of the relevant program's listing in this catalog or contact the program's graduate advisor or the department office.

4. Scores on the GRE General Test.

5. Evidence of having met any additional admission requirements stipulated by the individual doctoral degree program.

Doctoral Program Applicant

In addition to the minimum requirements for admission to a doctoral program listed below, many of the University's twenty-five doctoral programs will ask applicants to submit three letters of recommendation and an autobiography; to present evidence of having completed specific courses with specific grades or of having specific kinds of work or life experiences; to hold certain degrees or endorsements or certificates (such as a teaching certificate). For more specific information on each program, read the admission requirements section of the relevant program's listing in this catalog or contact the program's graduate advisor or the department office.

1. Bachelor's degree from an accredited institution, indicated on an official transcript.

2. Two official transcripts from each institution attended since high school.

3. An essay describing the applicant's academic interests and professional goals; to present evidence of having completed specific courses with specific grades or of having specific kinds of work or life experiences; or to hold certain degrees or endorsements or certificates (such as a teaching certificate). For more specific information on each program, read the admission requirements section of the relevant program's listing in this catalog or contact the program's graduate advisor or the department office.

4. Scores on the GRE General Test.

5. Evidence of having met any additional admission requirements stipulated by the individual doctoral degree program.

ADMISSION REQUIREMENTS

All applicants are expected to meet the same academic standards required for admission consideration. The minimum academic requirements vary, however, by discipline, and by admission type. For more specific information on each program, read the admission requirements section of the relevant program's listing in this catalog or contact the program's graduate advisor or the department office.

Master's Program Applicant

In addition to the minimum requirements for admission to a master's program listed below, many of the University's twenty-five doctoral programs will ask applicants to submit supplemental materials such as letters of recommendation, standardized test scores (such as the GRE General Test, GRE Subject Test, GMAT, TWE, or the like), or an essay describing the applicant's academic interests and professional goals; to present evidence of having completed specific courses with specific grades or of having specific kinds of work or life experiences; or to hold certain degrees or endorsements or certificates (such as a teaching certificate). For more specific information on each program, read the admission requirements section of the relevant program's listing in this catalog or contact the program's graduate advisor or the department office.

1. Bachelor's degree from an accredited institution, indicated on an official transcript.

2. Two official transcripts from each institution attended since high school.

3. An essay describing the applicant's academic interests and professional goals; to present evidence of having completed specific courses with specific grades or of having specific kinds of work or life experiences; or to hold certain degrees or endorsements or certificates (such as a teaching certificate). For more specific information on each program, read the admission requirements section of the relevant program's listing in this catalog or contact the program's graduate advisor or the department office.

4. Scores on the GRE General Test.

5. Evidence of having met any additional admission requirements stipulated by the individual doctoral degree program.
6. Acceptance by the academic unit offering the doctoral program and endorsement of the acceptance by the graduate dean. Additionally, doctoral students will be reviewed for eligibility to continue in the program at two other decision points—Applicancy and Candidacy—following their initial admission to a doctoral degree program. At each of these stages the academic program unit will decide whether the student should be permitted to continue study toward the doctoral degree.

Applicancy

1. 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 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. A student should present this request to the program advisor who will review the request for approval and record the decision on the student’s program of study filed in the Registrar’s Office.

2. Criteria for being awarded status as an applicant include:
   a. An overall point-hour ratio of at least 3.25 in all graduate work completed.
   b. Commitment to a specific degree program.
   c. Appointment of a doctoral dissertation committee.
   d. A decision by the unit that the student should be permitted to continue study toward a doctoral degree.

Candidacy

A candidate for a doctoral degree, prior to the session or semester in which the dissertation is defended, is required to have earned or completed satisfactorily the following and to have received approval by the academic program unit to continue study toward a doctoral degree:

1. An overall grade point average of 3.25 or better.
2. Appointment of a doctoral dissertation committee, and approval of the dissertation proposal by the committee.
3. All courses (excluding dissertation credit) and program requirements.
4. All course work requirements.
5. Comprehensive examinations.
6. Residence requirement.

Nondegree Applicant, Graduate Certificate Program

Often an applicant will plan to pursue a graduate certificate program in conjunction with a graduate degree program. In such an instance, the applicant will need to meet the admission requirements for both the graduate degree program and the graduate certificate program. When the graduate certificate program is pursued alone, the applicant will need to meet the following, minimum admission requirements. Some graduate certificate programs may ask applicants to submit supplemental materials or to meet additional requirements. For more specific information on each certificate program, read the admissions requirements section of the relevant program’s listing in this catalog or contact the program’s advisor.

1. Bachelor’s degree from an accredited institution, indicated on an official transcript.
2. Two official transcripts from each institution attended since high school.
3. Evidence of having met any additional admission requirements stipulated by the individual graduate certificate program.
4. Acceptance by the academic unit offering the graduate certificate program and endorsement of the acceptance by the graduate dean.

ADMISSION TYPES, DEGREE STATUS

Regular Admission

Regular Admission is granted to the student who has a bachelor’s degree with an acceptable academic record (minimum 3.0 grade point average in the final two years of undergraduate study), who has passed the required entrance examinations, and who has met the admission requirements of the program to which he or she has been admitted.

Acceptance to a definite program of study leading to a degree or certificate program is dependent upon the endorsement of the department or unit in which the student plans to study and of the graduate dean. For further information see the admission requirements section of the relevant graduate program in this catalog.

Admission with Reservation

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 a student during the final semester or session of enrollment in an undergraduate program if the academic record is satisfactory.

Probationary Admission

Probationary Admission 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 grade point average of at least 2.0 in the final two years of undergraduate study, as well as the approval of the department or unit in which the student plans to pursue graduate study, is required for probationary admission. A student admitted on probationary status may establish eligibility for regular admission to a degree or certificate program by completing the specified departmental prerequisites, by securing grades of “B” or better in each advisor-approved course in the first six to nine graduate credits, and by securing departmental approval. Students admitted on probation are not permitted to use in their degree program more than nine semester hours of credit earned as a probationary student.

Dual Undergraduate/Graduate Enrollment Admission

Dual enrollment admission (that is, admission to a master’s program while yet enrolled in a baccalaureate program) may be granted to any WMU senior who has an acceptable academic record (with a grade point average of 3.0 or better for the two years prior to admission date) and who has no more than 15 credit hours remaining for completion of the bachelor’s degree. Once granted dual enrollment status, the student may enroll in a maximum of 12 credit hours of graduate course work that has been approved by the appropriate departmental advisor in addition to those undergraduate courses required to complete the bachelor’s degree.

Dual enrollment is permitted for the calendar year only, and no graduate credit earned in this way may be used to meet undergraduate requirements. If the bachelor’s degree is not completed in the period of one calendar year, the student may not continue on dual enrollment.

A student must request dual enrollment status on the application for admission to a master’s degree program; however, official entry is not immediate. Graduate credits earned accumulate but the official entry date must follow the sessions or semesters of dual enrollment status and the completion of the bachelor’s degree.

ADMISSION TYPES, NONDEGREE STATUS

Permission to Take Graduate Classes (PTG)

Permission to Take Graduate Classes (PTG) is granted to a student with a bachelor’s degree who wishes to enroll in certain courses, but does not plan to pursue a program leading to a graduate degree, or is not eligible for degree admission. This status is also granted to a guest or visiting student from another university. PTG status does not constitute admission to a degree or certificate program, and the courses taken under this status might not apply to a particular degree or certificate program. For the student eligible for admission, a maximum of nine credits taken under PTG status may be considered in a degree program if the student should later decide to apply for admission to a degree program and if an advisor and the graduate dean approve the credit. PTG status is not available to students with dual enrollment.

Senior Citizen (SCOPE) Program

The Senior Citizens’ Opportunity Program in Education (SCOPE) Program offers persons sixty-two years of age or older the opportunity to register for one regularly scheduled class each semester/session for a reduced fee. Participants will be assessed all special class fees. Special contract courses, such as Distance Learning, are not available tuition free. Enrollment in courses is on a space available basis and participants may not register for credit.

Anyone interested in participating in the SCOPE program should contact the Office of Admission and Orientation and request an application form. Regular, degree-seeking admission is not extended to participants of SCOPE. Questions regarding SCOPE participation should be directed to the Registrar’s Office (387-4310).

For additional information regarding dates and deadlines for registration of courses for SCOPE participants, consult the Schedule of Course Offerings.

Michigan Intercollegiate Graduate Studies (MIGS)

The MIGS admissions category 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. Any graduate student in good standing in a master’s, specialist, or doctoral program at a
participating institution is eligible to participate in the MIGS program. (Western Michigan University participates in this program.) 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 the departmental officers and the MIGS liaison officers at both the home and host institutions. The officers of the home 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 advisor or the MIGS liaison officer in The Graduate College.

ACTIVE ADMISSION STATUS

An applicant admitted to a graduate degree or graduate certificate program or to Permission to Take Graduate Classes (PTG) status retains Active Admission Status for two years from the time of admission, as well as for one year from the date of the last enrollment as a graduate student at Western Michigan University.

If a student never enrolls during the two years following the effective admission date, the student's admission status is canceled and thereafter the student must submit an entirely new application and be formally admitted again before registration may occur. An enrolled student who has not registered for more than one year must complete and have approved a Readmission Application before registration may occur.
TUITION AND FEES

TUITION
Student tuition fees are assessed on a credit hour basis. Fees per credit hour for 2000-2001 are listed below.

Resident* Graduate Student, On-Campus $166.62
Non-Resident Graduate Student, On-Campus $389.77
All Graduate Students in Division of Continuing Education Courses, $206.64

*Resident: See the Resident Classification section directly below for definition.

Resident Classification
A student's classification as a resident or non-resident for the purpose of assessing tuition fees is determined by the following policy adopted by the Board of Trustees of Western Michigan University. The policy applies to all students.

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

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

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

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

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

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

7. A student may register as a student of this state if: (a) the parent or legal guardian of a minor student, or (b) a student who is at least 18 years of age has been employed as a migrant worker in Michigan for a minimum of two months each year for three of the past five years, or a minimum of three months each year for two of the past five years prior to the date of the proposed enrollment. Proof and verification of employment is required.

Migrant worker in Michigan is defined as one who travels to the state of Michigan in pursuance of seasonal agricultural or related industrial employment.

Please note that the deadline for applying for a change in resident classification is 20 days after the first day of classes for each semester or 10 days after the first day of classes for each session. Any questions concerning residency classification should be directed to the Office of the Assistant Vice President for Business, 3082 Seibert Administration Building, Telephone: 387-2366.

Auditing Courses, Tuition for
Students who audit courses (who register for classes but do not desire credit) are governed by the same regulations and tuition fees as students desiring credit.

Change in Credit Hour Load, Effect on Tuition
Changes in student credit hour load prior to the end of the final day for adding a course are considered to be realignments, and a refund will be granted, in full, for any net reduction in the credit hour load. After the final day for adding a course, there is no reassessment or refund for reduction in credit hour load. An increase in credit hour load will result in an upward adjustment of the tuition fee assessment. Students should refer to the current Schedule of Course Offerings for complete information pertaining to the University's refund policy.

Complete Withdrawal from All Courses, Effect on Tuition
The Schedule of Course Offerings for the appropriate semester/session should be consulted for the refund policy that pertains to complete withdrawal.

Students completely withdrawing from all classes must enter this information into the touchtone registration system or by going to the Registrar's office during the official drop/add days in order to process their withdrawal and assure a 100 percent refund. The withdrawal date for refund purposes will normally be determined by the date that the Registrar receives a Change of Enrollment Request form or an Appeal to Withdraw form. Students who find it impossible to be on campus to process a complete withdrawal and do not have access to touchtone phones may write to the Registrar's office, Room 3210 Seibert Administration Building, for aid in processing their withdrawal. All written requests for complete withdrawal must bear the appropriate postmark date for consideration of any refund.

STUDENT FEES OTHER THAN TUITION
The following are other 2000-2001 fees applicable for graduate study on campus.

Admission Application Fee
A non-refundable fee of $25 must accompany each application for admission.

Enrollment Fee
For all students registered in on-campus courses, the enrollment fee incorporates all required fees with the exception of the student organizations' assessment fee into a single per capita assessment. The enrollment fee for students registered in on-campus classes is as follows.

Students enrolled for 7 or more credit hours per semester or 4 or more credit hours per session:
- Fall and Winter Semesters: $289.00
- Spring and Summer Sessions: $144.50

Students enrolled for 6 or fewer credit hours per semester or 3 or fewer credit hours per session:
- Fall and Winter Semesters: $120.00
- Spring and Summer Sessions: $60.00

Graduation Fee and Application Deadline

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<tr>
<th>Session</th>
<th>Graduation Fee</th>
<th>Application Deadline</th>
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<tr>
<td>Summer Session Graduation (August)</td>
<td>$30.00 Application Deadline: August 1</td>
<td>$50.00 Application Deadline: July 15</td>
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<tr>
<td>Fall Semester Graduation (December)</td>
<td>$30.00 Application Deadline: December 1</td>
<td>$50.00 Application Deadline: November 15</td>
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<tr>
<td>Winter Semester Graduation (April)</td>
<td>$30.00 Application Deadline: April 1</td>
<td>$50.00 Application Deadline: March 15</td>
</tr>
<tr>
<td>Spring Session Graduation (June)</td>
<td>$30.00 Application Deadline: July 1</td>
<td>$50.00 Application Deadline: May 15</td>
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International Student Fee
International students will be charged a $25.00 fee each semester.

Late Registration Fee
A late registration fee of $100.00 is assessed to each new on-campus registrant starting at 12:01 a.m. the third day of classes. This fee applies to all students.
does not apply to those students completing drop-add procedures, only to students who did not register prior to the first day of classes. This fee is a charge for the special handling required. It is not refundable.

**Late Add Fee**

A late add fee of $50.00 is assessed for each class for which the student is allowed to register after the close of the drop/add period for that term. This fee is a charge for the special handling required. It is not refundable.

**Liability Insurance Fee**

Students enrolled in courses requiring participation off-campus for field experience or practicums will be charged a liability insurance fee. This fee will be charged one time per year, fall semester through summer session. Students registered in classes that require more than one type of liability insurance will be charged once for each.

**Student Activity Fee**

A student assessment fee (SAF) of $12.00 per semester (Fall and Winter) and $6.00 per session (Spring and Summer) will be collected from all graduate and undergraduate students at the time of registration. This assessment is for the support of student organizations and agencies. The student organizations and agencies use this money to enhance the out of classroom experience on campus. The following is a sample of the programs funded in previous years: Bronco Bash, Homecoming, College Bowl, Miller Movies, Bernie's Afterhours, Bernhard Center Center Stage, lectures, etc.

**TUITION AND FEE PAYMENT FOR GRADUATE APPOINTEES**

Graduate appointees (i.e., those holding assistantships, associateships, or fellowships) are entitled to a charge privilege for tuition and related fees. However, installment payments must be made. An account is considered to be delinquent thirty days after the beginning of a semester and thirty days after the beginning of a session. At that time a one and one-half 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. All tuition and fees must be paid prior to registration for the next semester/session.
REGISTRATION, RECORDS, ACADEMIC REGULATIONS

REGISTRATION
Registration is conducted by telephone at Western Michigan University according to the schedule and procedures given in the Schedule of Course Offerings which is published prior to each semester and session and is available in the Registrar's Office, in advising offices, and on the WMU web site. The Schedule of Course Offerings should be consulted for details regarding the time and place of graduate classes, credit types and levels for courses, course prerequisites, procedures and regulations regarding the adding or dropping of courses, tuition and fee schedules and their methods of payment, final examination week schedules, names and telephone numbers of departments and advisors, and all the University regulations that affect the registration process. Registration by students signifies an agreement to comply with all regulations of the University whenever approved by the University.

Course Numbers and Graduate Credit
To receive graduate credit, graduate students will register for courses offered at the 500-, 600-, or 700-level. Courses numbered 500 and above are open only to graduate students. Courses numbered 500 through 599 are open to both graduate and advanced upperclassmen. Students should consult with the department to determine whether the course is graduate credit.

Adding or Withdrawing from Classes Before the Final Date to Drop
Students may enroll in (add) any course through the first five days of classes of a semester or session. The final date for adding courses is published in the Schedule of Course Offerings.

Only students who have a class that is not officially scheduled to meet during the five day drop/add period will be given an additional opportunity to drop/add. See the Schedule of Course Offerings for details of this procedure. Students may withdraw (drop) courses through the fifth (5th) day of the term and the course will not be reflected on the student's official transcript. All withdrawals received after the drop/add period will be reflected on the student's academic record as a non-punitive "W" (Official Withdrawal).

Withdrawing from Classes After the Final Date to Drop
Students may withdraw from courses without academic penalty through the second Monday past mid-semester at the Registrar's Office. A non-punitive "W" will be reflected on the student's academic record for any classes dropped after the drop/add period and before the mid-semester withdrawal deadline. The final date for withdrawing is published in the Schedule of Course Offerings. Students may not withdraw from any class after this date without academic penalty.

Each student is encouraged to confer with the instructor before withdrawing from class, as the student may not re-register for the class.

Students who wish to withdraw from class officially after the second Monday past mid-point of the semester because of genuine hardship (i.e., illness, death in the immediate family), must be passing the course and must file a written appeal on forms which may be obtained from the Registrar's Office.

An Appeals Committee to review late withdrawals will be appointed by the Provost and Vice President for Academic Affairs. The Appeals Committee may request information from the instructors involved and from other appropriate sources.

The Appeals Committee will rule upon the basis of the student's written application and any additional information received. The action of the Appeals Committee is final.

Registration in Master's Thesis, Specialist Project, Doctoral Dissertation
A student who intends to register for the Master's Thesis (700), Specialist Project (720), or Doctoral Dissertation (730) for the first time is required to meet with the Dissertation Assistant in The Graduate College before registering for the class so that the student is informed about the regulations pertaining to the preparation and submission of the manuscript. Registration deadlines apply.

Registration for Continuous Enrollment in Master's Thesis, Specialist Project, Doctoral Dissertation
Following a student's first enrollment in the Master's Thesis (700), Specialist Project (720), or Dissertation (730), the student will enroll in that same course in each subsequent semester and session continuously until all thesis or project or dissertation requirements are completed satisfactorily and approved by all appropriate bodies. Registration deadlines apply.

Research Subject Protection and Registration
Students conducting research that involves human or animal subjects, biohazards, genetic materials, or nuclear materials/radiation must have prior approval of the research proposal by the appropriate University board, thus assuring compliance with the regulations for the protection of such subjects or for the use of such materials. There are no exceptions to this requirement. Registration for courses in which research is conducted that requires such prior approval should not be attempted until the approval is granted by the appropriate University board. The department requiring the course is responsible for ensuring that the student has complied with federal, state, and WMU requirements. The student completing such regulated research for a master's thesis, specialist project, or doctoral dissertation must include the written approval or exempt letter from the appropriate board as an appendix to the thesis, project, or dissertation, and a student completing such regulated research for a course report, paper, or project must include the written approval or exemption letter from the appropriate board as an addendum to the report, paper, or project. For more information, call the Office of the Vice President for Research, 387-6292.

RECORDS
Graduate Student Permanent Program of Study
A Graduate Student Permanent Program of Study is a document composed by a graduate student's program advisor which lists all course and other requirements necessary for completion of the degree program to which the student was admitted. The Graduate Student Permanent Program of Study is approved by the student's program advisor and by the graduate dean, filed in the Records Office, and used to audit the student's eligibility for the degree.

Identification Card
Each student on campus is required to have an identification card, which includes photo, name, and student signature. Dates, times, and locations of card production are determined by the Department of Public Safety. Each new student is eligible for an identification card free of charge, although if the card is not obtained during the first semester of attendance after admission, a $20.00 fee will be charged for its production in any subsequent semester. A $20.00 fee is also charged for replacing a lost or damaged card. The card is valid throughout the student's entire enrollment at Western Michigan University. Lending the card to another or failure to present it when requested by University officials is a violation of University regulations and subjects the holder to disciplinary action. Students are personally liable for all obligations incurred by the use of their identification cards.
Name Change
Students may maintain academic records under the name used at the time of admission. However, students with active admission status desiring to make an official name change may go to the Registrar's Office to request the change. Legal proof may be required, and the student will be required to sign a notarized affidavit swearing to the fact the name change is not requested for any fraudulent purpose.

Transcript
A student's permanent academic record or transcript is not open to visitors, although a student, all courses taken and credit hours and grades earned in the courses. All students desiring a transcript of their academic records at Western Michigan University should write or visit the Office of the Registrar, giving dates of attendance and, if a graduate, the date of graduation. All names under which the student may have been enrolled and a social security number should be provided. All copies are $3.00 each. The transcript will be released only upon written authorization of the student and only after payment is made.

ACADEMIC REGULATIONS

Academic Standards
All graduate students, PTG and degree candidates, must earn an overall grade point average of at least 3.0 (specialist and doctoral students must earn an overall grade point average of at least 3.25) to satisfy University requirements. The academic standards policy is intended to encourage satisfactory progress toward that end.

1. Good Standing: A graduate student is in good standing whenever the student's overall grade point average is at least 3.0 (3.25 for specialist and doctoral students).
2. Warning: Whenever the grade point average for any enrollment period is less than 3.0 (3.25), but the overall grade point average is 3.0 (3.25) or above, the student will be warned.
3. Probation: If a student's overall grade point average falls below 3.0 (3.25), the student will be placed on probation for one semester.
4. Continued on Probation: If the overall grade point average increases 0.1 or better during the semester of Probation, although still below 3.0 (3.25) overall, the student will be Continued on Probation for one additional enrollment period at the discretion of the academic department housing the student's program.
5. Probation Removed: When the conditions of Good Standing are restored, Probation will be removed.
6. Dismissal: The student who fails to increase his/her overall grade point average 0.1 or better at the end of an enrollment period of Probation, or whose overall grade point average fails to reach 3.0 (3.25) at the end of an enrollment period of Continued Probation, or whose overall grade point average fails to reach 3.0 (3.25) after three-fourths of the class or laboratory semester, the student must be dismissed from the University. Exceptions may be granted only by the academic units or program's admission body, and only through the unit's or program's appeal process. Students who have been dismissed from Western Michigan University are expected to remain out at least one full fifteen-week semester (spring and summer sessions together are equivalent to one full fifteen-week semester). Dismissed students must apply for readmission through the normal process. The student will send a Readmission Application to the Admissions Office which, in turn, will forward the student's Readmission Application to the program or academic unit admission body for decision on readmission.

Appeal Procedure: Upon appeal by the student, the program or academic unit admission body will determine whether to grant Continued on Probation status. Continued on Probation status must be granted by a program or academic unit admission body in order for the student to register. The appeal must be initiated and the decision made by the program or academic unit prior to the student's semester's last day to add classes.

Attendance
Students are responsible directly to their instructors for class and laboratory attendance, and for petitions to excuse absences.

Course Grades and Grading System
A grade is given in each course in which a student 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 Per Credit Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Outstanding</td>
<td>4.0</td>
</tr>
<tr>
<td>B</td>
<td>Exceptional</td>
<td>3.5</td>
</tr>
<tr>
<td>BA</td>
<td>Very good</td>
<td>3.0</td>
</tr>
<tr>
<td>CB</td>
<td></td>
<td>2.5</td>
</tr>
<tr>
<td>C</td>
<td></td>
<td>2.0</td>
</tr>
<tr>
<td>DC</td>
<td></td>
<td>1.5</td>
</tr>
<tr>
<td>D</td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>E</td>
<td>Failing</td>
<td>0.0</td>
</tr>
<tr>
<td>X</td>
<td>(Failure) Unofficial Withdrawal</td>
<td>0.0</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete</td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>Official Withdrawal</td>
<td></td>
</tr>
<tr>
<td>CR</td>
<td>Credit</td>
<td></td>
</tr>
<tr>
<td>NC</td>
<td>No Credit</td>
<td></td>
</tr>
<tr>
<td>AUD</td>
<td>Audit</td>
<td></td>
</tr>
</tbody>
</table>

X—(Failure) 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 the student's grade point average.

I—Incomplete: This is a temporary grade which the instructor may give to a student when illness, necessary absence, or other reasons beyond the control of the student prevent completion of course requirements by the end of the semester or session. The student must be passing the course and have completed the majority of the course work to be eligible to receive an "I." The grade of "I" (Incomplete) may not be given as a substitute for a failing grade.

A grade of "I" must be removed by the instructor who gave it or, in exceptional circumstances, by the department chairman.

Incomplete grades (except those given in Master's Thesis 700, Specialist Project 720, and Doctoral Dissertation 730, and courses directly related to them or identified by departments) will convert to an "X" if not removed within one calendar year, or sooner if so stipulated by the instructor. Students who receive an incomplete grade in a course must not reregister for the course in order to remove the "I." An instructor who assigns a grade of "I" will complete an official Report of Incomplete Work form indicating the remaining requirement for removal of the incomplete grade and indicating the time allowed, if less than one full year. The instructor will retain a copy for his/her own records and submit a copy to the departmental office. The remaining copies will be returned, along with the grade sheets, to the Registrar's Office, which will provide the student with a copy.

W—Official Withdrawal: A grade of "W" is given in a course when a student officially withdraws from that course or from the University before the final withdrawal date in the semester or session specified in the Schedule of Course Offerings.

CR or NC—Credit or No Credit: The Credit/No Credit grading system is used in all 700-level courses, as well as some departmental courses approved by the University. The student's transcript will indicate "CR" when the grade received is a C, B, or A; and "NC" when the grade received is a C, B, or A. The symbol "AUD" is used to indicate that a student has enrolled in a course as an auditor, has attended at least three-fourths of the class or laboratory sessions, and has given permission to the course instructor that the role as auditor has been satisfactory. A student who registers for a graduate course as an auditor, with the permission of the instructor, is not eligible to earn credit for examinations, earns no credit hours for the registration, and pays full tuition. The student must enroll in the audit status at the time of registration, and may not be transferred from the audit status after the course has begun.

Grade Change
A student who believes that an error has been made in the assignment of a grade must follow the procedure described later in this catalog in the Student Rights and Responsibilities section under the heading, "Course Grade and Program Dismissal Appeals."

Grade Point Average
A grade point average is obtained by dividing the total number of honor points earned by the total number of semester hours completed. For example, a total of forty-eight honor points earned in a semester by a student who completed sixteen hours of coursework gives a grade point average of 3.0 for the semester.

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 number 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
Repea ted Course
Any course is which a student may have been enrolled more than once is considered a repeated course. With the program advisor’s and graduate dean’s approval, the grade and credit earned in the repeated course only may count towards the student’s degree requirements at the time of graduation. A grade for each course registration will appear on the student’s transcript and be computed into the student’s overall, graduate grade point average.

Role and Composition of Thesis Committee, Project Committee, and Dissertation Committee

Master’s Thesis Committee
A master’s thesis committee shall be appointed for each student undertaking a graduate academic program in which the student is pursuing a master’s degree. The purpose of the thesis committee is twofold: 1) to provide the range of expertise necessary to advise a student in the conduct of the master’s thesis, and 2) to ensure that evaluation of the thesis represents a consensus of professionals in the student’s chosen discipline.

The master’s thesis committee is charged with the supervision and evaluation of the master’s thesis, a task that includes but is not limited to the following responsibilities: a) advise the student on selection and/or development of a master’s thesis topic; b) review and approve a proposal for the master’s thesis; c) provide consultation regarding progress on the thesis; d) evaluate the final document; and e) in those departments requiring an oral defense, evaluate the oral defense of the thesis.

In addition to the previously described responsibilities that are generic to all thesis committee members, the chairperson of the committee assumes the following additional responsibilities: a) in those departments where this responsibility is not discharged through other mechanisms, advise the student regarding selection of thesis committee members; b) routinely monitor student progress on the master’s thesis committee meetings; d) evaluate the readiness of the thesis proposal and of the thesis for committee review and action; and e) inform the student of the need to adhere to the Guidelines for the Preparation of Theses, Projects, and Dissertations.

Each thesis committee shall consist of a minimum of three members or associate members of the graduate faculty of Western Michigan University. Two of the committee members must be from the department or academic program in which the student is pursuing the master’s degree. The appointment of a master’s thesis committee is a three-stage process requiring, first, a mutual agreement between the master’s student and the prospective committee members; second, a formal appointment by the chairperson of the department (or the chairperson’s designee); and third, notification of and approval by the office of the dean of The Graduate College regarding this appointment.

Each unit offering a major in which the thesis is either required or optional may approve and disseminate additional guidelines concerning master’s thesis committees, including the qualifications for committee membership, procedures for selecting committee members, and the specific functions and responsibilities that the members of these committees have. Additional guidance is encouraged to disseminate an updated list of faculty who quality to serve on master’s thesis committees and their respective areas of expertise.

If there are differences among the members of a master’s thesis committee over the approval of the thesis or the thesis defense, it shall be the responsibility of the committee to undertake every reasonable effort to resolve these differences and come to a unanimous decision.

In the event a student wishes to appeal a negative decision by the student’s master’s thesis committee, the student shall first take the appeal to the same committee, which shall hear the appeal and render a decision. In case the committee cannot reach a unanimous agreement and the student wishes to appeal further, a negative decision, a Review Committee shall be established consisting of the dean of The Graduate College, the appropriate academic dean, and the chairperson or director of the unit. The Review Committee shall seek to resolve the controversy without passing on the thesis. The Review Committee handling such a case is limited to procedural actions, such as reconstituting the master’s thesis committee if the case merits it.

Specialist Project Committee
A specialist project committee shall be appointed for each student undertaking a project as partial fulfillment of the requirements for a specialist degree. The appointment of a specialist project committee is twofold: 1) to provide the range of expertise necessary to advise a student in the conduct of the specialist project, and 2) to ensure that evaluation of the project represents a consensus of professionals in the student’s chosen discipline.

The specialist project committee is charged with the supervision and evaluation of the specialist project, a task that includes but is not limited to the following responsibilities: a) advise the student on selection and/or development of a specialist project topic; b) review and approve a proposal for the specialist project; c) provide consultation regarding progress on the project; d) evaluate the final document; and e) in those departments requiring an oral defense, evaluate the oral defense of the project.

In addition to the previously described responsibilities that are generic to all project committee members, the chairperson of the committee assumes the following additional responsibilities: a) in those departments where this responsibility is not discharged through other mechanisms, advise the student regarding selection of project committee members; b) routinely monitor student progress on the project; c) call project committee meetings; d) review and approve a proposal for the project proposal and of the project for committee review and action; and e) inform the student of the need to adhere to the Guidelines for the Preparation of Theses, Projects, and Dissertations.

Each unit offering a major in which the specialist project is either required or optional may approve and disseminate additional guidelines concerning specialist project committees, including the qualifications for committee membership, procedures for selecting committee members, and the specific functions and responsibilities that the members of these committees have. Additional guidance is encouraged to disseminate an updated list of faculty who quality to serve on specialist project committees and their respective areas of expertise.

If there are differences among the members of a specialist project committee over the approval of the specialist project or the specialist project defense, it shall be the responsibility of the committee to undertake every reasonable effort to resolve these differences and come to a unanimous decision.

In the event a student wishes to appeal a negative decision by the student’s specialist project committee, the student shall first take the appeal to the same committee, which shall hear the appeal and render a decision. In case the committee cannot reach a unanimous agreement and the student wishes to appeal further, a negative decision, a Review Committee shall be established consisting of the dean of The Graduate College, the appropriate academic dean, and the chairperson or director of the unit. The Review Committee shall seek to resolve the controversy without passing on the thesis. The Review Committee handling such a case is limited to procedural actions, such as reconstituting the master’s thesis committee if the case merits it.
committees, including the qualifications for committee membership, the procedures used to select and appoint committee members, and the specific functions and responsibilities that the members of these committees have. Additionally, each unit is encouraged to disseminate an updated list of faculty who qualify to serve on specialist project committees and their respective areas of expertise.

If there are differences among the members of a specialist project committee over the approval of the project and its oral defense, it shall be the responsibility of the committee to undertake every reasonable effort to resolve these differences and come to a unanimous decision.

In the event a student wishes to appeal a negative decision by the student's specialist project committee, the student shall first take the appeal to the same committee, which shall hear the appeal and render a decision. In case the committee cannot reach a unanimous agreement and the student wishes to appeal further a negative decision, a Review Committee shall be established consisting of the dean of The Graduate College, the appropriate academic dean, and the chairperson or director of the unit. The Review Committee shall seek to resolve the controversy without passing on the project. The Review Committee handling such a case is limited to procedural actions, such as reconstituting the specialist project committee if the case merits it.

Doctoral Dissertation Committee

For each doctoral student a doctoral dissertation committee shall be appointed to review the dissertation proposal, procedures, and results; to make suggestions relative to these concerns to the student; and to decide whether to approve the dissertation and the oral defense as fulfilling these requirements for the doctoral degree.

Each doctoral dissertation committee shall consist of at least three members. The student's major dissertation advisor shall serve as chairperson of the committee. At least one member shall be from outside the student's department (this person may be from a related cognate discipline, from outside the student's college, or from outside WMU) who shall serve as a bona fide, fully participating member of the committee. The committee shall be approved and recommended by the unit, approved by the office of the appropriate academic dean, and approved and appointed by the graduate dean. Each member of the committee must be either a member or an associate member of the graduate faculty.

All members of this committee must approve the dissertation and at least three must be in attendance for and approve its oral defense. The dissertation must be in a form acceptable to the unit and to the Graduate College before the student may be awarded the doctoral degree.

Each unit offering a doctoral program shall approve and publish its policies concerning doctoral dissertation committees, including the qualifications for membership on doctoral dissertation committees, the procedures used to select who should serve on these committees, and the specific functions and responsibilities that the members of these committees have. The chairperson of each student's doctoral dissertation committee shall indicate in writing the specific responsibilities that individual members of that committee have.

If there are differences among the members of a doctoral dissertation committee over the approval of the dissertation and its oral defense, it shall be the responsibility of the committee to undertake every reasonable effort to resolve these differences and come to a unanimous decision.

In the event a student wishes to appeal a negative decision by the student's doctoral dissertation committee, the student shall first take the appeal to the same committee, which shall hear the appeal and render a decision. In case the committee cannot reach a unanimous agreement and the student wishes to appeal further a negative decision, a Review Committee shall be established consisting of the dean of The Graduate College, the appropriate academic dean, and the chairperson of the unit. The Review Committee shall seek to resolve the controversy without passing on the dissertation. The Review Committee handling such a case is limited to procedural actions, such as reconstituting the doctoral dissertation committee if the case merits it.

Transfer Credit

Transfer credit will be recorded on the Western Michigan University transcript as "Credit" (CR) only and will not be calculated into the honor points of the graduate grade point average at Western Michigan University. Grades and honor points do not transfer; only credit transfers. As a consequence, honor point deficiencies acquired in credits earned at Western Michigan University cannot be made up by credits earned at another university.

Master's Program

Six semester hours (three and four quarter hour terms) of graduate credit may be transferred from other schools provided:
1. The credits were earned in an institution accredited for graduate study and are of "B" grade (3.0) or better. Moreover, the student's overall grade point average for all graduate work taken at the other institution must also be "B" (3.0) or better.
2. The credit is earned within a six year period prior to graduation from Western Michigan University, is represented on an official transcript of the other university, and is identified as graduate credit.
3. The student's program advisor verifies that the transfer credits contribute to the student's degree program and includes them in the student's Graduate Student Permanent Program of Study.
4. The graduate dean approves the inclusion of the transferred credits in the student's Graduate Student Permanent Program of Study.

Second Master's Program

A student wishing to earn a second master's degree may transfer a maximum of six semester hours of approved graduate credit from the first graduate degree program. The second degree program must fulfill all the other usual requirements for a master's degree.

Specialist Program

A student with a master's degree from another university who completes a specialist degree at Western Michigan University may transfer up to thirty-six semester hours of approved graduate credit. A student without a master's degree who completes a specialist degree at Western Michigan University may transfer up to twelve semester hours of approved graduate credit.

Doctoral Program

A student enrolled in a doctoral program must complete a minimum of thirty semester hours, excluding the dissertation, at Western Michigan University after admission to the doctoral program. The thirty hours, excluding the dissertation, may not include any credit earned at another institution. Credit earned at another institution in addition to the thirty hours (excluding the dissertation) earned at WMU after admission to the doctoral program , however, may be approved by the doctoral program advisor and included in the student's Graduate Student Permanent Program of Study.

Undergraduate Credit in a Graduate Program

In certain instances, an advisor 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 advisor, the department chair, and the graduate dean prior to registering for these courses and then earns a grade of "B" or better. These courses earn undergraduate credit only which is not computed into the graduate grade point average. Undergraduate tuition is charged for these courses.
GRADUATION REQUIREMENTS

GRADUATION PROCEDURES

When a student satisfactorily completes all academic requirements for a degree, fulfills all financial and legal obligations to the University, and meets all relevant processing deadlines, the student is eligible for graduation and to receive the appropriate degree. An eligible student may graduate at the end of a semester or a session—in December, April, June, or August; however, a Commencement Ceremony is held only in December, April, and June.

Degree Program

The graduation process requires students to:

1. Apply for graduation by submitting the form Application for Graduation Audit and an application fee ($30.00 or $50.00, depending upon the date of filing) for a graduation audit. The application form may be obtained from the Registrar’s Office on the third floor of the Seibert Administration Building or on the Internet, www.wmich.edu/registrar/auditform.htm.

2. Fulfill all program and degree requirements. Students completing the requirements for a Graduate Certificate Program, whether together with a degree or independent of a degree, may apply for a certificate of completion. The process, fee, and requirements for obtaining a certificate are similar to that described above for obtaining a degree. The essential differences are that the student applying for a graduate certificate will have been officially admitted to the certificate program, will have completed the application form entitled Application to Receive Graduate Certificate, and will have completed satisfactorily the certificate program requirements recorded on the student’s advisor-approved Graduate Certificate Program, Program Outline.

3. All completed course work (and other program requirements, where applicable) coincide with the Graduate Student Permanent Program of Study.

4. Where applicable, all relevant documents are filed attesting to the approval of committee appointments, passing of comprehensive examinations, completion of research tools, successful defense of thesis or project or dissertation, fulfillment of any residency requirement, and compliance with the continuous enrollment requirement within the time limit allowed for the completion of degree requirements.

GRADUATION FEES AND APPLICATION DEADLINES

Fall Semester Graduation (December)
$30.00 Application Deadline: August 1
$50.00 Application Deadline: November 15

Winter Semester Graduation (April)
$30.00 Application Deadline: December 1
$50.00 Application Deadline: March 15

Spring Session Graduation (June)
$30.00 Application Deadline: February 1
$50.00 Application Deadline: May 15

Summer Session Graduation (August)
$30.00 Application Deadline: April 1
$50.00 Application Deadline: July 15

2. Fulfill all program and degree and University requirements and obligations.

3. If required for the degree, successfully complete, defend, and have approved by the graduate dean the master’s thesis, specialist project, or doctoral dissertation.

4. Meet all department, Graduate College, and University deadlines for the completion of all work required for the degree and the submission of all materials required for graduation. All work taken either on or off the campus must be completed by graduation day.

The graduation audit, initiated by the submission of the Application for Graduation Audit, is a process by which a student's academic record is examined to make sure all the requirements for the degree have been met. The audit is conducted by a graduation auditor in the Registrar's Office and its outcome depends greatly on the completeness and appropriateness of the materials contained in the student's academic record. Students should ensure that the following requirements are met and the following documents are contained in their academic record before applying for graduation:

1. A Graduate Student Permanent Program of Study is completed, approved by the advisor and graduate dean, and filed in the Registrar’s Office with the appropriate graduation auditor. The Graduate Student Permanent Program of Study should be filed as soon as practicable after the student begins enrollment following admission to the degree program.

2. All transfer credit, if applicable, is approved and the Graduate Transfer Credit form is appropriately signed by the advisor and the graduation auditor.

3. All completed course work (and other program requirements, where applicable) coincide with the Graduate Student Permanent Program of Study.

4. Where applicable, all relevant documents are filed attesting to the approval of committee appointments, passing of comprehensive examinations, completion of research tools, successful defense of thesis or project or dissertation, fulfillment of any residency requirement, and compliance with the continuous enrollment requirement within the time limit allowed for the completion of degree requirements.

Students who do not meet all degree and University requirements will be removed from the graduation class automatically. Such students must change their graduation date. No fee is charged for submitting a change of graduation date form. Under no circumstances will any student be graduated with a class if the student's academic record does not show complete fulfillment of all requirements within thirty days after the established commencement date.

Students who wish to change from one graduation class to another need to complete a change of graduation date form. The graduation auditor will not automatically move the student to another graduation class. No fee is charged for submitting a change of graduation date form.

Nondegree Graduate Certificate Program

Students completing the requirements for a Graduate Certificate Program, whether together with a degree or independent of a degree, may apply for a certificate of completion. The process, fee, and requirements for obtaining a graduate certificate are similar to that described above for obtaining a degree. The essential differences are that the student applying for a graduate certificate will have been officially admitted to the certificate program, will have completed the application form entitled Application to Receive Graduate Certificate, and will have completed satisfactorily the certificate program requirements recorded on the student's advisor-approved Graduate Certificate Program, Program Outline.

GRADUATION REQUIREMENTS

Graduates of specific degree programs offered by Western Michigan University are expected to meet the same academic standards and requirements. These academic standards and requirements vary, however, by discipline, by degree level, by program concentration, and the particular conditions related to a student's admission (for example, the completion of specified course or experiential prerequisites). For more specific information about the graduation requirements for each department's degree programs, read the program requirements section of the relevant department's listing in this catalog or contact the department program's graduate advisor or the department office.

Master's Degree

In addition to the minimum University requirements for graduation listed below, each master's degree program requires students to complete satisfactorily specific courses, examinations, research, and/or experiences. For more complete information about the requirements for each master's program, read the program requirements section of the relevant program's listing in this catalog or contact the program's graduate advisor or the department office.

1. Minimum Credit Hours: Completion of a minimum of thirty hours of accepted graduate credit in an approved program of study. Hours in addition to thirty may be required by a specific program; consult the program advisor for complete information.

   • At least one-half of the credits earned for the master's degree must be in courses numbered 600 or above.

   • A master's level Graduate Student Permanent Program of Study may include a maximum of four hours of credit in 598 (Readings).

2. Grade Point Average: An overall grade point average of at least 3.0 is required for all work taken for the master's degree at Western Michigan University.

   • Credit toward the master's degree is granted only for graduate courses in which a grade of "C" or better is earned.

   • Courses with lower grades will not count toward graduation.

3. 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 universities provided:

   • The credit is earned at an institution accredited for graduate study and is of "B" grade (3.0) or better.

   • The student's overall grade point average for all graduate work taken at the other institution must also be "B" (3.0) or better.
4. Time Limit: All work accepted for the degree program must be completed within six years preceding the date on which the master's degree is conferred. All work must be completed satisfactorily by the day of graduation.

5. Information Subject Protection: Students conducting research that involves human or animal subjects, biohazards, genetic materials, or nuclear materials/radiation must have prior approval of the research proposal by the appropriate University board, thus assuring compliance with the regulations for the protection of such subjects or for the use of such materials. There are no exceptions to this requirement. For more information, contact the Office of the Vice President for Research, 387-4288.

6. Enrollment in Master's Thesis (700): A student who intends to register for the Master's Thesis (700) for the first time is required to meet with the Dissertation Assistant in The Graduate College and file a completed Permission to Elect form before registering for the class so that the student is informed about the regulations pertaining to the preparation and submission of the manuscript and to the requirements for research involving regulated subjects and hazardous materials.

7. Continuous Enrollment in 700. The course 700, Master's Thesis, is six credit hours and may be registered for in increments of one to six hours. Following a student's first enrollment in 700, the student will enroll for a minimum of one hour of credit in 700 in each semester/session continuously until all thesis requirements are completed satisfactorily and approved by the appropriate bodies. A student unable to complete the thesis within the first six hours of registration must be required to continue to enroll in 700; however, only six hours of 700 will count toward meeting the program requirements for the master's degree.

8. Submission of Master's Thesis (700) Manuscript: The master's thesis manuscript must be submitted to The Graduate College for approval of the style and format by the degree requirements in the graduation audit letter. The manuscript, when submitted, must conform to the style and format requirements specified in the University guidelines for the Preparation of Theses, Projects, and Dissertations. A revision of this publication will be available Fall 2000 for purchase at Western's Campus Bookstore, or for free downloading at [http://www.wmich.edu/grad/guidelines.PM.pdf]. Also, the manuscript may be submitted for review only after it has been approved by the student's thesis committee and only with the signed committee approval forms certifying departmental approval of the manuscript and of the student's successful defense of it.

If the student wishes to have the master's thesis published by Bell & Howell (formerly University Microfilms, Inc.), a certified check or money order for $50.00 (payable to Bell & Howell) must accompany the manuscript when it is submitted to The Graduate College.

See the Graduate Studies section of this catalog, under GRAD 700, for additional information regarding the Master's Thesis.

Second Master's Degree

A student wishing to earn a second master's degree may include a maximum of six credits from the first master's degree program, if approved by the program advisor and the graduate dean. The second degree program must fulfill all of the other usual requirements for a master's degree.

Acquiring a Master's Degree en route to the Doctoral Degree

Students who enter a doctoral program with a bachelor's degree may, upon recommendation of their department, acquire the master's degree by the following means:

1. The student requests the departmental graduate advisor to review the student's program of study to ascertain that it meets the requirements for the master's degree.
2. A student enters a doctoral program of study demonstrating that the student has met all requirements for the master's degree as defined by The Graduate College and the student's academic unit/department.
3. The student files an application for graduation with a master's degree, initiating the graduation audit which determines the student's eligibility for graduation.
4. A student achieves a master's degree en route to the doctoral degree must complete the minimum number of semester hours of graduate credit. The student must meet the additional requirements that distinguish the doctoral degree from the master's degree.
5. A separate application for graduation with a doctoral degree must be filed.

Students who enter a doctoral program holding a master's degree may, upon recommendation of their department, acquire a second master's degree en route to the doctoral degree by the following means:

1. Six hours from the first master's program may be applied to the second master's degree if evaluated and approved by the advisor and the graduation auditor as meeting the general and program requirements for transfer credit for graduate programs.
2. The student requests the departmental graduate advisor to review the student's program of study to ascertain that it meets the requirements for the master's degree.
3. The graduate advisor or chair submits a signed program of study for the master's degree demonstrating that the student has met all requirements for the master's degree as defined by the Graduate College and the student's academic unit/department.

Specialist Degree

In addition to the minimum University requirements for graduation listed below, each specialist degree program requires students to complete specific courses, examinations, research, and/or experiences. For the complete information about requirements for each specialist program, read the program requirements section of the relevant program's listing in this catalog or contact the program's graduate advisor or the department office.

1. Minimum Credit Hours: Completion of a minimum of sixty hours of accepted graduate credit in an approved program of study. Hours in addition to sixty may be required by a specific program; consult the program advisor for complete information.

2. Residency Requirement: A residency requirement is established by each specialist program and approved by the University's curriculum review process and must be met prior to graduation. Unless otherwise approved by the University for an individual academic unit, the general residency requirement for specialist students is one academic semester of full-time study on campus or enrollment in two sessions in consecutive years and the intervening semesters. Consult the program advisor for complete information.

3. Grade Point Average: An overall grade point average of at least 3.25 is required for all work taken for the specialist degree at Western Michigan University.

4. 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 semester hours of approved graduate credit. A student without a master's degree who completes a specialist degree at Western Michigan University may transfer up to twelve semester hours of approved graduate credit. Graduate credit earned at another university may transfer to Western Michigan University specialist program provided:

- The credit is earned at an institution accredited by the appropriate professional accrediting agency, and the credit is in the area of "B" grade (3.0) or better. Moreover, the student's overall grade point average for all graduate work taken at the other institution must also be "B" (3.0) or better.
18 GRADUATION REQUIREMENTS

- The credit is earned within a six year period prior to graduation from Western Michigan University, is represented on an official transcript of the other university, and is identified on that transcript as graduate credit.

- The student's program advisor verifies that the transfer credits contribute to the student's degree program and includes them in the student's Graduate Student Permanent Program of Study.

- The graduate dean approves the inclusion of the transferred credits in the student's Graduate Student Permanent Program of Study as "Credit" (CR) only and will not be calculated into the honor points earned and the grade point average at Western Michigan University.

- Time Limit: A student admitted to the specialist program with a master's degree is required to complete the specialist program within five years. A student admitted without a master's degree is required to complete the specialist program within six years. All work must be completed satisfactorily by the day of graduation.

- Research Subject Protection: Students conducting research that involves human or animal subjects, biohazards, genetic materials, or nuclear materials/radiation must have prior approval of the research proposal by the appropriate University board; thus assuring compliance with the regulations for the protection of such subjects or for the use of such materials. There are no exceptions to this requirement. For more information, call the Office of the Vice President for Research, 387-8298.

- Enrollment in Specialist Project (720): A student who intends to register for the Specialist Project (720) for the first time is required to meet with the Dissertation Assistant in The Graduate College and file a completed Permission to Enroll form before registering for the class so that the student is informed of the regulations pertaining to the preparation and submission of the manuscript and to the requirements for research involving regulated subjects and hazardous materials.

- Continuous Enrollment in 720: The course Specialist Project, 720, is six credit hours and may be registered for in increments of one to six hours. Following a student's first enrollment in 720, the student will enroll for a minimum of one hour of credit in 720 in each semester/session continuously until all project requirements are completed satisfactorily and approved by the appropriate bodies. A student unable to complete the project within the first six hours of registration will be required to continue to enroll in 720; however, only six hours of 720 will count toward meeting the program requirements for the specialist degree.

- Submission of Specialist Project (720) Manuscript: The specialist project manuscript must be submitted to The Graduate College for approval of style and format by the deadline specified in the graduation audit letter. The manuscript, when submitted, must conform to the style and format requirements explained in the University's guidelines for the Preparation of Theses, Projects, and Dissertations. A revision of this publication will be available Fall 2000 for purchase in Western's Campus Bookstore, or for free downloading at [http://www.wmich.edu/grad/guidelines.PM.pdf]. Also, the manuscript may be submitted for review only after it has been approved by the specialist project committee and only with the signed committee approval forms certifying departmental approval of the manuscript and the student's successful defense of it. If the student wishes to have the specialist project published, Bell & Howell (formerly University Microfilms, Inc.) may certify the manuscript for a fee of $50.00 (payable to Bell & Howell) must accompany the manuscript when it is submitted to The Graduate College. See The Graduate Studies section of this catalog, under GRAD 720, for additional information regarding the Specialist Project.

- Doctoral Degree

In addition to the minimum University requirements for graduation listed below, each doctoral degree program requires students to complete specific course examinations, research, and/or experiences. For more complete information about the requirements for each doctoral program, read the program requirements section of each program's listing in this catalog or contact the program's graduate advisor or the department office.

1. Minimum Credit Hours: After admission to the doctoral program, completion of a minimum of thirty hours, excluding the dissertation, at Western Michigan University in an approved program of study hours in addition to thirty may well be required by a specific program; consult the program advisor for complete information. The thirty hours, excluding the dissertation, may not include any credit earned at another institution. Credit earned at another institution in addition to the thirty hours and dissertation earned at WMU after admission to the doctoral program, however, may be approved by the doctoral program advisor and included in the student's program of study.

- Each student's program will be planned by a committee selected in consultation with the student and the graduate advisor of the program in which the student wishes to study. The exact distribution of courses, seminars, and research will depend upon the program and may vary from one student to another. Each program, however, will contain a significant amount of research, and each student will be required to complete a dissertation.

- A doctoral level Graduate Student Permanent Program of Study may include a maximum of four hours of credit in 598 (Readings).

2. Research Tools: Demonstration of proficiency in two appropriate research tools, as determined by the department and approved by the University. Normally, the research tools are selected from among foreign language, statistics, research methodology, and computer programming. However, research tools may be approved for some programs.

3. Residency Requirement: The general residency requirement for doctoral students is to be academically (two consecutive semesters) of full-time study on campus. Each doctoral program may, however, with approval of the University through the curriculum review process establish its own residency requirement.

- Students must meet the residency requirement prior to approval of candidacy. Students should consult with their advisor regarding the residency requirement for the specific program of interest.

- Comprehensive Examinations: Passing the required comprehensive examination(s) that cover the principal subject matter areas is required in the student's program of study.

- Grade Point Average: An overall grade point average of at least 3.25 is required for all work taken for the doctoral degree at Western Michigan University.

- Credit toward the doctoral degree is granted only for graduate courses in which a grade of "C" or better is earned. Courses with grades of "C" or better will not count toward graduation.

- Transfer Credit: Often doctoral students attend Western Michigan University after earning a master's or other graduate degree elsewhere, and their subsequent course work is then usually elected at Western Michigan University. However, graduate work taken at another university after admission to the doctoral program is eligible for transfer provided:

- The credit is earned at an institution accredited for graduate study.

- The student's overall grade point average for all graduate work taken at the other institution must also be "B" (3.0) or better.

- The credit is earned within a six year period prior to graduation from Western Michigan University, is represented on an official transcript of the other university, and is identified on that transcript as graduate credit.

- The students program advisor verifies that the transfer credits contribute to the student's degree program and includes them in the student's Graduate Student Permanent Program of Study.

- The graduate dean approves the inclusion of the transferred credits in the student's Graduate Student Permanent Program of Study.

- Honor points and grades earned in courses at another university do not transfer to Western Michigan University. Transfer credits are recorded on the Western Michigan University transcript as "Credit" (CR) only and will not be calculated into the honor points earned and the grade point average at Western Michigan University. A graduate degree earned elsewhere that comprises part of the student's doctoral program of study at Western Michigan University will be posted on the student's transcript, but the degree's courses, grades, and honor points will not be transferred to WMU.

- Students must meet the residency requirement prior to approval of candidacy. Students should consult with their advisor regarding the residency requirement for the specific program of interest.

- There are no exceptions to this requirement. For more information, call the Office of the Vice President for Research, 387-8298.

- Time Limit: After admission, all requirements for the degree must be completed within seven years preceding the date on which the degree is conferred.

- Research Subject Protection: Students conducting research that involves human or animal subjects, biohazards, genetic materials, or nuclear materials/radiation must have prior approval of the research proposal by the appropriate University board, thus assuring compliance with the regulations for the protection of such subjects or for the use of such materials. There are no exceptions to this requirement. For more information, call the Office of the Vice President for Research, 387-8298.
9. Enrollment in Doctoral Dissertation (730): A student who registers for the Doctoral Dissertation (730) for the first time is required to meet with the Dissertation Assistant in the Graduate College and file a completed Permission to Elect form before registering for the class so that the student is informed about the regulations pertaining to the preparation and submission of the manuscript and to the requirements for research involving regulated subjects and hazardous materials.

- Doctoral Dissertation (730) varies in credit from a minimum of twelve hours to a maximum of twenty-four hours. The minimum and maximum number of hours of 730 required by each department in a student's program of study will be determined by the department in a proposal approved by the University's curriculum review process. A department may require all students within the program to register for a specific, common total of hours between twelve and twenty-four, or a program may require different students within the program to register for a variety of total hours between twelve and twenty-four. For more complete information about the dissertation requirements for each doctoral program, read the program requirements section of the relevant program's listing in this catalog or contact the program's graduate advisor or the department office.

- See the Graduate Studies section of this catalog, under GRAD 730, for additional information regarding the Doctoral Dissertation.

10. Continuous Enrollment in 730: Doctoral Dissertation (730) may be registered for in increments of one or more hours. Following a student's first enrollment in 730, the student will enroll for a minimum of one hour of credit in 730 in each semester/session continuously until all dissertation requirements are completed satisfactorily and approved by the appropriate bodies. A student unable to complete the dissertation within the program-stipulated hours will be required to continue to enroll in 730; however, only the program-stipulated hours for 730 will count toward meeting the program requirements for the doctoral degree.

11. Submission of Doctoral Dissertation (730) Manuscript: The doctoral dissertation must be submitted to The Graduate College for approval of style and format by the deadline specified in the graduation audit letter. The manuscript, when submitted, must conform to the style and format requirements explained in the University's Guidelines for the Preparation of Theses, Projects, and Dissertations. A revision of this publication will be available in Fall 2000 for purchase in Western's Campus Bookstore, or for free downloading at [http://www.wmich.edu/grad/guidelines.PM.pdf]. Also, the manuscript may be submitted for review only after it has been approved by the student's dissertation committee and only with the signed committee approval forms certifying departmental approval of the manuscript and of the student's successful defense of it.

12. Publication of the Dissertation Manuscript: All doctoral dissertations will be published (microfilmed) by Bell & Howell (formerly University Microfilms, Inc.) and an abstract of the dissertation will be prepared by the student for publication in Dissertation Abstracts. A certified check or money order for $60.00 (payable to Bell & Howell) must accompany the manuscript when it is submitted to The Graduate College.

Nondegree Graduate Certificate Program

To signify that a student has satisfactorily completed an approved curriculum in a Graduate Certificate Program, a certificate of completion is awarded. Regular admission to the program by the relevant academic unit is required. The student must complete the requirements of the Graduate Certificate Program with a "B" (3.0) or better grade point average, with no course grade lower than a "C," within a six-year period after admission to the certificate program. In addition to these minimum University requirements, each certificate program requires students to complete specific courses, examinations, research, and/or experiences. For more information about the completion requirements for each certificate program, read the program requirements section of the relevant program's listing in this catalog or contact the program's advisor or the department office.
FELLOWSHIPS, ASSISTANTSHIPS, ASSOCIATESHIPS, GRANTS

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. Appointments are often renewable, except for Graduate College Fellowships and Dissertation Fellowships. For more information and to obtain application forms, visit or call The Graduate College.

The following appointments are available; the stipend amounts are those in effect during the 2000-2001 academic year.

Graduate College Fellowship
Graduate College Fellowships of $8,586 for two semesters are awarded in open competition outstanding students (3.25 and above) 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. The fellowship requires no service from the student, but encourages participation in the professional activities of the department. Enrollment in at least nine hours per semester is required. The fellowship will pay 18 hours of full tuition. Application deadline: February 15.

Graduate College Doctoral Associateship
Graduate College Doctoral Associateships of $10,576 for two semesters are offered to doctoral students with completion of their dissertations. To be eligible, an applicant must be a doctoral candidate who can demonstrate superior academic achievement and a record of timely and steady progress toward degree completion. Applicants must have completed all requirements for the degree except the dissertation and must have an accepted dissertation proposal. Enrollment of at least six hours per semester is required. For nonresidents of Michigan, the fellowship will pay up to 12 hours of the out-of-state portion of the tuition. Application deadline: February 15.

Thurgood Marshall Assistantship
Thurgood Marshall Assistantships of $11,406 for the academic year plus the spring and summer sessions are available to U.S. citizens from historically underrepresented groups who are beginning their master's degree programs and who have regular admission to the program. Enrollment is required in at least nine hours per semester and five hours per session, and at least ten hours per week is required in the student's department or academic unit. Recipients of the assistantship award are eligible for partial in-state tuition scholarships which will be applied to the in-state portion of the tuition bill. For nonresidents of Michigan, the assistantship will pay up to 18 hours of the out-of-state portion of the tuition. Although applications may be submitted at any time, priority will be given to those who apply by February 15.

Historically Underrepresented Groups Program
The Historically Underrepresented Groups Program awards financial assistance to qualifying entering graduate students who are U.S. citizens from historically underrepresented groups. The program is intended to furnish a base of financial support to assist these students to pursue graduate degrees at WMU (priority is given to students enrolling in programs leading to a Ph.D.). The awards are tailored to each individual and can be made in conjunction with other awards, sometimes including partial in-state tuition and up to 18 hours of the out-of-state portion of the tuition. Departmental service up to twenty hours per week or teaching assignments may be required. Applications and additional information may be obtained from The Graduate College. Although applications may be submitted at any time, priority will be given to those who apply by February 15.

Martin Luther King/Cesar Chavez/Rosa Parks Future Faculty Fellowship
Martin Luther King/Cesar Chavez/Rosa Parks Future Faculty Fellowships are available to U.S. citizens from historically underrepresented groups with regular admission to a doctoral program and who wish to pursue a full-time teaching career in post-secondary education in Michigan or Illinois. The fellowship does not require departmental service; however, students must meet other requirements as stated in the guidelines for KCP fellowships. KCP fellowships can be awarded in conjunction with other appointments. Inquiries should be sent to The Graduate College. Although applications may be submitted at any time, priority will be given to those who apply by February 15.

Departmental Teaching or Research Assistantship
Teaching and Research Assistantships at a minimum of $8,586 for two semesters of full-time appointment are available in many departments of the University. Inquiries should be sent to the chairperson of the department.

Service Assistantship
Service Assistantships at a minimum of $8,586 for two semesters of full-time appointment are available to U.S. students from historically underrepresented groups with regular admission to the University. Interested students may apply by sending a resume and cover letter to the Office of Career and Student Employment Services or by contacting the department directly. Departments with openings will have access to these resumes. Students seeking information about open graduate assistant positions should contact the Office of Student Employment.

Thurgood Marshall Professional Tuition Grant
Thurgood Marshall Professional Tuition Grants are available for U.S. students from historically underrepresented groups with regular admission in a master's degree program who enroll part-time. The grant reimburses in-state tuition after courses are completed for all earned credits of "B" or better. Reimbursement is made for up to six credits per semester and three credits per session. Although applications may be submitted at any time, priority will be given to those who apply by February 15.

Graduate Student Research and Travel Fund Grant
Graduate Student Research and Travel Fund grants (maximum of $600) are awarded to encourage research by graduate students and to assist them in presenting their findings to professional groups. Students must be enrolled at the time the research or travel takes place. This grant may be awarded in conjunction with other appointments. Applications and additional information may be obtained from The Graduate College.
University Dames Endowed Scholarship Grant

University Dames Endowed Scholarship grants are available for candidates who are admitted to a graduate degree program, who have successfully completed at least 15 credit hours of graduate work, and who are in good academic standing. Preference is given to female candidates. The award amount is credited to the student's University account and applied toward tuition, fees, and books. Nominations from department chairs or graduate advisors must include the nominee's vita and a letter of support from either the department chair or graduate advisor. The scholarship is awarded on an annual basis each spring. Applications must be received by March 31.

George and Beatrice Fisher Gerontology Dissertation Prize

This annual award recognizes the doctoral dissertation that best advances the study and understanding of the process of aging. The prize may be awarded in any discipline or field relating to gerontology. Candidates must be admitted to a degree program and be in good academic standing. Nominations from department chairs or graduate advisors must include a summary of the nominee's gerontology research, a vita, and a letter of support from the department chair or graduate advisor. The annual award is made during the month of June. Applications must be received by May 15.

Graduate Opportunity for Long-term Development (GOLD) Program

The GOLD program has multiple purposes, including increasing awareness among graduate students of external funding opportunities, engaging graduate students in the hands-on process of grantseeking, and enhancing external support for graduate student research. Applicants selected will be awarded $2,000 credited to the student's University account, and who are in good academic standing. Preference is given to female candidates. The award amount is credited to the student's University account and applied toward tuition, fees, and books. Nominations from department chairs or graduate advisors must include the nominee's vita and a letter of support from either the department chair or graduate advisor. The scholarship is awarded on an annual basis each spring. Applications must be received by March 31.

Definitions and Classifications

1. A graduate appointee is a student enrolled in a program leading to a graduate degree or to a graduate certificate who receives a University-administered salary and stipend which is less than one-half of the prevailing full amount set by the University for that particular type of appointment.

2. To be eligible for a graduate appointment, a student must be regularly admitted in good academic standing, and enrolled in a program leading to a graduate degree or a graduate certificate. A student admitted to a graduate degree program or concurrently to a graduate degree program and a graduate certificate program is eligible for a graduate appointment only within the academic unit offering the graduate certificate.

3. Although graduate appointments differ in many important ways, each can be classified as either an assistantship or a fellowship. The critical difference between an assistantship and a fellowship lies in the primary intent of the awardee—as payment for services provided (assistantship, or a gift (stipend) 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 by comparison 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.

4. 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.

Types of Appointments

1. Assistantship
   a. Assistantships are awarded to graduate students in exchange for a professional service. Graduate assistants are apprentices in the profession, and 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.
   b. The service of a Graduate Teaching Assistant (T.A.) consists of activities directly related to teaching, while the service of a Graduate Research Assistant (R.A.) consists of research activity under the supervision of a faculty member, and the service of a Graduate Non-Teaching Assistant (N.T.A.) includes all other professional work in the unit accepted as appropriate and germane to the student's educational goal.

2. Associateship
   Associateships are assistantships awarded to outstanding students in doctoral programs. Service may involve teaching, research, or other appropriate activity.

3. Fellowship
   Fellowships are awarded to 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.

Service Requirement

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

No service is required of students holding Fellowships; the fellowship grant (stipend) is a gift to help the Fellow achieve an educational goal, rather than a payment for services.

Stipends and Salaries

1. The amount of a fellowship grant (stipend) is set by the donor with the concurrence of the Provost and Vice President for Academic Affairs.

2. The minimum salary and stipend for full-time Assistants and Associates in each type of appointment is established by the Provost and Vice President for Academic Affairs.

3. Fractional awards are made for fractional appointments.

4. Assistantship and fellowship awards may have tax implications. Detailed records of educational expenses and check stubs from any payments received from the University should be kept for tax purposes.

Affirmative Action

The University's Affirmative Action Policy shall apply to graduate appointments.

Professional Ethics

Graduate assistants and associates shall adhere to the same standards of professional ethics as those of the regular faculty.
**FINANCIAL AID AND SCHOLARSHIPS**

Western’s Student Financial Aid Office administers a variety of student financial aid programs designed to assist graduate students who are in need of additional financial support. Four types of financial aid programs are available for graduate students: scholarships, employment opportunities, loans, and tuition plans. The federal and state governments, colleges and universities, private associations, companies, and private citizens are sources of financial assistance. The information in this section describes both need- and non-need-based financial aid programs based upon the 1999/2000 award year criteria at the time of this editing. Should federal, state, or University regulations and procedures change for the 2000/2001 and subsequent award years, the University will be responsible for administering these programs according to updated descriptions and criteria.

**Applying for Financial Aid**

To determine eligibility for need-based financial aid programs, students must file a Free Application for Federal Student Aid (FAFSA). The FAFSA is available from Western’s Student Financial Aid Office, from other higher education institutions, or can be filed electronically at www.fafsa.ed.gov. Returning graduate applicants will receive a “Personal Identification Number” (PIN) in the mail to file electronically. Students may file the FAFSA as soon as January 1 of the award year for which they are planning to attend Western Michigan University.

Students who have been admitted to a graduate program are considered “independent” students and may file the application with only their own income information. Students who have been admitted to The Graduate College as a PTG student (Permission to Take Graduate Classes) are not considered admitted to a graduate program and may need to have parental information listed on the application. In addition, PTG students have limited loan eligibility only, and at the undergraduate annual and aggregate limits.

The FAFSA gathers information regarding the student’s income assets, and other related information to determine the expected family contribution (EFC). The amount of need based financial aid is determined by subtracting the EFC from the cost of attendance. The cost of attendance is based on an estimation of tuition, fees, books, supplies, housing, food, transportation, and personal expenses. The amount of aid not based upon need (non-need programs) is also determined by subtracting eligible need based financial aid programs and other resources received from the cost of attendance.

Besides filing the FAFSA, other documents and processes may be required before an award notice or payment is processed. Written communication will be mailed to students identifying what is required as a result of application edits, specific programs awarded, or general eligibility requirements. Application edits may require copies of federal tax returns and/or asset documentation. Social security matches may require copies of the social security card and driver’s license. Immigration and Naturalization Service matches may require copies of INS documents. Program requirements may include receipt of loan promissory notes or attendance at an “entrance counseling session.” Entrance counseling is required for first time loan borrowers at Western.

**Effect on Financial Aid**

In each class schedule students will find a list of dates and percentages that are applied to all Western students who withdraw from school. Thus, if students withdraw and their tuition and fees (and housing, if on campus) have already been paid, the schedule identifies what percentage of the paid charges must be returned to the financial aid programs instead of to the students. This is referred to as a refund. If students also receive a financial aid check to assist them with other school related costs, the Financial Aid Office will have to determine if any portion of that must be returned to the financial aid programs as well. This is called a repayment.

To calculate if a refund or repayment is due back to the financial aid program, the student’s withdrawal date from the University must be determined. Considering that date, a calculation is performed to see if the student may owe, if anything.

Once the withdrawal date has been determined, Accounts Receivable and Financial Aid will work together to determine if money must be returned to the financial aid programs. In the case of a refund, where a bill has been paid by financial aid, the University will send those funds back to the financial aid programs on the student’s behalf. In the case of a repayment, the student will be responsible for returning financial aid to the University. At Western, in turn, can return the money to the financial aid programs.
Refunds will be applied to the financial aid programs in the following order: Federal Direct Student Loans (Unsubsidized, then Subsidized), Federal Perkins Loan, and Federal Grants.

Types of Financial Aid

Employment

Financial aid programs funded by Federal and State governments and the University to assist needy student through employment opportunities:

Federal College Work Study provides employment opportunities for undergraduate and graduate students. Students work from ten to twenty hours a week while attending school and may earn up to a specified amount per academic year. Western's Student Employment Referral Service Office assists students who have been awarded employment in selecting jobs either on- or off-campus (including community service opportunities).

Michigan College Work Study provides employment opportunities for undergraduate and graduate students who are Michigan residents. Students work from ten to twenty hours a week while attending school and may earn up to a specified amount per academic year. Western's Career and Student Employment Services Office assists students who have been awarded employment in selecting jobs either on- or off-campus (including community service opportunities).

Loans

Financial aid programs designed to assist students through borrowing at a lower interest rate with opportunities to defer principal payments and possibly interest payments until after enrollment ends:

Federal Perkins Loan allows needy graduate students to borrow funds on an annual basis with an interest rate of 5.0%. The annual amount varies per academic year, and the total outstanding debt includes loans received for undergraduate study. Interest and principal payments are deferred as long as a student is enrolled at least half-time. Repayment of the loan, plus interest, to Western Michigan University begins nine months after the student ceases to be enrolled at least half-time.

Federal Direct Subsidized (FDI) Loan allows graduate students with financial need to borrow funds on an annual basis with a variable interest rate capped at 8.25%. The annual amount is dependent upon cost of attendance, EFC, grade level, and other resources received. The total debt outstanding as a graduate student for the subsidized loan includes loans received for undergraduate study. Interest and principal payments are deferred as long as a student is enrolled at least half-time. Borrowers pay a 3% origination fee that is deducted from each disbursement. Repayment of the loan plus interest begins six months after the student ceases to be enrolled at least half-time.

Federal Direct Unsubsidized (FDU) Loan is a program not based on need and allows graduate students with financial need to borrow funds on an annual basis with a variable interest rate capped at 8.25%. The annual amount is dependent upon cost of attendance, grade level, and other resources received. The total debt outstanding as a graduate student for all Stafford Loans (subsidized and unsubsidized) includes any Stafford loans received for undergraduate study. Interest accrues while the student is enrolled in school, and the student has the option of paying the interest payments or letting the interest payments be added to the loan amount. Loan principal payments are deferred as long as a student is enrolled at least half-time. Borrowers pay a 3% origination fee that is deducted from each disbursement. Repayment of the loan, plus interest, begins six months after the student ceases to be enrolled at least half-time.

Michigan Alternative Loan (Mi-Loan) provides credit-worthy students an alternative source of funds. The interest rate is variable, and students may borrow up to the cost of attendance per year. Borrowers must submit a Free Application for Federal Student Aid and pass a credit eligibility check. Eligibility is dependent upon the cost of attendance, eligibility for need-based programs, and other resources received.

Other Alternative Loans are available from banks and private resources that have set up a variety of alternative loan programs. These programs require payment while the student is in school; the interest rates are higher than the rates in Federal programs; and they offer different repayment options. Contact Student Financial Aid for a listing of known alternative loan programs.

Other Financial Opportunities

In addition to employment and loan programs, other financial assistance is available to students:

WMU Nontraditional Student Scholarship is available for part-time graduate students. The award usually covers the cost of in-state tuition for one class per semester for up to two semesters. Scholarship, need, special circumstances, and availability of funds are factors in determining recipients and award amounts. Applicants must complete the Free Application for Federal Student Aid and submit a scholarship application by a specified deadline. Contact Student Financial Aid or a WMU Regional Center for an application form.

Customer Account Services Office. The plans allow parents and students to pay tuition, fees, and on-campus housing costs on a monthly basis. The plans generally cost $50.00 and do not charge interest. Parents or students generally pay a deposit, and the balance is paid by monthly installments. The companies, in turn, pay the University directly. Students may call Academic Management Services at 1-800-635-0120 and Tuition Management Systems at 1-800-722-4867. Academic Management Services can also be contacted online at http://www.amsweb.com. U.S. Armed Forces offer students a variety of educational assistance programs. For further information, call the local armed forces recruiter.

Diether H. Haenicke Institute for International and Area Studies Exchange Scholarships are available through the Haenicke Institutes's Study Abroad Office, which administers international exchange scholarships awarded in a competitive process annually to qualified graduate students for study in foreign universities in Asia and Europe. Contact the Study Abroad Office, B200 Ellsworth Hall, for information and application forms.

On- and Off-campus Student Employment opportunities exist. The Office of Career And Student Employment Services actively recruits employment opportunities for WMU students. Part-time employment is available in and around Kalamazoo; internships and summer jobs are posted from all over the country. Students seeking employment should visit the office regularly. Those interested specifically in an internship can register and have their employment information shared with interested employers. Available employment opportunities are also posted at www.broncojobs.wmich.edu.

College Work Study positions, both for graduate and undergraduate students are posted in our office. Western Michigan University is also participating in the Federal Community Service Work Study program, giving students a chance to use work-study funding in an off-campus, not-for-profit organization. Most of these opportunities are directly connected to a student's field of study. Individual appointments are encouraged for students with special employment questions, confidential resolution of problems, and assistance in completing application materials. Please call (616) 387-2745.

Payment Plans are available through either Academic Management Services or Tuition Management Systems. These private companies work with the University's Customer Account Services Office. The plans allow parents and students to pay tuition, fees,
STUDENT RIGHTS AND RESPONSIBILITIES

STUDENT RIGHTS

Basic Rights
1. Students have the right to free inquiry, expression, and association.
2. Students should be free from discrimination and harassment based on race, sex, sexual orientation, age, color, national origin, religion, disability, marital status, or family status.
3. Students should be secure in their persons, living quarters, papers, and effects.
4. Students are protected against improper disclosure as provided for in the Family and Education Rights and Privacy Act of 1974.
5. Students have the right to access their personal records and other University files as provided for under the Michigan Freedom of Information Act.
6. Students are free to participate in the governance of the University through membership in appropriately designated University and college committees.

Academic Rights
1. Student performance will be evaluated solely on academic criteria.
2. Students have protection against prejudiced or capricious academic evaluation.
3. Students are free to take reasoned exception to the data or views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.
4. Students will be fully informed by the faculty about course requirements, evaluation procedures, and the academic criteria to be used in each class. This information will be provided at the beginning of the semester or sufficiently in advance of actual evaluation.
5. Students have the right to have all their materials to be tested before the scheduled examination and from using external aids permitted; making revisions in a credit paper or report (including oral presentations) and submitting it again as if it were new work.

STUDENT ACADEMIC CONDUCT

The following policies and procedures shall apply to all matters of student academic conduct.

Academic Honesty
If a student is uncertain about an issue of academic honesty, he/she should consult the faculty member to resolve questions in any situation prior to the submission of the academic exercise. Violations of academic honesty include but are not limited to:

Cheating
Definition
Cheating is intentionally using or attempting to use unauthorized means, information, notes, study aids or other devices or materials in any academic exercise.
Clarification
1. Students completing any examination are prohibited from looking at another student's examination and from using external aids (for example, books, notes, calculators, conversation with other) unless specifically allowed in advance by the faculty member.
2. Students may not have others conduct research or prepare work for them without advance authorization from the faculty member. This includes, but is not limited to, the services of commercial term paper companies.

Fabrication, Falsification, And Forgery
Definition
Fabrication is the intentional invention and unauthorized alteration of any information or citation in an academic exercise. Falsification is a matter of altering information while fabrication is a matter of inventing or counterfeiting information for use in any academic exercise or University record. Forgery is defined as the act to imitate or counterfeit documents, signatures, and the like.
Clarification
1. "Invented" information shall not be used in any laboratory experiment, report of results or academic exercise. It would be improper, for example, to analyze one sample in an experiment and then "invent" data based on that single experiment for several more required analyses.
2. Students shall acknowledge the actual source from which cited information was obtained. For example, a student shall not take a quotation from a book review and then indicate that the quotation was obtained from the book itself.
3. Falsification of University records includes altering or forging any University document and/or record, including identification material issued or used by the University.

Multiple Submission
Definition
Multiple submission is the submission of substantial portions of the same work (including oral reports) for credit more than once without authorization from instructors of all classes for which the student submits the work.
Clarification
Examples of multiple submission include submitting the same paper for credit in more than one course without all faculty members' permission; making revisions in a credit paper or report (including oral presentations) and submitting it again as if it were new work.

Plagiarism
Definition
Plagiarism is intentionally, knowingly, or carelessly presenting the work of another as one's own (i.e., without proper acknowledgment of the source). The sole exception to the requirement of acknowledging sources is when the ideas, information, etc., are common knowledge. Instructors should provide clarification about the nature of plagiarism.
Clarification
1. Direct Quotation: Every direct quotation must be identified by quotation marks or appropriate indentation and must be properly acknowledged, in the text by citation or in a footnote or endnote.
2. Paraphrase: Prompt acknowledgment is required when material from another source is paraphrased or summarized, in whole or in part, in one's own words. To acknowledge a paraphrase properly, one might state: "To paraphrase Locke's comment..." and then conclude with a footnote or endnote identifying the exact reference.
3. Borrowed facts: Information gained in reading or research which is not common knowledge must be acknowledged.
4. Common knowledge: Common knowledge includes generally known facts such as the names of leaders of prominent nations, basic scientific laws, etc. Materials which add only to a general understanding of the subject may be acknowledged in the bibliography and need not be footnoted or endnoted.
5. Footnotes, endnotes, and in-text citations: One footnote, endnote, or in-text citation is usually enough to acknowledge indebtedness when a number of connected sentences are drawn from one source. When direct quotations are used, however, quotation marks must be inserted and acknowledgment made. Similarly, when a passage is paraphrased, acknowledgment is required.

Complicity
Definition
Complicity is intentionally or knowingly helping or attempting to help another to commit an act of academic dishonesty.
Clarification
Examples of complicity include knowingly allowing another to copy from one's paper during an examination or test, distributing test questions or substantive information about the materials to be tested before the scheduled
exercise; collaborating on academic work knowing that the collaboration will not be reported; taking an examination or test for another student, or signing another’s name on an academic exercise. (NOTE: Collaboration and sharing information are characteristics of academic communities. These become violations when they imply academic dishonesty. Faculty members should make clear to students expectations about collaboration and information sharing. Students should seek clarification when in doubt.)

Computer Misuse

Definition

Academic computer misuse is the use of software to perform work which the instructor has forbid, either by writing, exhibiting or doing without the assistance of software.

Conduct In Research

Research and creative activities occur in a variety of settings at the University, including class papers, theses, dissertations, projects, grant funded projects and service activities. Research and creative activities rest on a foundation of mutual trust. Misconduct in research and in creative activity destroys that trust and is prohibited. Students shall adhere to professional standards of integrity in both artistic and scientific research including appropriate representations of originality, authorship and collaborative crediting.

Definition

Misconduct in research is defined as serious deviation, such as fabrication or falsification of data, plagiarism, or scientific or creative misrepresentation, from accepted professional practices of the discipline or University in carrying out research and creative activities or in reporting or exhibiting/performing the results of research and creative activities. It does not include honest error or honest differences in judgments or interpretations of data.

Clarification

Examples of misconduct in research include but are not limited to:

1. Fabrication of Data Deliberate invention or counterfactually editing ideas as one’s own, in such ways as stealing others’ results or methods, copying or presenting the writing or ideas of others without acknowledgment, or otherwise taking credit falsely. Representing another’s artistic or technical work or creation as one’s own.
2. Falsification of Data Dishonesty in reporting results, ranging from unauthorized alteration of data, improper revision or correcting of data, gross negligence in collecting or analyzing data, to selective reporting or omission of conflicting data.
3. Plagiarism and Other Misappropriation of the Work of Another The representation of another person’s ideas or writing as one’s own.
4. Abuse of Confidentiality: Taking or releasing the ideas or data of others which were given in the expectation of confidentiality, e.g., an instructor allowing ideas from grant proposals, award documents, or manuscripts intended for publication or exhibition/performing when one is a reviewer for granting agencies or journals or when one is a juror.
5. Dishonesty in Publication or Exhibition/Performance Knowingly publishing, exhibiting or performing work that will mislead, e.g., misrepresenting material, particularly its originality, or adding or deleting the names of other authors without permission.
6. Deliberate Violation of Requirements Failure to adhere to or receive the approval required for work under research regulations of federal, state, local or university agencies, including the protection of human subjects or animal subjects and the use of recombinant DNA, radioactive material, and chemical or biological hazards.
7. Failure to Report Fraud Concealing or otherwise failing to report known misconduct or breaches of research or artistic ethics.

Research Board Requirements

Misconduct in research includes failure to comply with requirements of the conduct of research and creative activities, e.g., the protection of human subjects, the welfare of laboratory animals, radiation, and biosafety. Allegations in these areas may be brought by Human Subjects Institutional Review Board, the Institutional Animal Care and Use Committee, and the Institutional Biosafety Committee.

Charges of Violations of Academic Honesty and Conduct in Research

Western Michigan University’s academic honesty and conduct in research policies have been created and defined by its community, recommended by its faculty senate, and adopted by its board of trustees. The University is necessary to support these policies are managed and facilitated by the Office of Student Judicial Affairs (OSJA). If you have questions about the forms, the process, your role in the process, or anything else related to academic honesty, please call the Office of Student Judicial Affairs at 387-2160. These policies take effect August 30, 1999, and supersede previous catalog sections entitled “Academic Policy and Status,” “Academic Conduct Violation: Consequences and Appeals,” “Academic Grade Appeal Procedure,” and “General Academic Appeals Procedure.”

This section applies to cases in which a student is to be charged with a violation of the Academic Honesty Policy and the policy on Academic Honesty and the policy on Conduct in Research.

1. Charging a student with a violation: An Academic Dishonesty/Conduct in Research Charge Form is filled out by the instructor for the purpose of charging the student. After the instructor completes the form, the instructor sends it (or may fax it) to the OSJA. A staff member in that office will then contact the student and schedule a meeting between the student and the OSJA. An OSJA staff member will also notify the Registrar of the pending case, and will institute a “disciplinary hold” preventing the student from dropping, adding, or registering in classes.

2. If the student admits the charge: If the student admits responsibility, the OSJA will contact the instructor and arrange an appointment with the instructor and the student to communicate the instructor’s penalty for the behavior, unless the instructor chooses not to meet with the student. The instructor may impose an academic penalty up to failure of the course in which the student is enrolled. The OSJA may also impose non-grade-related penalties ranging from reprimand to dismissal from the University.

3. If the student denies responsibility: If the student denies the charge, the OSJA will consult with the instructor to ascertain the instructor’s preference as to hearing type. The hearing may be a meeting between the instructor and the student or a hearing between the student and an Academic Integrity Committee. An Academic Integrity Committee will consist of three faculty members and two students, selected using procedures established by the Professional Conduct Committee of the Faculty Senate. The choice of hearing type is the instructor’s. The OSJA will assist the instructor in setting up the hearing and will notify the student of its time, date, and location.

4. If the student wants to appeal a finding of responsibility after a hearing with the instructor: A student has been found responsible for a finding of responsibility resulting from a hearing with the instructor to an Academic Integrity Committee within five University business days. The student cannot appeal after that time has elapsed.

5. The authority of the academic integrity committee: An Academic Integrity Committee will conduct hearings to determine whether the student is responsible for academic dishonesty. An Academic Integrity Committee makes no decisions regarding the penalties and/or grades that are to be imposed by the instructor or by the OSJA.

6. If a finding of “responsible” has been made: A finding of “responsible” occurs when a student admits responsibility to the OSJA, the instructor so decides, or an Academic Integrity Committee so decides by majority vote. When that has occurred, the instructor may impose an academic penalty up to failure of the course in which the student is enrolled. A decision by the instructor regarding a grade penalty cannot be appealed by the student once the student has been found responsible and has exhausted or waived all appeals. Also, once the student has been found responsible and has exhausted or waived all appeals, that student’s continued attendance in the relevant class depends on the penalty imposed by the instructor and/or the OSJA. If the instructor determines to fail the student in the course, the student is not permitted to continue attending class. Again, following a finding of responsibility, the OSJA may impose additional penalties ranging from reprimand to dismissal from the University. In all cases when a final finding of responsibility has been made, the Registrar will be notified and will note the finding on the student’s academic record.

7. If a finding of “not responsible” has been made: If a finding of “not responsible” has been made, the charge is dismissed and no penalties are imposed.

8. While a case is pending: A case is considered pending until one of two events occurs: (1) the student admits responsibility or (2) the hearing process is completed. While a case is pending, the student has the right to attend and participate in the class. If the case is pending at the end of the semester, the instructor must assign and incomplete grade and then submit a change of grade once the process is complete.

9. Instructor unavailable to assign grade: Circumstances may arise which may prevent an instructor from assigning a grade in a timely manner. In such instances, the academic unit chair/director will make reasonable efforts to contact and ask the instructor to submit a grade. If these efforts are unsuccessful, the instructor’s academic unit chair/director will
STUDENT RIGHTS AND RESPONSIBILITIES

An Academic Integrity Committee (AIC) will be established consisting of the dean of the Graduate College, the appropriate academic dean, and the chairperson or director of the unit. The Review Committee shall seek to resolve the controversy without undertaking these additional procedures, such as reconstituting the committee if the committee is satisfied.

THE FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT

The Family Educational Rights and Privacy Act of 1974 is a Federal law which states that (a) a written institutional policy must be established and (b) a statement of such policies covering the privacy rights of students must be made available. The law provides that the institution shall 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' educational records without the written consent of the students, except to persons or organizations as stated in the policy. It is the responsibility of the institutions to which Western Michigan University sends educational records to ensure that other institutions disclose any information from, students' educational records without the written consent of the students, except to persons or organizations as stated in the policy. It is the responsibility of the institutions to which Western Michigan University sends educational records to ensure that other institutions disclose any information from, students' educational records without the written consent of the students, except to persons or organizations as stated in the policy.
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 request a formal hearing by the Registrar. Students may then request a formal hearing. The request must be made in writing to the Registrar who, within ten days after receiving such request, indicates in writing the date, place, and the time of the hearing. Students may present evidence relevant to the issues raised and may be assisted or represented at the hearings by individuals 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, and may be appealed to the appropriate 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, may make written statements 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 educational 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 institutional policy warrants.

WMU POLICY ON SEXUAL HARASSMENT AND SEXISM

Western Michigan University is committed to an environment which encourages fair, humane, and beneficial treatment of all faculty, staff, and students. Consistent with that fundamental objective, the University has a continuing commitment to assure equal opportunity and to oppose discrimination because of race, color, sex, sexual orientation, age, religion, national origin, handicap, height, weight, or marital status. Therefore, in that same perspective, neither sexual harassment nor sexism will be tolerated at Western Michigan University. It is expected that each member of the University community will consider himself/herself responsible for the proper observance of this policy.

Definitions

Sexual Harassment Sexual harassment is defined as unwelcome sexual conduct which is related to any condition of employment or evaluation of student performance. This definition is intended to include more than overt advances toward actual sexual relations. It applies as well to repeated or unwarranted sex-related statements, unwelcome touching, sexually explicit comments, and/or graphics. All persons should be sensitive to situations that may affect or cause the recipient discomfort or humiliation or may display a condescending attitude towards a person. Sexual harassment is illegal under both state and federal law. In some cases, it may be subject also to prosecution under the criminal sexual conduct statute. Conduct will be defined as sexual harassment when any or all three of the following conditions exist:

1. The sex-related situations are unwelcome by the recipient.*
2. A specific or implied connection with employment or student status is involved.
3. The sexual harassment continues after the recipient has made it clear that the conduct is unwelcome.

* Note: In some cases of overt physical sexual conduct, a blatant threat if sexual favors are not given, or promised reward in exchange for sexual favors, no notice that the conduct is unwelcome shall be necessary and a finding of sexual harassment may be based on a single occurrence.

Sexism Sexism is defined as the perception and treatment of any person, not as an individual, but as a member of a sex-related category based on sex. Whether expressed in overt or subtle form such as sex-related jokes or materials, sexism in the classroom or workplace is unacceptable, and its elimination shall be the responsibility of the entire University community. Depending upon the seriousness of the misconduct, informal corrective action may be adequate.

Complaint Procedure

Sexual harassment and sexism constitute acts of misconduct. The University to act through the appropriate procedures, employees and students are encouraged to report such incidents.

Employees should report such conduct to the Director of Compensation and Employee Relations, 1275 Seibert Administration Building (387-3620). Students should report such conduct to the Affirmative Action Director and Assistant General Counsel, 274 Walwood Hall (387-8858).

The Director of Compensation and Employee Relations and the Affirmative Action Director and Assistant General Counsel shall jointly establish appropriate procedures to implement this policy. They shall also investigate thoroughly any complaints of alleged sexual harassment or sexism, and then report the results of such investigation to the President of the University.

If you hesitate to file a sexual harassment complaint for fear of retaliation, you should know that:

Federal and state law, as well as University policies, protect any person who has filed a complaint of sexual harassment or sexism from being intimidated, harassed, discriminated against or any other form of retaliation.

Likewise, protection is afforded any person who testifies, assists or participates in any manner, in an investigation resulting from a sexual harassment complaint.

Therefore, any individual so harassed, intimidated, or otherwise retaliated against may file a complaint alleging harassment, intimidation, or retaliation. Such complaint should be filed with the department of Legal and Compliance Affairs, 260 Walwood Hall (387-8970).

Western Michigan University is committed to the principles of equality and nondiscrimination. On its campus, students, faculty, and staff of many races and ethnic backgrounds live and work closely together day by day in offices, classrooms, and residence halls. This racial and ethnic mix brings richness and diversity to the cultural, intellectual, and personal dimensions of campus life. The University benefits from this diversity and seeks to enhance it.
All members of the University are expected to contribute to an atmosphere of racial and ethnic harmony on campus, displaying tolerance for cultural differences and courtesy and civility in discourse with students, faculty, and staff of diverse backgrounds and origins. In this environment, there is no room for any derogatory comments of a racial nature, be they in the form of slurs, posters, songs, jokes, graffiti, or the like.

Most members of the campus community need not be reminded of the institutional position toward those who through racist acts bring discord to this campus.

DISCRIMINATION: COMPLAINTS AND GRIEVANCE PROCEDURE

Western Michigan University, in accordance with the law, prohibits discrimination in the provision of all student instruction, activities, and programs. Discrimination based on race, color, religion, national origin, sex, sexual orientation, age, disability, height, weight, veteran status, family status, or marital status shall not be considered in the determination of eligibility, participation, or grading for any courses or program established for the benefit of students unless otherwise provided by law.

Any student who has inquiries about the University's Anti-Discrimination Policy or about anti-discrimination laws, including Title IX and the Rehabilitation Act of 1973, or who have complaints of prohibited discrimination, may file their grievances and complaints with the Office of Institutional Equity, 260 WWalwood Hall (387-8880). The Office of Institutional Equity will receive and investigate complaints of prohibited discrimination filed with it by students and may assist the students in resolving their concerns. The complaint, an oral allegation or charge against the University, an employee(s), or agent, stating prohibited discrimination has occurred, must be filed with the Office of Institutional Equity or professor, instructor, or program coordinator. The Office of Institutional Equity shall accept and consider complaints at any point of the year submitted by a student. If the complaint is denied or not pursued, the student may appeal to the appropriate level of the grievance procedure.

The Grievance Procedure

Step 1: Departmental Level
A formal grievance must be filed with the Office of Institutional Equity no later than thirty (30) calendar days after the event or events giving rise to the complaint. The Grievance Procedure, provided the Office is given at least twenty-four (24) hours notice prior to the concerned meeting.

The Department of Institutional Equity will forward the grievance to the Step 1 representative, who will be the Dean or academic unit or the appropriate Vice President to respond to the grievance. The Step 1 representative must provide a written answer within fourteen (14) calendar days after receiving the formal grievance.

Step 2: Appeal to the Vice Presidential Level
If the grievance is not resolved at Step 1, the student may appeal to the appropriate Vice President within seven (7) calendar days after receiving the departmental representative's written answer. The student must file the appeal with the Office of Institutional Equity, using an official University appeal form. The Office will, in turn, notify the departmental representative and the appropriate Vice President of the student's appeal. The appropriate Vice President or his/her designee will then arrange a meeting with the grievant, the appropriate Vice President, or his/her designee hearing the appeal receives the grievance from the Office of Institutional Equity. Within seven (7) calendar days after this meeting, the appropriate Vice President or his/her designee hearing the appeal will communicate an answer in writing to the involved parties.

Step 3: Appeals to the Presidential Level
If the grievance has not been resolved at Step 2, it may be appealed to the President of the University. The Office of Institutional Equity must receive the appeal within seven (7) calendar days after the grievant receives the Step 2 answer. If the grievant's appeal is denied, the President will arrange a meeting with the grievant and the appropriate Vice President of the student's appeal. The appropriate Vice President or his/her designee will then arrange a meeting with the grievant, the appropriate Vice President, or his/her designee hearing the appeal and communicate an answer in writing to the involved parties.

Step 4: Final Resolution
The President will make the final grievance decision and communicate it to the appropriate parties.

In addition to filing a grievance with Office of Institutional Equity, the student may file a complaint directly with the Office of Civil Rights, U.S. Department of Education, or the Board of Trustees. If the complaint is denied or not pursued, the student may appeal to the appropriate level of the grievance procedure.

WMU STUDENT CODE

A student who chooses to enroll at Western Michigan University assumes the obligation for conduct that is compatible with the University's position in the education of the University community. While students have the privilege to enroll at the University of their choice, choosing to enroll at Western Michigan University requires a student to become aware of, and to abide by the student rules and regulations of the University. Ignorance of acceptable boundaries of student behavior as contained in the Student Code is not a basis for excusing inappropriate behavior.
ACADEMIC SKILLS CENTER

The Academic Skills Center, located at 1042 Moore Hall, telephone 387-4442, is designed to offer students the opportunity to strengthen their learning skills and improve their academic performance. Programs and services carry no academic credit. There is no charge for services.

Student Support Program

The Student Support Program, a United States Department of Education Trio Program, provides support services for undergraduates with academic need who have low incomes, and/or whose parents did not graduate from a four-year college or university. Students selected for the program are entitled to Learning to Learn(TM) tutoring and receive personal guidance to help them succeed.

College Success Seminar

The College Success Seminar helps students learn how to use their time effectively and develop efficient study habits. Students practice techniques for time management, note taking, and test taking. Students also learn whether they are driven by internal or external motivators, as well as investigate their learning style preferences.

Computer Lab

Academic Skills Center participants may use a variety of software programs in the areas of reading, vocabulary, spelling, and writing. Additionally, all software on the University's computer system is available.

Content Tutoring

Drop-in tutoring for selected courses is available.

Supplemental Instruction

Student leaders are trained to offer three voluntary weekly review sessions in selected courses. Supplemental Instruction promotes student learning through regularly scheduled review sessions by incorporating extensive group work, collaborative problem solving, application of study skills, and strategies for test preparation.

Math Seminar

The Math Seminar reviews concepts covered in the Math Skills Test. Students identify troublesome areas in math, receive guided instruction, and practice concepts like fractions, ratios, percentages, area, and volume in a small group setting. Each seminar series, students can take the Math Skills Test.

ARCHIVES

The University Archives and Regional History Collections is located in East Hall, Room 111. Staff collect, preserve, and make accessible records which document the history of the University and of twelve southwestern Michigan counties. Holdings include: books, ephemera, newspapers, microfilm, photographs, oral history tapes, and manuscript collections. In addition, local public records from southwestern Michigan are on deposit from the State Archives.

ATHLETICS, INTERCOLLEGIATE

The University is represented by men's teams in football, baseball, basketball, indoor and outdoor track, cross country, tennis, ice hockey, and soccer. Women's teams represent the University in basketball, cross country, golf, gymnastics, synchronized skating, softball, tennis, indoor and outdoor track, soccer, and volleyball.

Athletics are governed by the Athletic Board, which adheres to the policies and principles established by the National Collegiate Athletic Association and the Mid-American Conference. Western Michigan University is a member of the Mid-American Conference. Other members of the conference are Akron, Bowling Green, Buffalo, Central Michigan, Eastern Michigan, Kent State, Marshall, Miami (Ohio), Northern Illinois, Toledo, Ball State, and Ohio. The teams winning Mid-American Conference championship qualify automatically for the annual NCAA Tournament. The hockey team is a member of the Central Collegiate Hockey Association, and the champion automatically qualifies for the annual NCAA Tournament.

CAREER AND STUDENT EMPLOYMENT SERVICES

All students are urged to make use of the career education facilities of the University for assistance in deciding upon a major and minor, planning for realistic entry-level jobs, and visualizing a career path for the future. Career counseling and advising are available in the offices of Career and Student Employment Reference Service, the University Counseling and Testing Center, and curriculum and departmental advisors. A course directly related to career education is UNIV 102, Career Exploration and Development. The Office of Career and Student Employment Services offers a full range of services to help develop skills, explore the world of work and obtain full-time employment upon graduation. Services include a career learning lab, on-campus interviewing, part-time off-campus employment, internship opportunities, weekly job opportunity bulletins, Web-based employment listings, maintenance and distribution of education credentials, a computerized career guidance system, career fairs, and workshops.

For more information or to schedule an appointment, call (616) 387-2745. The office is located on first floor of Ellsworth Hall.

CHILDREN'S PLACE LEARNING CENTER

The Children's Place Learning Center, located in the middle of campus at 2210 Wilbur, is open from 7:30 a.m. to 6:00 p.m. weekdays. The convenient location and flexible care schedules make the center an attractive child care option for WMU faculty, staff, and students. Children 2-1/2 to 11 years old and toilet trained may be enrolled full-time, part-time, or hourly (maximum 10 hours per week). Breakfast, lunch, and snacks are included in the tuition and are provided by WMU's Dining Services Department. A full vegetarian menu is available daily.

The Children's Place philosophy emphasizes child-initiated learning within a culturally diverse community. The program nurtures and supports the development of children by providing developmentally appropriate activities which address each child's need for fun, creativity, active play, communication skills, problem solving, social interaction, rest and nutrition. The program is licensed by the State of Michigan. For more information and an application call (616) 387-2277.

DISABLED STUDENT RESOURCES AND SERVICES

Disabled Student Resources and Services assists Western students who have disabilities as they seek to find effective accommodations, maximize their abilities and gain independence. DSRS offers advocacy, registration assistance, readers/scribes and other test accommodations, textbook taping, accessibility information, handi-van transportation, adaptive equipment, and referral to other campus and community agencies.

The office is located in the Faunce Student Services Building and can be reached by calling (616) 387-2116.

Learning Disabled Students

Students with documented learning disabilities may contact the Coordinator of Services for Learning Disabled Students to discuss requests for accommodations or other services. Contact the Coordinator at the Center for Academic Support Programs, 201 Moore Hall, (616) 387-4410.

FACULTY SENATE

The Faculty Senate is composed of members elected by the faculty to represent the departments and the University at large, and others appointed by the President. It meets regularly to promote the common interests of the University and give the faculty a share in the determination of institutional policy.

Faculty Senate councils are composed of faculty members elected by the Faculty Senate, certain ex officio members, several members appointed by the President of the University, and student members selected by the Western Student Association and the Graduate Student Advisory Committee. The councils, at present, include: Campus Planning and Finance, Graduate Studies,
Western Michigan University recognizes that helping people to clarify their values, act on their commitments, articulate their own beliefs, and understand the beliefs of others is an important part of the educational process. The University endorses no particular faith or religious tradition, but it welcomes and facilitates the presence of many religious organizations, Christian and non-Christian alike.

A broad spectrum of spiritual opportunities is available to Western Michigan University students, including traditional, contemporary, and experimental worship; individual and small group studies; workshops and retreats; study-travel experiences, social concerns, and action groups.

Various church groups provide support for clergy whom they assign to campus ministry. The 600 apartments are available to students and their families for personal and religious counseling, and materials and resources for religious activities. Campus ministers are not employees of Western Michigan University, but serve as a resource for students as representatives of their various beliefs.

The Office of Faith and Spiritual Development, a satellite unit of the Office of Student Activities and Leadership Programs, is located in Kanley Memorial Chapel. The Chapel is designed to serve as a center for worship-oriented religious and spiritual activities. In addition, the Chapel provides office space for eleven campus ministries. The Kanley Memorial Chapel facility includes an interfaith chapel, several meeting rooms, a kitchen, and a study room. The Chapel provides office space for eleven campus ministries.

In addition to Kanley Memorial Chapel, there are several student centers operated by specific denominations on or near campus.

Specific information regarding the religious groups or services on or near campus is available in the Office of Faith and Spiritual Development. Telephone: 387–2501.

HOUSING

Western Michigan University students may live on or off campus. Two alternatives exist: on-campus, Residence Halls and WMU Apartments, and both deliver tremendous value to their residents. The success rate in meeting the diverse needs of their residents is very high and improvements are constantly being made. For these reasons, students should carefully consider the benefits of on-campus housing when choosing where to live. The listed rental fees are complete. They include all utilities, cable TV, and in most cases, many extra benefits not available off-campus.

Your residence hall application will be sent upon admission to Western Michigan University. An apartment application may be submitted directly to Western Michigan University. The application date is the basis for assignment and the probability of an assignment increases with early application. Admission to the University or submission of a contract for a housing assignment does not guarantee a space will be available. Requests received after capacity are placed on a waiting list.

WMU Residence Halls

Twenty-two residence halls in locations close to every academic hall on campus attract over 5,500 students each academic year. These students represent a variety of different backgrounds, cultures, and academic interests.

Most halls offer a variety of services and opportunities for residents: reception desk with mail and message services, formal lounge, all-purpose rooms for meetings or studying, extensive fitness/exercise rooms, aerobics, saunas, television viewing areas, refrigerator rental, paint-your-room program, free VCR use, and academic computer terminals. All rooms are provided with beds, desks, study chairs, dressers and closets.

Any student enrolled at WMU for at least one credit hour may live in a hall. Newly admitted students are automatically sent information (fall–during the month of February; winter–in November; spring and/or summer–in March) detailing the residence hall offerings available for the semester or session they expect to be enrolled.

Many of WMU’s residence halls are open year-round with a flexible lease that is renewable each semester. Residents appreciate the international flavor and collegiate atmosphere of the residence halls, and pleasant relationships are formed between neighbors that often continue long after graduation.

Make inquiries directly to the WMU Housing Office, Faunce Student Services Building, Western Michigan University, Kalamazoo, MI 49008–5079 or visit our web site at www.wmich.edu/apartments. Telephone: 800–852–9819 or 616–387–2175 or fax 616–387–4796.

Off-Campus Housing

Approximately 72 percent of Western’s students live off campus in privately owned housing. Thus, a unique service is provided to assist them in locating a place to live. Listings of apartments, houses, sleeping rooms, and roomsmates are maintained on campus and in the off-campus directory and on the WMU Web and are printed for distribution. Students can see a photograph of what the rental unit looks like by accessing the WWW. While most students will choose to off-campus living as an opportunity to pursue individual life styles, 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 coordinates with conflict resolution and educational programs as well as tenant/landlord services. For additional information regarding off-campus housing, contact the Office of Off-Campus Life, Room 3510, Faunce Student Services Building, Telephone: 616–387–2336; FAX: 616–387–2325; URL: http://www.ocl.wmich.edu.

OFFICE OF INFORMATION TECHNOLOGY

The Office of Information Technology (OIT) encompasses a wide spectrum of computing and information technologies. In addition to supporting administrative computing functions on campus, OIT also supports educational computing needs at the University. This includes providing students with computer accounts with access to the Internet (for e-mail and World Wide Web), supporting open access computing facilities for student use, and supporting a computer Help Desk. OIT also oversees the telecommunications and instructional technology services offered to the campus community.

The Office of Information Technology is located in the third floor of the University
enlarge text and graphics on-screen; produce Braille printouts; allow input to programs through voice recognition, switches, and alternative keyboards. Orientation, training, and consulting are a part of the services available through METL staff.

The Computing Help Desk (387–5161)

The University provides access to computing and information technology for individuals with disabilities through the Multipurpose Enabling Technology Lab (METL) and other sites around campus. The METL is a centralized facility with a variety of solutions and services for a variety of disabilities. Some examples are software that generate speech from on-screen text; enlarge text and graphics on-screen; produce Braille printouts; allow input to programs through voice recognition, switches, and alternative keyboards. Orientation, training, and consulting are a part of the services available through METL staff.

Open Access Computing Labs

There are a number of computing facilities located across Western’s campus. Four large “public” computing labs are available for walk-in use on the WMU community. These are located in the Computer Aided Engineering Center, the Bronco Mall area of the Bernhard Center, the Haworth College of Business, and the University Computing Center. The Bernhard lab houses 130 computers and is generally available on a 24-hour basis. Additionally, there are many small to medium-sized labs operated by departments and colleges across campus. An extensive list is available on the Web at http://www.wmich.edu/labs. The computer labs provide a mix of platforms including Macintosh, Windows, and UNIX workstations which are used to connect to the University’s academic servers and the Internet.

Instructional Technology Services

The Enhancing Teaching with Technology Center is a walk-in facility for faculty and teaching assistants where they can experiment with instructional technology. The facility has a variety of computing hardware, numerous software applications, and several types of cameras to assist users, digital video, and other equipment. These are located in the Computer Aided Engineering Center, the Bronco Mall area of the Bernhard Center, the Haworth College of Business, and the University Computing Center. The Bernhard lab houses 130 computers and is generally available on a 24-hour basis. Additionally, there are many small to medium-sized labs operated by departments and colleges across campus. An extensive list is available on the Web at http://www.wmich.edu/labs. The computer labs provide a mix of platforms including Macintosh, Windows, and UNIX workstations which are used to connect to the University’s academic servers and the Internet.

Diegher H. Haenicke Institute for International and Area Studies

The Diegher H. Haenicke Institute for International and Area Studies houses a family of interdisciplinary programs devoted to the study of major areas and regions of the world, and to global and international developments and institutions. These programs include coordinate majors (which must be taken in conjunction with a standard major) and minors, and graduate cognate programs. Interdisciplinary programs in the Haenicke Institute draw heavily on courses in the College of Arts and Sciences, as well as offerings from other colleges. They provide a broad variety of intellectual and experiential stimuli designed to promote an understanding of large geographical regions, and the nature of interactions among cultures and nations of the world. In addition, the programs strongly encourage foreign language study and study abroad.

Haenicke Institute programs are designed for students planning careers in international business, education, government, or other professions in which success would be enhanced by an understanding of diverse cultural practices around the world. They are also excellent cognates for systematic study of geographical and cultural regions at the graduate level.

Office Of Study Abroad

Students who are interested in studying abroad should contact the Office of Study Abroad. Assistance in designing the appropriate program, as well as extensive resources about foreign study opportunities are available. Financial aid, International Student Identity Card, Youth Hostel Pass, and some volunteer and work abroad information is available. For further information contact the Director of Study Abroad, B200 Elsworth Hall, telephone: (616) 387–3962, fax: 616–387–3062.

OFFICE OF INTERNATIONAL AFFAIRS

Western Michigan University conducts active programs of international education, research, and service on campus and in a variety of overseas locations. The Office of International Affairs, established in 1981, provides leadership and administration for the international involvements of the University.

Component units include the Office of International Student Services and the Career English Language Center for International Students (CELIC). Other responsibilities of the Office of International Affairs include initiation and maintenance of exchanges with foreign institutions, sponsorship of conferences and lectures on international issues, developing technical assistance and training projects, summer institutes for international students, and assisting foreign faculty and units in preparing grant proposals.

For additional information, contact the Office of International Affairs, B200 Floor, Elsworth Hall, Western Michigan University, Kalamazoo, Michigan 49008–5177. Telephone (616) 387–3951 FAX (616) 387–3962.

The Office of International Affairs also oversees the units responsible for the needs of foreign students: The International Student Services Office, which handles the admission and special circumstances of foreign students, and the Career English Language Center for International Students, which provides intensive English instruction for foreign students seeking admission to U.S. institutions of higher learning. For additional information, see the entries directly below.

Office of International Student Services

The Office of International Student Services handles the special needs of international students by processing applications for admission, conducting an orientation program for new foreign students, assisting with housing arrangements, coordinating community programs involving international students, providing immigration advising, serving as a liaison between students and their financial sponsors, and offering personal and social counseling. While at the University, international students are encouraged to participate in academic and social activities as their interests and time allow.

International students interested in seeking admission to Western Michigan University should contact the Office of International Student Services for further information and instructions. See the earlier catalog sections describing Admission Procedures and Admission Requirements for more complete information.

Requests for additional information or application materials by mail from the Office of International Student Services, A11 Elsworth Hall, Kalamazoo, Michigan 49008–5176 OR by FAX (616) 387–5899 or download the materials from the Office’s web page (http://www.wmich.edu/oiss).
Career English Language Center for International Students (CELCIS)
The Career English Language Center for International Students (CELCIS) provides intensive instruction for those prospective students who need further training in English in order to qualify for regular admission to the University. F-1 students in the CELCIS program must be enrolled full-time and must attend twenty hours of classroom instruction per week. Resident aliens and F-2 students may attend CELCIS part-time. Classes at various levels include: Teaching Comprehension, Grammar, Academic Reading and Vocabulary Building, Academic Writing, and Research Paper Writing. Extra-curricular activities include social hour, conversation partners, home visits, and various social, sport, and cultural programs.

There are four CELCIS terms per year, two 15-week terms (fall and winter) and two seven-week terms (spring and summer). The University Testing and Evaluation Services offers the institutional TOEFL at the end of each term. The Certificate of Eligibility for a visa (Form I-20 or IAP-68) 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, 60021 Elizabeth Hall, Western Michigan University, Kalamazoo, Michigan 49008-5182. Telephone: 616-387-4800; fax: 616-387-4806; or download the materials from the CELCIS web page (http://www.wmich.edu/oai/ceelcis)

MINORITY AFFAIRS, THE DIVISION OF
The Division of Minority Affairs facilitates the development and continuance of a supportive environment for our ethnic minority student population. As a result, the Division assists the University in its objective to increase the minority presence and participation at the institution. Specifically, the Division:

1. Provides information to the University community on the importance and value of diversity in the educational process.
2. Offers programs and services in response to ethnically specific student needs and concerns, including cultural awareness and student-organized support aimed at increasing minority student retention.
3. Monitors students impressions and satisfaction with delivery of services from other areas to which they have been referred. Provides feedback to these areas on students perceptions.
4. Serves as advocate in presenting concerns that affect the quality of life for minority students on the campus of Western Michigan University, and works with students to identify concerns and to develop solutions.
5. Supports programs targeted at pre-college youth in order to increase the participation of minority students in higher education.
6. Provides funding, staff, and computer support for program assistance to the Office of Admissions and Orientation to help increase the recruitment and enrollment of minority students.

The activities of the Division are designed to define and positively react to minority students' needs and impact their environment. By doing so, students are ensured the greatest opportunity for a successful and relevant educational experience.

OFF-CAMPUS LIFE
The Office of Off-Campus Life responds to the diverse needs of the 72 percent of WMU students who reside off campus. Specifically, graduate students are provided assistance in locating a place to live. To aid students searching for rental housing or roommates, a computerized database system has been developed. Students can access rental and roommate information through the World Wide Web. Listings of apartments, houses, sleeping rooms, students who recommend those available as roommates and those available as roommates are also maintained and printed for distribution.

Recognizing the significance of an adequate housing environment for all students, the University's rental listing program is supplemented with conflict resolution and educational programs as well as tenant/landlord services. For additional information regarding off-campus housing, contact the Office of Off-Campus Life, Room 3510, Faunce Student Services Building. Telephone: 616-387-2323; Fax: 616-387-2325; World Wide Web site: http://www.ocl.wmich.edu

OFFICE OF OMBUDSMAN
The Office of Ombudsman provides intervention and functions impartially in helping students, faculty, and staff resolve academic and non-academic concerns. The Office of Ombudsman: listens to you and discusses your question or concern; provides you with information that answers your question or helps you locate someone who can assist you; explains the University's policies and procedures and how they may affect you; follows up with you and others at the University to make sure your concern is resolved; and recommends changes in the institution that will make it more responsive to every member of the community. The basic principles of the Ombudsman are independence, impartiality, and confidentiality. The Office of Ombudsman is authorized to make thorough investigations and has access to most University offices and records, reports, and other documents in the University. No person shall suffer any penalty for seeking assistance from the Office of Ombudsman. The Ombudsman is appointed by the President and reports directly to the Associate Vice President of Institutional Equity. The office is located at 218 Berhard Center. Telephone: 387-5300.

PARKING AND VEHICLE REGISTRATION
Detailed regulations concerning the use of motor vehicles on campus is available from the Department of Public Safety's Parking Services. All students are eligible to park a motor vehicle on University property; however, they must first register their motor vehicle, motorcycle, and/or moped with the Parking Services and pay a registration fee. Information concerning parking regulations, parking permits, and parking violations can be obtained by visiting Parking Services located at 2507 West Michigan Avenue (at the corner of West Michigan and Knoxlwood) or by telephoning 387-4699 during normal University business hours.

POLICE
Located at 511 Monroe, off the 1300 block of West Michigan Ave., the Department of Public Safety is open 24 hours a day, providing a full range of police services through the use of a uniformed patrol division, a detective division, and a communications center. The Department of Public Safety is responsible for investigating all crimes and accidents occurring on University property. It is committed to providing an environment conducive to the education of the students at Western Michigan University. Towards that goal, the department's various divisions and bureaus have coordinated their efforts to create and maintain a feeling of security and belonging among the University community. Information can be obtained by visiting the office, telephoning 387-5555 or 911 in an emergency.

PUBLICATIONS
Western Herald: WMU's student newspaper, is published Mondays, Tuesdays, Wednesdays, and Thursdays during the fall and winter semesters, Mondays and Thursdays during the spring session, and Wednesdays during the summer session. The Western Herald is made available to students partially through support from the general fund of Western Michigan University. All positions on the paper are filled by students with the exception of the general manager/adv. Arabian News is the official publication for administration, faculty, and staff members. It is published every other Thursday by the Office of University Relations, which also produces WMU - the Western Michigan University Magazine in association with the Office of Alumni Relations. The magazine is published four times a year for alumni, donors, and other friends of the University.

RADIO
WMUK is Western's full power stereo public radio broadcasting service, operating at 102.1 on the FM dial with a power of 50,000 watts and serves an area 80 miles in radius; this area includes most of the southwestern quarter of the state. WMUK(FM) provides a cultural extension of the University through its presentation of campus, community, and area events. Through the satellite-linked National Public Radio network of stations, WMUK provides listeners with outstanding programming in the fields of classical, blues, jazz, and popular arts, news, and information from around the world. WMUK has built an enviable reputation in classical, blues, and jazz music programming, as well as programming for Spanish-speaking audiences. WMUK(FM) is the charter member of NPR, the National Public Radio network of over 500 non-commercial radio stations. WIDR(FM), a 100-watt station operated by students, broadcasts on 89.1. Facilities of WIDR(FM) are located in the L. Dale Faunce Student Services Building. WIDR(FM) offers a unique opportunity for Western Michigan University students to gain experience in programming, promotion, and station operation.

SINDECUSE HEALTH CENTER
The Sindecuse Health Center is a student-oriented medical facility that exists to assist the University community members to achieve and maintain their optimal health status. As a student attending Western Michigan University, you have the right to high-quality, convenient health care through our many professional services. Our entire staff works as a team to assist you with your health care and health education needs.

Medical Services
The Health Center provides evaluation, treatment, and education for a variety of illnesses and injuries in addition to preventive health care. Medical specialties include family practice, internal medicine, gynecology, psychiatry, dermatology, orthopedics, and sports medicine. In addition, Health Center physicians and physician assistants can refer students to other medical specialists in the Kalamazoo area whenever necessary.
indicated. Upon acceptance to the University, each student will receive a Health History Questionnaire. Completing and returning this questionnaire is important as it becomes a permanent part of a student's medical record and a reference when medical treatment is required. Any student younger than 18 years of age must also complete and return a Medical Treatment Authorization form signed by a parent or guardian. This form will be included in the admissions packet. All information and Health Center records are strictly confidential and not part of any other University record. Student signature is required for release. Pharmacy
A full-service pharmacy provides competitively-priced prescription medications to students. It also carries a limited number of non-prescription medications. Prescriptions written by your personal physician from home can be filled, as well as prescriptions written by Sindecuse Health Center medical staff. If you have prescription drug coverage through outside insurance, bring the identification card with you as many major insurance cards are accepted. Laboratory Services
The Center's full-service laboratory performs most standard diagnostic tests. These are often evaluated while you wait so that you receive prompt treatment, saving you both time and money. Electrocardiograms are also available. X-ray Services
The radiology department performs general diagnostic x-rays. All x-rays are developed for diagnostic purposes only. Electrocardiograms are also available.

Allergy Injections
Students requesting allergy injections need to provide their antigen and injection schedule to Health Center staff. No appointment is needed. Check with the Health Center for times injections are given.

Immunizations
Several serious diseases, including measles, mumps, German measles, tetanus, diphtheria, and hepatitis B, are all vaccine preventable. You should be immunized to protect yourself and the University community. Additionally, a vaccine for bacterial meningitis is available. The Health Center clinical staff can provide information regarding meningitis, including risk factors associated with the disease, potential benefits of immunization, and vacxing. The Sindecuse Health Center also offers all immunization updates and immunizations required for overseas travel. Appointments for immunizations are required.

Tuberculosis Testing
Routine tuberculosis testing, required for some classes and employment, is also available. No appointment necessary. Check with the Health Center for times TB testing is performed.

HIV Testing
Anonymous HIV testing with the oral HIV antibody test (Orasure(TM)) is available to all students. For more information, call 387-4HIV.

Sports Medicine Clinic
The Sports Medicine Clinic provides comprehensive diagnosis and treatment of bone, joint, and muscle problems. Full physical therapy services are available. Consultations with orthopedists, sports medicine physicians, and a podiatrist are available.

Physical Therapy Services
The Center's Sports Medicine Clinic offers the full spectrum of treatment modalities provided by certified physical therapists and athletic trainers. Orders from your home physician are honored.

Nutrition Counseling
Appointments with a registered dietician are available for weight management, eating disorders, sports nutrition, diabetic diet management, and more.

Office Of Health Promotion And Education Programs
The Office of Health Promotion and Education, Sindecuse Health Center, offers a variety of interactive computer resources, information, education programs and preventive health services designed to help students maintain and enhance their physical and emotional well-being. Services include an array of resources with special emphasis on the following health promotion skills:
- Healthy intimate relationships
- Healthy sexuality
- Computerized HIV Risk Assessment
- Anonymity Counseling and Testing
- Coping With Stress
- Increasing Assertiveness and Positive Thinking
- Understanding and Managing Depression
- Meditation
- Nutrition
- Vegetarian Food Choices
- Eating Disorder Assessment and Treatment
- Healthy Weight Management
- Recovery from Nicotine Dependence
- Cholesterol Testing and Education
- CPR Certification
- Blood Pressure Assessment

All programs are offered at little or no charge as a Student Health Fee benefit. Information regarding services and resources is published each quarter in an informational brochure which can be picked up from our office or mailed to you by request. Information is also available through the Western Michigan University Worldwide Web Home Page under Health Resources and Services, Sindecuse Health Center.

Office of Health Promotion and Education, Hours: Monday through Wednesday and Friday, 8:00 a.m. - 5:00 p.m.; Thursday, 9:00 a.m. - 5:00 p.m.; Location: Room 1110, Lower Level, Sindecuse Health Center. 387-3263.

Appointment Information
Students are encouraged to make appointments whenever possible to prevent unnecessary time and money. Electocardiograms are also available.

Nutrition Counseling Appointments are available by calling 387-3263; 8:00 a.m. - 5:00 p.m., Monday through Wednesday and Friday; 9:00 a.m. - 5:00 p.m., Thursday. Allow about an hour for an appointment and longer if you have a second test or x-rays are required. Please cancel an appointment if unable to keep it. There is a charge for missed appointments.

Sindecuse Health Center Hours
Appointments
Monday - Wednesday and Friday, 8:00 to 11:30 a.m. and 1:00 to 4:30 p.m.; Thursday, 9:00 to 11:30 a.m. and 1:00 to 4:30 p.m.
Urgent Care Clinic
Monday - Friday, 8:00 a.m. to 5:00 p.m.; Monday - Saturday, 9:00 - 11:30 a.m. (except summer session and during break weeks).

Parking
While visiting the Sindecuse Health Center, parking is available in one of the designated Health Center parking lots marked by signs. Travel on I-196 to Campus Drive, then take semicircle drive while you receive your permit.

Student Health Fee
All Western Michigan University students enrolled for seven or more non- exempt credit hours per semester (four or more per session) are assessed a Student Health Fee as part of the enrollment fee. This fee is used to support the Health Center services (including those offered in the Sports Medicine Clinic). Students enrolled for fewer than seven credit hours per semester (fewer than four per session), non-enrolled students, and spouses of WMU students may pay the Student Health Fee on their first professional visit of the semester/session and receive a limited number of services for the fee. Eligibility for use of the Health Center extends from the first day of the applicable semester/session for which the fee has been paid to the first day of the next semester/session. Students remain eligible to be seen at the Health Center one semester or two sessions after graduation. Fees for services are available at the Sindecuse Health Center.

The Student Health Fee benefits apply only to services rendered in the Sindecuse Health Center. Visits to hospital emergency rooms, immediate care centers, medical specialists outside the Health Center, and transportation by ambulance are not covered by the fee. Lab, x-ray, prescription, and physical therapy services requested by clinicians outside the University can also be provided by the Health Center.

Optional Hospital, Medical, And Surgical Insurance
All students are urged to carry some form of health insurance that covers medical, surgical, and hospitalization expenses. It is important to verify the services included in any insurance policy you purchase. Be sure to carry your insurance identification card with you at all times.

If you are not presently covered by a major medical insurance program, consider the student insurance plan offered through Western. This plan is provided at reduced rates to students and their dependents. Brochures are available at the Health Center or by calling 387-3266. More information is available through our Web site at www.wmich.edu/ush or by e-mail at shc-usip@wmich.edu.

Mandatory Hospital, Medical, And Surgical Insurance
All international students are required to carry health insurance if health care coverage is not provided by their sponsor. Students will be automatically enrolled in the University-sponsored policy unless an approved alternate policy is chosen.

Non-sponsored international students must show proof of coverage and have alternate policy approved at the Health Center during the first two weeks of the semester/session. No refunds of insurance premiums can be given after that time. Call 387-3266 for guidelines on alternate policies.
The insurance coordinator at the Health Center is available to assist students weekdays from 8–11:30 a.m. Mondays, Tuesdays, and Fridays; 1–4:30 p.m. on Wednesdays; 9–11:30 a.m. on Thursdays; or by calling 387–3268.

Important Phone Numbers
- Appointments: 387–3290
- Information: 387–3287
- Insurance Information: 387–3266
- Pharmacy: 387–3301
- Health Promotion/Health Info: 387–3263
- Sports Medicine Clinic: 387–3248
- HIV Antibody Testing: 387–4HIV

SPEECH, LANGUAGE, AND HEARING SERVICES
The Van Riper Language, Speech, and Hearing Clinic is a service program provided by the Department of Speech Pathology and Audiology for persons with communication disorders. It is located in the University Medical and Health Sciences Center, 1000 Oakland Drive. Students may take advantage of diagnostic and therapeutic services by contacting the Clinic for an appointment. Telephone: 387–8047.

STUDENT ACTIVITIES AND LEADERSHIP PROGRAMS
Mission
The mission of the Student Activities and Leadership Programs is to enhance student learning and personal development by engaging students in educationally purposeful academic and social activities. Student Activities has registered over 300 student organizations at WMU representing a diverse range of interests. We welcome you as a valued member of our community and are excited to be a part of your learning and personal development.

Student Activities enhances student learning and personal development, teaches effective citizenship and advances diversity within our community by:
- coordinating campus-wide events
- advising and providing support services for over 300 student organizations
- coordinating campus-wide leadership development programs
- providing leadership for lesbian, bisexual, and gay students and their allies
- supporting Kanley Memorial Chapel and religious activities
- providing leadership for women’s resources and services
- supporting the WMU Parents Association

Support Services for Registered Student Organizations
The wide variety of student organizations at Western Michigan University offers many opportunities to enhance students’ experiences in the classroom and to develop practical competence and leadership skills. Students who are involved in campus activities generally develop an understanding and appreciation of human differences and a greater sense of identity. Student Activities staff are here to inspire excellence in student leadership development and programs outside of the classroom. Staff provide services and support to student organizations while allowing them the freedom to fulfill their purposes.

Advising for Student Organizations
- Programming assistance
- Leadership and skills training
- Team building within organizations
- Mediation and conflict resolution
- General student organization advising
- Training for organization advisors
- Contract management for performers and attractions

Services to Registered Student Organizations
- Faunce student office space, room reservations, outdoor space reservations, mail services, mail and office key requests, email accounts, web page authorization, campus flyer authorization, table tent advertising, and EduCABLE announcements.

WMU Parents Association
The WMU Parents Association encourages mutual understanding and communication between our parents/guardians and the University. The Association sponsors programs and services to involve parents/guardians in the life of our University and Kalamazoo community. Currently, the WMU Parents Association has over 1,200 families as members.

Lesbian, Bisexual And Gay Student Services
The Lesbian, Bisexual and Gay Student Services office, a unit of Student Activities, provides resources, services, and programs to support WMU students, staff, and faculty who identify as lesbian, bisexual, or gay, or who question their sexual orientation. The office also educates the campus community on issues of sexual orientation as part of a larger effort to provide an affirming and supportive environment at WMU for all students.

Faith and Spiritual Development
Faith and Spiritual Development, a satellite unit of Student Activities, is located in Western Michigan University’s Kanley Memorial Chapel. The Chapel is designed to serve as a center for worship-oriented and action-oriented religious and spiritual activities. In addition the Chapel provides office space for campus ministries.

Women’s Resources and Services
Women’s Resources and Services, another unit of Student Activities, provides educational programs, educational and informational materials, and personal assistance to students. Educational programs either focus on gender issues or address issues from a female perspective. A primary purpose of WRS is to provide support, guidance, and opportunities to acquire skills and experiences that will help them develop both personally and professionally. Inquiries may be made by stopping in or calling the office, A331 Ellsworth Hall, 387–2990.

The S.T.A.R. Program: Students Talking About Relationships
Twenty-five to thirty female and male students who have completed in-depth training volunteer their time to present educational programs designed to increase understanding and help prevent acquaintance and date rape and relationship abuse/violence. Programs are presented in college and high school classrooms, residence halls, and for student organizations.

Victim Assistance
Students, or friends or parents of a student, coping with a sexual assault, an abusive relationship, or sexual harassment are provided confidential, individual support, information, referral, and other assistance as needed. Each semester, WRS also offers a free, confidential, professionally-facilitated support group for women students who have experienced sexual assault.

The Women’s Leadership Team
This group of student volunteers conceives, plans, and organizes projects, programs, and events that are sponsored by WRS.

Issues and topics addressed change from year to year, based on the interest of team members.

Educational and Informational Materials
WRS maintains a resource library of books, reports, and scholarly articles on a variety of gender issues. Information on campus, community, and national resources of special interest to women is available in a referral manual and reference books in our library.

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

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

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

STUDENT VOLUNTEER SERVICES
Student Volunteer Services (SVS) is dedicated to furthering the student community service movement on campus and to enhancing the traditional classroom education through experiential service-learning opportunities. The mission of Student Volunteer Services is to foster awareness and understanding of the challenges facing our society and to encourage student involvement in addressing these needs through community service and social action.

Through SVS, students have access to volunteer opportunities in over 150 community and campus organizations. The SVS staff will assist you in determining where your interests and skills can be matched with community needs. Individual volunteer opportunities and one-time group projects are available in a variety of interest areas including food/clothing/shelter services, mental and physical health care, friendship/role model services, recreation, education, cultural arts and sciences, financial/legal/government services, handicapped services, advocacy, natural resources, and media/public relations. Individual volunteer opportunities typically require a two to four hour weekly time commitment; one-time group projects vary from three to eight hours.

Services projects coordinated by SVS include Alternative Spring Break, Into the Streets, Service Week, and the Volunteer Opportunities Fair. Presentations are offered throughout the academic year and include information on service sites, volunteer positions, and how to get involved. Students are encouraged to visit our office located in the Lee Honors College. Telephone: 387–3230.

SUBSTANCE ABUSE SERVICES
University Substance Abuse Services, located in the Sincendue Health Center, provides an
counseling and testing center

Many important decisions and situations will confront students while they are at Western Michigan University. They will need to make decisions regarding courses, curricula, and career exploration. They may become involved in social and personal situations that leave them feeling confused and upset. It may be that the inherent stresses of university life, at some time, interfere with academic achievement and personal growth. The University Counseling and Testing Center, located on the main floor of the Faunce Student Services Building, exists to help students deal effectively with such concerns.

The Center is staffed with professionally licensed counselors and psychologists and is accredited by the International Association of Counseling Services. Counseling and Testing Center services consist of the following:

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

- **Educational Counseling** to help students deal with conflicts concerning vocational planning and educational goals.

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

- **The Career Exploration/Media Center** contains a wide and varied selection of printed materials on self-understanding, career exploration and preparation, occupational information, and job trends. Included is a section of college and university catalogs, educational guides, and computer-aided guidance and information pertinent to career awareness. An extensive collection of professional test material is also available for student/faculty review.

- **Training and Internship Programs** for graduate students and faculty include the "Training and Internship Program" of the Department of Counselor Education and Counseling Psychology, School of Social Work, and Department of Psychology are available. Individual and group services are offered as indicated. Also offered are didactic groups to those students seriously interested in exploring their relationship with mood altering drugs (alcohol, marijuana, stimulants, narcotics, depressants, and barbiturates) as well as groups for adult children of alcoholics.

- **University Substance Abuse Services** is licensed by the State of Michigan Department of Consumer Resources and is directed by a nationally certified substance abuse therapist and professor of counseling. All services are free, unless they are court ordered, and completely confidential as required by state and federal law. Students are encouraged to make an appointment through the Sindecuse Health Center reception area, or, by calling 387-3257.

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**UNIVERSITY AND STUDENT SERVICES**

**UNIVERSITY COUNSELING AND TESTING CENTER**

Many important decisions and situations will confront students while they are at Western Michigan University. They will need to make decisions regarding courses, curricula, and career exploration. They may become involved in social and personal situations that leave them feeling confused and upset. In addition, it may be likely that the inherent stresses of university life, at some time, interfere with academic achievement and personal growth.

The University Counseling and Testing Center, located on the main floor of the Faunce Student Services Building, exists to help students deal effectively with such concerns. The Center is staffed with professionally licensed counselors and psychologists and is accredited by the International Association of Counseling Services.

Counseling and Testing Center services consist of the following:

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

- **Educational Counseling** to help students deal with conflicts concerning vocational planning and educational goals.

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

- **The Career Exploration/Media Center** contains a wide and varied selection of printed materials on self-understanding, career exploration and preparation, occupational information, and job trends. Included is a section of college and university catalogs, educational guides, and computer-aided guidance and information pertinent to career awareness. An extensive collection of professional test material is also available for student/faculty review.

**Training and Internship Programs** for graduate students and faculty include the "Training and Internship Program" of the Department of Counselor Education and Counseling Psychology, School of Social Work, and Department of Psychology are available. Individual and group services are offered as indicated. Also offered are didactic groups to those students seriously interested in exploring their relationship with mood altering drugs (alcohol, marijuana, stimulants, narcotics, depressants, and barbiturates) as well as groups for adult children of alcoholics.

**University Substance Abuse Services** is licensed by the State of Michigan Department of Consumer Resources and is directed by a nationally certified substance abuse therapist and professor of counseling. All services are free, unless they are court ordered, and completely confidential as required by state and federal law. Students are encouraged to make an appointment through the Sindecuse Health Center reception area, or, by calling 387-3257.

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**UNIVERSITY ARCHIVES AND REGIONAL HISTORY COLLECTIONS**

The University Archives and Regional History Collections, located in the Dorothy U. Dalton Center, is a branch of the University Libraries. It is a depository for official University records, records of other institutions, and records of individuals. It is an active collecting center for records of the University and for records of organizations that have an impact on the history of Western Michigan. The Archives maintains a wide range of collections, including records of the University, records of other institutions, and records of individuals. It is an active collecting center for records of the University and for records of organizations that have an impact on the history of Western Michigan.

The **University Archival Collections** include records of the University, records of other institutions, and records of individuals. It is an active collecting center for records of the University and for records of organizations that have an impact on the history of Western Michigan.

**The Carol Ann Haenicke American Women's Poetry Room** contains a collection of poetry by American women poets. The collection includes microform collections, annual reports from businesses and industries, and many periodical and serial titles in the field of business and finance.

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The University Libraries have a large number of computerized services available to its users. The online catalog provides access to the University Libraries' collections by author, title, subject, and keyword. The Libraries' web page (http://www.wmich.edu/library) contains a listing of available databases and electronic resources. Terminals located in Waldo Library and its branches give the user access to these resources. Access is also available remotely from a home or office computer. Additional electronic indexes are provided on CD-ROM terminals located in reference areas.

The University Libraries participate in online interlibrary loan systems regionally, state-wide, nationally and internationally, and are also a member of a variety of multi-type library networks. They also hold membership in the Center for Research Libraries, a multi-million item collection located in Chicago which operates as a cooperative library for less-used but important research materials.

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General and specialized reference service is provided in the Central Reference Service Desk, the Science Reference Desk, and in the Documents Department in Waldo Library. Reference collections of indexes, abstracts, dictionaries, encyclopedias, handbooks, bibliographies, and other sources, are maintained in each of the libraries, and reference librarians offer personal assistance in finding the books, information, and other sources needed for class or research related problems.

Research materials which are not in the University Libraries' collections can usually be obtained from another library through interlibrary loan services located in the Resource Sharing Center of Waldo Library. The University Libraries participate in online interlibrary loan systems regionally, state-wide, nationally and internationally, and are also a member of a variety of multi-type library networks. They also hold membership in the Center for Research Libraries, a multi-million item collection located in Chicago which operates as a cooperative library for less-used but important research materials.

Self-service photocopy machines are located throughout the library system. These machines operate with coins or Bronco ID chip card and have enlarging and reduction capabilities. An attendant-operated copy service is located in the Copy Center in Waldo Library. Microform copiers are also available within the library system. Students aged in off-campus classes are always welcome at the University Libraries, where they have the same privileges as any other Western student and may bow materials from their Continuing Education identification card and freely use library services. Selected library services are also available through arrangements with the Regional Services in the locality where the classes are taught.

The major purpose of the University Libraries is to take an active role in the educational process at the University, and to provide facilities, materials, and an environment which will not only support the students' educational progress but also will encourage them to develop the habit of self-education.

**UNIVERSITY RECREATION PROGRAMS AND FACILITIES**

**Student Recreation Center**

(616) 387-3760

The Student Recreation Center (SRC) is a student-oriented, multi-use facility that is programmed, staffed, and financed by Western Michigan University Students. Recreational, educational, and health promotion programs are provided for the benefit of students, faculty, staff, spouses, emeriti and alumni faculty members. The facility includes an 8,000 square foot fitness/weight room with over 100 pieces of state-of-the-art equipment, a recreational pool with attached swim pool and saunas, a 45' climbing wall, indoor jogging track, basketball courts, volleyball and badminton courts, indoor tennis courts, 10 racquetball courts, aerobics room, multiple gyms, fitness testing laboratory, and much more.

The SRC is equipped with a state-of-the-art electronic security system to help protect our student-fundamented facility from vandalism and to ensure that all users are properly authorized. Only ID cards belonging to individuals who have paid the facility fee may gain access and take advantage of programs and services.

**Intramural Sports**

Intramural Sports are available for students, faculty, staff, and members of the SRC who are interested in competitive activities. The program offers both team and individual sports, including basketball, volleyball, soccer, softball, ice hockey, flag football, tennis, racquetball, in-line hockey, and much more. Intramurals provide opportunities for individuals to participate in sports experiences that will help them to develop team building and leadership skills. These experiences permit participants to set goals, relate to others, participate in physical activity, and enrich their lives. Opportunities for leadership are available for students who wish to officiate contests.

**Fitness Programs**

Fitness classes are available for individuals interested in improving their health and physical development through safe and effective exercise programs. A variety of instructor-led classes are offered, including water exercise, high/low aerobics, step aerobics, stretch and tone classes, kickboxing, jumprope classes, and yoga.

**Fitness Weight Room**

Located in the SRC, the 8,000 square foot fitness/weight room contains a full line of variable resistance weight machines and free weights, computerized exercise bicycles, stair climbers, rowers, and elliptical machines. Student Exercise Specialists are available to instruct on proper use of the equipment and to provide exercise training guidelines to meet personal goals.

**Phytechs**

PhyTechs is a fitness testing program designed exclusively for WMU students. The program offers free-of-charge fitness assessments and individual exercise program development for students who wish to develop and maintain a high level of physical fitness. The testing package includes health screening, blood pressure analysis, body composition, and physical assessments for flexibility, muscular strength and endurance, and cardiovascular endurance. A consultation is available to obtain personal exercise recommendations and guidelines based on current levels of physical fitness and personal goals.

**Climbing Wall**

The WMU Climbing Wall is designed to challenge and teach participants about the unique sport of indoor climbing. The wall is a top-rope system where climbers are harnessed in for safety. SRC members can come feel the excitement of scaling a 45 foot wall. Participants may also complete a climbing clinic to learn proper harnessing and belaying techniques.

**Special Events**

The SRC conducts one or two special events each semester, such as National Girls and Women Sports Day, Finals Finish, Sizzlin' Sampler, and the Turkey Trot Two Mile Run/Walk Race. These events may coincide with other University events or reflect a seasonal holiday theme. Games, activities, and contests are offered in an informal and celebrative atmosphere designed to provide interaction and tradition among the participants.

For more information on services and specific days and times of programs, pick up a SRC brochure or call 387-4REC. Current information may also be found on the web at "www.SRC.wmu.edu..."

**VETERANS' ASSISTANCE**

The Office of the Registrar, on the third floor of the Administration Building certifies students under the G.I. Bill and its extensions. The Veterans' Certification Officer will assist any person who seeks certification, or application, to the Veterans Administration under applicable programs.

Students who wish to receive V.A. benefits must annually file a "V.A. Certification Information Card" outlining plans for enrollment for the coming year. Students are certified on the basis of attendance and academic progress toward a declared degree. Address changes are also to be reported to the Veterans' Certification Officer as soon as possible.

In addition to normal scholarship standards, students receiving benefits from the Veterans Administration are advised of their additional rights and responsibilities. The Veterans' Certification Officer may be reached in the Office of the Registrar at (616) 387-4115.

**WRITING CENTER**

The Writing Center, located at 1039 Moore Hall, offers free one-on-one writing consultations and other writing assistance to all WMU students—undergraduate and graduate. A trained writing tutor will be glad to help student writers at any point of their writing projects, from pre-writing planning, writing the first draft, revising, or editing. Students are encouraged to make appointments for the fifty-minute conferences. Walk-ins are also welcome. Appointments should be scheduled on a first-come-first-served basis. Handouts on specific writing topics, a writing reference library, and computers are also available to students.

For hours of operation and other information, telephone 387-4615 or visit the Writing Center's website at http://www.wmich.edu/writing

**Writing Center Resource Library**

The Writing Center offers a hundred books on a variety of writing topics, including research paper writing, business and technical writing, and writing in the disciplines.
The Center also has resources for students whose first language is not English. Free handouts addressing many common writing concerns are also available.

Web-based Assistance
The Writing Center can be found on the World Wide Web at http://www.wmich.edu/writing. The website contains detailed information about Writing Center services and resources, as well as links to other writing resources on the WWW.

Writer's Hotline
Have a quick question about writing? Call the Writing Center's Writer's Hotline at 387-4615 during our regular hours of operation. We will be happy to assist in answering your brief questions about research paper formatting, punctuation, grammar, and other writing-related topics.

Research Writing Workshops
This series of three workshops prepares students to write effective research papers using either APA or MLA style. Workshop One covers planning the research paper, including selecting a topic, determining a purpose, and developing a working thesis. Workshop Two addresses ways students can integrate research material and their own ideas using summary, paraphrase, and direct quotation. Workshop Three covers the conventions for research paper citation and formatting. Workshops will be scheduled during each semester. Call or visit the Writing Center website for times, dates, and locations. Faculty may also schedule workshops for their classes.

Professional and Employment Writing Support
The Writing Center provides assistance to students who are writing applications, personal or professional statements, and resumes.
The mission of the College of Arts and Sciences, in accordance with the traditional stewardship of the liberal arts, is to engender in students those skills, attitudes, and habits of mind which permit them to challenge successfully a profoundly complex and changing world. To that end, the College of Arts and Sciences offers graduate courses and programs of study in the humanities, the social and behavioral sciences, and the physical, biological, and mathematical sciences. In addition to providing specialization in its many disciplines at the graduate level, the College provides opportunity for the liberal education of all graduate students at the University. The goals of the graduate programs within the College are specifically focused to offer research, teaching, and professional degrees to prepare the graduate to assume a leadership role in academe, government, and other institutions of society.

Graduate programs are offered at the master's degree level in Anthropology, Applied Economics, Applied Mathematics, Biological Sciences, Biostatistics, Chemistry, Communication, Comparative Religion, Computer Science, Economics, English, Foreign Languages and Literatures, Geography, Geosciences, History, Mathematics and Statistics, Medieval Studies, Philosophy, Physics, Political Science, Psychology, Public Affairs and Administration, Science Studies, Sociology, and Women's Studies.

American Studies Courses (AMS)

Open to Upperclass and Graduate Students

AMS 500 Special Topics in American Studies
3 hrs.
This course provides group study of special topics in American Studies. Topics will vary with the training and scholarship of the professor or professors involved. Prerequisites: At least 18 hours of courses approved in the American Studies Program, including AMS 200 and AMS 300, or graduate-student status in any participating department.

AMS 590 Interdisciplinary Theory and Methods
3 hrs.
This course will allow students to understand the development of American Studies from the early history and literature syntheses to the symbol and myth school to the social and cultural studies approaches that have drawn their techniques from anthropologists and other social and natural scientists. Prerequisites: At least 18 hours of courses approved in the American Studies Program, including AMS 200 and AMS 300, or graduate-student status in any participating department.

AMS 598 Independent Study
1-3 hrs.
An individual project is available to advanced students by special permission from the director of American Studies. Prerequisites: At least 18 hours of courses approved in the American Studies Program, including AMS 200 and AMS 300, or graduate-student status in any participating department.
Anthropology Courses (ANTH)

Open to Upperclass and Graduate Students

All 500-level courses have the following prerequisites:

- Junior/senior status and at least 12 credits in anthropology, including the specific prerequisite for each course.

ANTH 500 Topics in Archaeology

3 hrs.

A consideration of the prehistory of a particular geographic area (e.g., the southwestern United States, the Circumpolar) or of selected theoretical problems (e.g., artifact typology, prehistoric ecology). The topic to be studied will be announced each semester. May be repeated for credit. Prerequisites: Junior/senior status, 12 hours of Anthropology; and ANTH 110, 210, or consent of instructor.

ANTH 501 The Rise of Civilization

3 hrs.

The archaeological record in one or more of the nuclear centers of prehistoric civilization will be considered in some detail. The course may focus intensively upon one area, (e.g., the Near East or Meso-America) or it may give equal emphasis to two or more areas in a comparative framework. The specific area or areas to be studied will be announced each semester. May be repeated. Prerequisites: Junior/senior status, 12 hours of Anthropology; and ANTH 110, 210, or consent of instructor.

ANTH 502 The Origins of Agriculture

3 hrs.

An intensive study of the human transition from hunting-gathering to cultivation during the post-Pleistocene period. Topics to be treated include: both archaeological and botanical models to explain these processes; the comparison of agricultural systems in various parts of the world; the geographic distribution and biosystematics of selected cultivars; and the cultural systems which have arisen from the economic foundations of plant domestication. Prerequisites: Junior/senior status, 12 hours of Anthropology; and ANTH 110, 210, or consent of instructor.

ANTH 505 Social Archaeology

3 hrs.

Investigates the mechanisms of social, political, and economic integration within human social groups by analyzing and interpreting the material world. Focus will vary between communal and complex social forms. Prerequisites: Junior/senior status, 12 hours of Anthropology; and anthro of Anthropology, and ANTH 210 or consent of instructor.

ANTH 506 The Archaeology of Gender

3 hrs.

Gender constructs, a critical organizing principle for human interaction, are becoming an important focus for archaeological investigation. This course will explore the multiple ways archaeologists have attempted to use gender relations as a means to gain insights into individual societies. We will follow gender as an archaeological concept historically and conceptually. Participants will explore the attempts and successes of a gendered understanding of the archaeological record. Prerequisites: Junior/senior status, 12 hours of Anthropology, and ANTH 210.

ANTH 510 Human Biology

3 hrs.

An advanced course in the method and theory involved in the study of the biology of Homo sapiens. Aspects of Human Biology that will be studied include: the role of evolution in shaping human culture, will be explored in cross-cultural perspective, with examples drawn mostly from so-called "primitive art." Discussions will cover various theories about creativity and about interrelationships among art, artists, and culture, will be explored in cross-cultural perspective, with examples drawn mostly from so-called "primitive art." Discussions will cover...
the biology and evolution of art; cross-cultural aesthetics; sociocultural contexts such as issues of gender, power, patron-client relations; material culture; semiotics, ritual and healing; and acculturation processes in arts and crafts. Prerequisites: Junior/senior status, 12 hours of Anthropology, and ANTH 240 or consent of instructor.

ANTH 545 Topics in Sociocultural Anthropology 3 hrs.
An intensive study of the cultures of an area of the world or selected problems. Topic will be announced each semester. May be repeated for credit. Prerequisites: Junior/senior status, 12 hours of Anthropology, and ANTH 240 or consent of instructor.

ANTH 550 Human Evolution 3 hrs.
This course is designed to provide students with an intensive examination of the human fossil record from the initial divergence of the hominid lineage to the origin of modern Homo sapiens. Emphasized in this course will be paleontological theory, issues relating to species definition and recognition, functional anatomical complexes, adaptive processes, and human morphological variation. Prerequisites: Junior/senior status, 12 hours of Anthropology, and ANTH 250.

ANTH 551 Evolution of Human Culture 3 hrs.
This course is designed to provide a platform for discussion of hominid and early modern human culture. Questions for discussion include: Do non-human primates have culture? Is reproductive behavior related to the development of human culture? How can early hominid behavior be modeled? What constitutes modern human behavior in the archaeological record? The course will focus on three problem areas in Old World Prehistory: 1) Chimpanzee material culture and early hominid Oldowan assemblages; 2) the Middle Paleolithic and the origin of modern humans; and 3) the Upper Paleolithic and the cultural revolution. Prerequisites: Junior/senior status and 12 hours of Anthropology, including ANTH 210 or ANTH 250 or permission of instructor.

ANTH 552 Forensic Anthropology 3 hrs.
The study of biological anthropology as it applies to the legal system. Primary emphasis will be on skeletal and dental identification, facial reconstruction and analysis of lime since death. Courtroom procedures and responsibilities of the expert witness in the legal system will be covered. Prerequisites: Junior/senior status, 12 hours of Anthropology, and ANTH 250 or consent of instructor.

ANTH 555 Topics in Biological Anthropology 3 hrs.
A consideration of the biological relationships of specific population groups or 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. Prerequisites: Junior/senior status, 12 hours of Anthropology, and ANTH 250 or consent of instructor.

ANTH 583 Anthropology and History 3 hrs.
The course evaluates the relationship between anthropology and history through research selected works in each discipline. Theoretical and methodological similarities and differences will be addressed as well as how each discipline writes about the "other." Special attention will be given to the rhetorical devices employed to make ethnographic and historical accounts convincing and the potential to critical scholarship that the ongoing exchange between the two disciplines offers. Prerequisites: ANTH 240, graduate standing or consent of instructor.

Open to Graduate Students Only
ANTH 601 Seminar in Cultural Anthropology 3-4 hrs.
Intensive study of 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.

ANTH 602 Seminar in Archaeology 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.

ANTH 603 Seminar in Biological Anthropology 3-4 hrs.
Advanced instruction and research in the principal problem areas in biological 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.

ANTH 610 Topics in Archaeology 3 hrs.
An intensive study of a selected topic or emerging field in archaeology. Topics will vary and will be announced in the Schedule of Course Offerings. May be repeated for credit with different topics. Prerequisite: consent of instructor.

ANTH 640 Topics in Sociocultural Anthropology 3 hrs.
An intensive study of a selected topic or emerging field in sociocultural anthropology. Topics will vary and will be announced in the Schedule of Course Offerings. May be repeated for credit with different topics. Prerequisite: Consent of instructor.

ANTH 650 Topics in Biological Anthropology 3 hrs.
An intensive study of a selected topic or emerging field in biological anthropology. Topics will vary and will be announced in the Schedule of Course Offerings. May be repeated for credit with different topics. Prerequisite: Consent of instructor.

ANTH 690 Archaeological Field School 3 hrs.
Archaeological investigation of specific problems relating to the prehistory or history of a particular area (e.g., southwest Michigan, Lower Mississippi Valley). Participants will receive instruction in collecting and evaluating background information, creating a research design, and implementing archaeological fieldwork (i.e., logistics, site location survey, mapping, recovering and recording objects from archaeological contexts), and processing and curating data for analysis and interpretation in the laboratory. May be repeated with permission of instructor, but does not count toward M.A. program requirements twice. Prerequisite: ANTH 210 or consent of instructor.

ANTH 699 Independent Research in Anthropology 1-3 hrs.
Students may contact a faculty member to conduct research under the guidance of the faculty member. Before the initiation of the research a literature search and a written proposal must be prepared. At the conclusion of the research project, a written report will be submitted to the guiding faculty member. Prerequisite: Graduate standing.

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

ANTH 700 Master's Thesis 6 hrs.

ANTH 710 Independent Research 2-6 hrs.
Open to Upperclass and Graduate Students

A-S 604 Graduate Foreign Studies Seminar 1–6 hrs.
Seminars in the Social Sciences conducted outside the U.S. Students who complete such a seminar may receive credit in the department of Anthropology, Economics, Geography, History, Political Science, or Sociology, if the credit is approved by the chairperson of the department prior to registering for the seminar. May be repeated for credit. Prerequisite: Approval of the student's graduate advisor and the instructor.

A-S 605 Graduate Foreign Studies Seminar 1–6 hrs.
Seminars in the Humanities conducted outside of the traditional disciplines. The initiative for describing the project, planning the method(s) of investigation, determining appropriate product or results, and securing the cooperation of a faculty member to supervise the work must come from the student. Application forms may be picked up in the College of Arts and Sciences Advising Office and must be approved by the Dean of the College. Approval is contingent on the merit of the proposal. Repeatable to a maximum of 16 hours. Prerequisites: Approved application and permission of the instructor(s) and Dean of the College.

Open to Graduate Students Only

Foreign Studies Seminars
Students may receive up to six hours credit in any combination of departments as described provided the seminar is planned with that combination in mind. No student will receive credit under any of the course plans indicated here for work done in seminars planned and conducted by other institutions or for work done independent of seminars planned by the College of Arts and Sciences.

A-S 598 Directed Off-Campus Independent Studies 1–16 hrs.
A program of independent study that allows the student to pursue a subject that falls outside of the traditional disciplines. The initiative for describing the project, planning the method(s) of investigation, determining appropriate product or results, and securing the cooperation of a faculty member to supervise the work must come from the student. Application forms may be picked up in the College of Arts and Sciences Advising Office and must be approved by the Dean of the College. Approval is contingent on the merit of the proposal. Repeatable to a maximum of 16 hours. Prerequisites: Approved application and permission of the instructor(s) and Dean of the College.

Directed individual study of a specific topic in Japanese language, literature, or culture. May be repeated for credit to a maximum of three years. Prerequisites: Completion of four courses in Japanese or equivalent; minimum grade point average of 3.0 in Japanese; departmental approval required.

A-S 605 Independent Study in Chinese 1–3 hrs.
Directed individual study of a specific topic in Chinese language, literature, or culture. May be repeated for credit to a maximum of three years. Prerequisites: Completion of four courses in Chinese or equivalent; minimum grade point average of 3.0 in Chinese; departmental approval required.

ASIAN AND MIDDLE EASTERN LANGUAGES

Chinese Course (CHN)
Open to Upperclass and Graduate Students
CHN 550 Independent Study in Chinese 1–3 hrs.
Directed individual study of a specific topic in Chinese language, literature, or culture. May be repeated for credit to a maximum of three years. Prerequisites: Completion of four courses in Chinese or equivalent; minimum grade point average of 3.0 in Chinese; departmental approval required.

JAPANESE

Japanese Course (JPNS)
Open to Upperclass and Graduate Students
JPNS 550 Independent Study in Japanese 1–3 hrs.
Directed individual study of a specific topic in Japanese language, literature, or culture. May be repeated for credit. Prerequisites: Completion of four courses in Japanese or equivalent; minimum grade point average of 3.0 in Japanese; departmental approval required.

BIOLGICAL SCIENCES

Dr. Leonard Beuving, Chair
Main Office: 5330 McCracken Hall
Telephone: 387-5625
FAX: 387-2849
Todd Barkman
Bruce Bejcek
Leonard Beuving
Christine Byrd
David Cowan
Robert Eisenberg
Alexander Eryedi
Karim Essani
Gyuja Ficsor
John Geiser
Leonard Ginsberg
Charles Ide
William Jackson
John Jellies
David Karowe
Stephen Malcolm
Jay Meinis
David Reinhold
Silvia Rossbach
DelWayne Shoemaker
John Spitsbergen
Susan Stapleton

Master of Science in Biological Sciences
Advisor:
David Karowe,
Room 3155, Wood Hall

The Master of Science in Biological Sciences enhances students' ability to plan, conduct, analyze, and report original research. Course work increases students' scientific preparation and supports their research. Through the advice of the students' major advisor, efforts are made to choose courses to meet individual needs and interests. The degree may serve as preparation for continued graduate or professional study or for positions in the private or public sector. Thesis and non-thesis options are offered.

Admission Requirements
To be admitted to the master's program, both departmental and University requirements must be met. Application materials must be obtained from both the Department of Biological Sciences at (616) 387-5625 and the Office of Admissions and Orientation at (616) 387-2000. To be considered, an application must contain:
1. Completed University and Departmental application forms;
2. Official transcripts from all colleges and universities previously attended, indicating that the applicant has a. earned a Bachelor's degree from an accredited institution with an overall grade point average of at least 3.0, and b. taken appropriate courses in biology, chemistry, physics, and mathematics;
3. Official scores for the verbal, quantitative, and analytical sections of the Graduate Record Exam (these must be submitted to the Office of Admissions and Orientation);
4. Three letters of recommendation; and
5. A cover letter highlighting the student's most important accomplishments to date and indicating how graduate work at Western Michigan University will further the applicant's career goals.

Although not required for admission, applicants are encouraged to contact individual faculty to discuss their research interests. Students with academic deficiencies may be provisionally admitted and required to address their deficiencies during the first year in the graduate program.
Program Requirements
The Master of Science in Biological Sciences (thesis option) requires 33 hours of course work, including preparing and defending a thesis in an oral examination and presenting research results at a departmental seminar. The Master of Science in Biological Sciences (non-thesis option) requires 33 hours of course work, including presentation of research results at a departmental seminar, defense of research results in an oral examination, and preparation of a manuscript suitable for publication in a refereed journal (in consultation with the student's thesis committee).

Required Courses (11 hrs.)
There are 6 graduate core courses: BIOS 611, BIOS 612, BIOS 613, BIOS 614, BIOS 615 and BIOS 616. Master's students are required to take 3 of these 6, 1 from each of three pairs: BIOS 611 Eukaryotic Cell Biology or BIOS 612 Prokaryotic Cell Biology; BIOS 613 Animal Physiology or BIOS 614 Plant Physiology; and BIOS 615 Ecology or BIOS 616 Evolution. In addition, each student is required to take 2 hours of BIOS 605 Biological Sciences Colloquium.

Elective Courses (16 hrs.)
Elective courses are selected with the advice and approval of the student's advisory committee. Electives are selected from Biological Sciences or approved cognate courses.

Research Requirement (6 hrs.)
Thesis Option BIOS 700 Master's Thesis (6 hrs.)
Non-Thesis Option BIOS 710 Independent Research (6 hrs.)

Certificate Program in Electron Microscopy
Advisor: Leonard Beuving
Room 5351, McCracken Hall
The Graduate Certificate in Electron Microscopy allows students to acquire skills beyond the master's degree. The program consists of theoretical courses, practical preparations in the field, and training in interpretation of electron photomicrographs and operation and maintenance of the electron microscope. Graduates are equipped to be productive members of an operating electron microscopy laboratory.  

Admission Requirements
To be admitted to the Certificate Program, applicants must demonstrate competence in specimen preparation, equipment operation and maintenance, and photographic processing and printing. Competence is evaluated through an oral or written examination and practical demonstration of skills before a three-person committee consisting of at least two Biological Sciences faculty members.

For specific admission requirements, contact the Biological Imaging Center in the Department of Biological Sciences.

Doctor of Philosophy in Biological Sciences
Advisor: David Karow, Room 3155, Wood Hall
The Doctor of Philosophy in Biological Sciences at Western Michigan University offers a unique combination of traditional research experience, breadth of course work, and training in effective communication of scientific concepts. This program is specifically designed for students who wish to pursue careers in the biological sciences that require excellence in both teaching and research. In addition, the pedagogy requirement requires candidates to present in an oral examination and practical demonstration of teaching skills.

Admission Requirements
Application materials may be obtained from the Office of Admissions and Orientation. A special application form is required for candidates for admission. Application materials may be obtained from the Office of Admissions and Orientation.

Conservation
The Graduate Certificate in Electron Microscopy is approved for graduate credit by the Office of Graduate Studies.

Certificate Structure: Prior to the first teaching experience, the student must establish a Teaching Committee. The teaching committee will be composed of one faculty member in Biological Sciences, one faculty member in Science Studies, and one representative from the biology department of a collaborating two- or four-year college. At the end of the first year, or before taking the first independent research hours (BIOS 735), a Dissertation Committee should be constituted. The Dissertation Committee will be composed of at least four members, including the major professor, two or more members of the Department of Biological Sciences, and one or more outside examiners.

Candidacy
No later than the end of the third calendar year after enrollment in the Ph.D. program, the applicant must seek candidacy. By this time the student should have completed the distribution requirements of the research tools requirement, and a preliminary plan for the dissertation endorsement by the Dissertation Committee. To be admitted to candidacy, the student must successfully complete the Comprehensive Examination. This exam, administered by the Graduate Advisor, will examine the student over the biological sciences as topics covered in the distribution requirements. Students will be given a grade of pass or fail. This exam may be retaken once in the event of failure.

Candidacy will be approved or denied by the Graduate Advisor based upon successful completion of the Comprehensive Examination, a positive recommendation of the Dissertation Committee, and the student's performance in course work, a positive recommendation from the teaching advisory committee, and successful performance in all other professionally related activities, including teaching assistants.

Program Requirements
1. A minimum of 76 graduate semester hours. These hours shall consist of the following:
   a. 18 hours of distribution courses.
      i. BIOS 611, Eukaryotic Cell Biology (3 hrs.)
      ii. BIOS 612, Prokaryotic Cell Biology (3 hrs.)
      iii. BIOS 613, Animal Physiology (3 hrs.)
      iv. BIOS 614, Plant Physiology (3 hrs.)
      v. BIOS 615, Ecology (3 hrs.)
   b. At least 21 hours of electives chosen from the graduate offerings of Biological Sciences or other departments appropriate to the student's research interest as agreed upon by the student and the Dissertation Committee.
   c. Three hours of BIOS 699 taken during three laboratory rotations.
   d. Four hours of BIOS 610 (Teaching of Biological Sciences), including a formal course and three Teaching Experiences.
   e. Doctoral Research composed of 15 hours of BIOS 735 (Independent Research) and 15 hours of BIOS 730 (Doctoral Dissertation).

2. Satisfaction of the research tools requirement.

3. Successful completion of Comprehensive Examination.


5. Any other requirements as specified by the Graduate College.

General Plan and Sequence of the Program
1. Students will satisfy any curricular deficiencies beginning with the first semester in residence.
2. Core courses should be taken early in the program to assist in preparation for the Comprehensive Examination. These courses and the electives need not be taken in sequence.

3. Course work pertaining to teaching and Teaching Experiences should be initiated no later than the second year of graduate study.

Financial Assistance

The Department of Biological Sciences offers opportunities for financial support of doctoral students through Graduate Assistantships and Fellowships. Individuals desiring further information about such opportunities, or about the graduate program, should contact the Graduate Advisor and The Graduate College.

Biological Sciences Courses (BIOS)

Open to Upperclass and Graduate Students

All 500-level courses have the following Prerequisites: Junior/senior standing and at least 12 credits in biology, including the specific prerequisite for each course.

BIOS 507 The Biology of Addictive Drugs 3 hrs.

The study of modes of action and effects of psychoactive drugs, such as alcohol, marijuana, cocaine, amphetamines, heroin, methadone, LSD, PCP, and nicotine. Prerequisite: An introductory physiology course or enrollment in the Specialty Program in Alcohol and Drug Abuse or consent of instructor.

BIOS 512 Environment and Health Problems 3 hrs.

The impact of the environment on the health of the individual and of populations, the resulting physiological and anatomical difficulties, and the various means employed in meeting these challenges.

BIOS 518 Endocrinology 3 hrs.

A survey of the hormonal integration of organ-system function, including the chemical nature of these secretions, the cellular and biochemical mechanisms of hormone actions, and the endocrine feedback control mechanisms. The regulatory nature of hormones in developmental processes, in adaptation, and in disease processes will be stressed. Prerequisite: BIOS 350; biochemistry is recommended.

BIOS 524 Microbial Genetics 3 hrs. Fall (alternate years)

A lecture/seminar course emphasizing modern microbial genetics, as well as historic keystone experiments. This course focuses on work carried out with bacteria and bacteriophages. Concepts include mutation and selection, recombination and repair, DNA cloning and mutagenesis procedures, regulation of gene expression, differential gene expression in response to environmental stimuli, and genome organizations. Prerequisites: BIOS 312 Microbiology and BIOS 250 Genetics, or consent of instructor.

BIOS 526 Molecular Biology Laboratory 3 hrs.

This course is designed to expose students to techniques that are currently being used to manipulate and analyze nucleic acids. Students will gain extensive hands-on experience with restriction mapping, ligations, bacterial transformations, eukaryotic gene-replacements, gel electrophoresis, non-isotopic hybridizations, as well as application of the polymerase chain reaction (PCR). Experimental design, use of appropriate controls and handling of acquired data will be stressed. Prerequisite: BIOS 250 Genetics, BIOS 312 Microbiology, CHEM 375 Organic Chemistry I, CHEM 376 Organic Chemistry Lab I.

BIOS 528 Biology of Non-Vascular Plants 4 hrs.

A detailed comparative study of the morphology, life cycles, and ecology of the algae, fungi, and bryophytes. Laboratory study will be complemented by field investigations. An independent project may be required. Prerequisite: BIOS 202.

BIOS 529 Biology of Vascular Plants 4 hrs.

A detailed comparative study of the morphology, life cycles, and phylogeny of the vascular plants. Laboratory study will be complemented by field trips. An independent project may be required. Prerequisite: BIOS 202.

BIOS 530 Bryology 3 hrs.

Mosses and liverworts will be studied in lecture, lab, field trips, and herbarium. Aspects of bryophyte ecology, systematics, and biogeography will be considered. Microscope and keying techniques will be developed. Each student will produce personal collections and keys. Prerequisite: BIOS 202.

BIOS 531 Biology of Aging 3 hrs.

This course is designed to provide students 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. Prerequisite: An introductory physiology course.

BIOS 534 Virology 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: BIOS 312; biochemistry is recommended.

BIOS 536 Immunology 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. Prerequisite: BIOS 312; biochemistry is recommended.

BIOS 542 Entomology 4 hrs.

This course is a general study of insects, their structure, classification, physiology, life histories, ecological relationships, and economic importance. Students will learn to identify common families of insects, and make individual collections. Prerequisite: BIOS 151.

BIOS 547 Ornithology 3 hrs.

An introductory course that explores both scientific and popular aspects of bird study. Life history, behavior, ecology, and identification are emphasized.

BIOS 549 Field Ecology 3 hrs.

Field studies of forest, native grassland, wetlands, and other local ecosystems. Plant and animal composition, geological history, human effects, succession, and other aspects of the structure and working of ecosystems are integrated. Field ecological methods are emphasized. Prerequisite: BIOS 301 or equivalent.

BIOS 553 Limnology 3 hrs.

Biological, chemical, and physical aspects of lakes, ponds, and streams. Ecological relationships of invertebrate animals and lower plants are emphasized. Prerequisite: BIOS 151.

BIOS 557 Water Pollution Biology 3 hrs.

A comparison of organisms which live in clean waters as contrasted with those in polluted waters. Streams, lakes and ponds will be studied. Water condition studies will be made, and the use of biological indicators will be studied. The course will include field trips, laboratory work and lecture presentations. Prerequisite: BIOS 202.

BIOS 559 Neurobiology 4 hrs. Fall

The substrate of behavior will be examined in this interdisciplinary survey of neural structure and function in molecular, cellular, and system levels. There will be a strong emphasis on underlying mechanisms in different animal models. Lecture and discussion will be integrated and supplemented by demonstrations. Topics covered will include: membrane biophysics, synaptic physiology, transduction and signaling in the visual, auditory, chemical and somatosensory systems, reflexes, simple behavior and plasticity. Prerequisites: BIOS 350 and college-level courses in Physics and Biochemistry, or consent of instructor.

BIOS 560 Toxicology 3 hrs. Fall

Through a lecture/discussion format, the means by which toxicants exert their effects on mammalian, aquatic and ecological systems will be explored. Topics will include: bioaccumulation, distribution and excretion of chemicals in the body, the role of metabolism in enhancing or reducing toxicity, mechanisms of toxicity and the effects of toxicants on the major organ systems. Chemodynamic processes which control exposure of organisms will be presented in the context of risk assessment, and the problems inherent in predicting and quantifying risks will be discussed. This course is cross-listed with CHEM 556. Prerequisites: BIOS 350, and chemistry through biochemistry, or permission of instructor.

BIOS 561 Pharmacology 3 hrs. Winter (alternate years)

The study of the mode of action of drugs in the body. Topics may include, but are not limited to pharmacokinetics, pharmacodynamics, autonomic pharmacology, cardiovascular pharmacology, and renal pharmacology. The course will consist of approximately 50 percent lecture and 50 percent student presentations on selected topics. Prerequisites: BIOS 350 and a course in organic chemistry.

BIOS 570 General Pathology 4 hrs.

An introduction to pathology which describes the structural and biochemical changes occurring in cells and tissues following injury or disease. Prerequisite: BIOS core curriculum and organic chemistry.

BIOS 574 Embryology 4 hrs.

Embryology is the study of the development of an organism from a single fertilized cell to a complex multicellular fetus. The course will present this material from both 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.
BIOS 587 Topics in Biological Sciences 3-4 hrs.
Lectures or seminars in various areas of the biological sciences will be offered. The student's record will indicate the topic studied. May be repeated for credit.

BIOS 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 up to a maximum of six hours. Prerequisite: Consent of instructor.

BIOS 602 Seminar: Variable Topics 2-6 hrs.
Several seminars in various areas of Biological 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.

BIOS 605 Biological Sciences Colloquium 1 hr.
A series of seminars describing current research in various fields in the Biological Sciences. Reports on these research seminars are required. May be repeated for a total of 2 hours. Graded on a "Credit/No Credit" basis. Prerequisite: Admission to a department degree program.

BIOS 610 Teaching of Biological Sciences 1-4 hrs.
This course will provide instructional techniques for the teaching of Biological Sciences at the college or secondary level. May be repeated for credit. Prerequisite: Consent of instructor.

BIOS 611 Eukaryotic Cell Biology 3 hrs.
A study of the structure and function of the organelles and biochemical components of eukaryotic cells. Through lectures and readings in current literature, students will examine the latest information on the workings of eukaryotic cells. Prerequisite: A course in biochemistry.

BIOS 612 Prokaryotic Cell Biology 3 hrs.
Bacterial structure-function relationships are examined in a biochemical context. Current and classical concepts of cell biochemistry are organized around the bacterial cell as a model for understanding energetics, synthesis of cell structures, transport, metabolism, and regulatory mechanisms. Readings will be from the literature and substantial use will be made of review articles in biochemistry and microbiology for lecture topics. One paper will be required. Prerequisites: A course in biochemistry and a course in microbiology or consent of instructor.

BIOS 613 Animal Physiology 3 hrs.
Current concepts and molecular details of modern systems physiology will be examined through lecture, readings from the current literature, discussion, and student presentations. Emphasis will be placed on understanding the mechanisms used by the organ systems of animals to maintain homeostasis. Prerequisite: A course in physiology or consent of instructor.

BIOS 614 Plant Physiology 3 hrs.
An advanced topics course covering the current research emphases on the physiology, molecular biology, environmental biology, biochemistry, and cell biology of plants. Prerequisite: Biochemistry.

BIOS 615 Ecology 3 hrs.
The structure and dynamics of plant and animal populations are considered with critical evaluations of current concepts. Emphases include the relative roles of competition and trophic interactions in population dynamics and how communities are structured. Applications of ecological concepts will consider aspects of conversation biology, pest control, agroecosystem function, and risks of genetic engineering. Prerequisite: A course in Ecology or consent of instructor.

BIOS 616 Evolution 3 hrs.
Evolution is approached as the all encompassing theory of biology. Topics range from genetic and molecular issues to adaptation in life histories and behavior. At least one paper will be required. Course readings will be drawn primarily from journal articles. Prerequisites: A course in genetics and a course in ecology or consent of instructor.

BIOS 620 Mutagenesis/Carcinogenesis 3 hrs.
Through lectures, presentations by students, and reading of the current literature, the mechanism of action, impact on human health as well as practical aspects of detection of mutagens and carcinogens are examined. Prerequisites: A course in genetics and a course in biochemistry or consent of instructor.

BIOS 630 Biological Imaging 3 hrs.
A technique-oriented course stressing preparatory procedures and use of various biological imaging methods. These will include both transmission and scanning electron microscopy, fluorescence microscopy, laser-scanning confocal microscopy, and image analysis. Prerequisite: Consent of instructor.

BIOS 632 Advanced Techniques in Electron Microscopy 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 biologic problems. The course will be personalized instruction 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 material preparation. The student will conduct detailed examinations of his/her preparations and prepare critical critiques. Prerequisite: Consent of instructor.

BIOS 633 Topics in Biological Sciences 3 hrs.
Courses in which a selected area of biological sciences is studied in depth. Possible topics will reflect the areas of expertise of the biological sciences faculty. The specific topic dealt with in a given semester will be indicated in the Schedule of Course Offerings and on the student's record. Students may take one or all topics offered for credit. Prerequisite: Consent of instructor.

BIOS 699 Laboratory Rotations 1-4 hrs.
This course provides credit for Laboratory Rotation requirement of the Ph.D. program. Students will carry out directed studies in a research laboratory different from the laboratory where their thesis research is conducted.

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

BIOS 700 Master's Thesis 6 hrs.

BIOS 710 Independent Research 2-6 hrs.

BIOS 712 Professional Field Experience 2-12 hrs.

BIOS 730 Doctoral Dissertation 15 hrs.

BIOS 735 Graduate Research 2-10 hrs.
The requirement for any of the above 500-level training in chemistry, to attend departmental defense of his or her thesis administered by corresponding course as an undergraduate. Students who fail an entrance examination are required to attend the corresponding undergraduate course, if available, or make specific arrangements with the appropriate division. Enrollment in a 600-level Chemistry course is not permitted unless the appropriate entrance requirement has been satisfied.

Program Requirements
The student is required to elect twenty hours in the field of Chemistry, including the Master's Thesis. The Chemistry hours may be more than twenty depending on the student's background. The remaining hours up to at least thirty hours may be in a related field or fields. The course sequence will include (if not previously elected):
1. CHEM 505, Chemical Literature.
2. CHEM 506, Chemical Laboratory Safety.
3. CHEM 520, Instrumental Methods in Chemistry.
4. CHEM 515, Inorganic Chemistry or CHEM 550, Biochemistry I or CHEM 552, Biochemistry I with Laboratory.
5. CHEM 601, Graduate Seminar. (Attendance required every semester.)
6. Three 600-level courses from three different divisions (Analytical, Biochemistry, Inorganic, Organic, and Physical), including one course in the division of the Master's Thesis.
7. CHEM 703, 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 defense of his or her thesis administered by the student's graduate committee. The student is also required, as part of the graduate training in chemistry, to attend departmental seminars, colloquia, and symposia, and to participate in research within the department.

Doctor of Philosophy in Chemistry
The Doctor of Philosophy in Chemistry, with emphasis in environmental chemistry, is a research degree designed for persons intending to take a leadership role in teaching and/or research in applied areas of environmental chemistry. The program takes an innovative approach, using the skills and expertise provided by the traditional areas of chemical study as the foundation for addressing chemical processes occurring in the atmosphere, biosphere, hydrosphere, and lithosphere. The program is designed to offer flexibility so that a full-time student may complete the degree in four years and a nontraditional student may be accommodated around full-time employment. The educational goals of the program stress a well-rounded expertise in chemistry, as well as a literate acquaintance with another environmentally related discipline such as biological science, hydrogeology, or paper science. These educational goals provide scientific breadth not often found in traditional chemistry degrees. Combining formal education with a research endeavor encompassing a chemical discipline will provide students with the high quality education necessary to contribute to the resolution of the expected and unexpected environmental issues of the future.

Admission Requirements
Applicants to the program will be expected to meet the entrance requirements of The Graduate College and hold a bachelor's degree in chemistry or equivalent amount of experience or training. Application must be made to both the Office of Admissions and Orientation, Graduate Admissions, and to the department. Prospective students are required to take the Graduate Record Examination General Test and the Chemistry or Biochemistry Subject Test. Three letters of recommendation from academic or professional sources should accompany the application. Application material, including grade point average, transcripts, performance on GRE's, and letters of recommendation will all be used in the determination of admission and financial support.

Program Requirements
1. After admission, the student will be required to take standardized placement examinations. Identified deficiencies, if any, will be remedied with appropriate course work determined by an academic advisor.
2. Within the first academic year, students will select a research advisor and a major area of study. Selection of the research advisor will be by mutual consent of the faculty member and student. Selection of the student's major area of study will be determined in conjunction with the research advisor. Major areas of study currently include analytical chemistry, biochemistry, inorganic chemistry, organic chemistry, and physical chemistry. Shortly after selecting a research advisor, a dissertation committee should be established. The committee should be comprised of the advisor serving as chair and at least two other faculty from the department and one member from outside the department. No more than two of the departmental committee members should be from the student's major area of study. Emeritus faculty may serve on the committee. Removal of a committee member will require mutual consent of the
6. The student, after successful completion of no less than 12 CUME questions, will be required to defend a written proposal for a unique research topic. The proposal topic must be unrelated to the student's current dissertation research project and must be approved by the student's dissertation committee.

7. To be considered a candidate for the degree and to ensure a timely completion of the program, a full-time student should have completed the following by the end of the third year:
   a. Any deficiencies identified by the entrance examinations.
   b. At least five (5) of the seven (7) required chemistry courses with a minimum course grade point average of 3.25.
   c. Twelve (12) cumulative examination questions.
   d. The proposal defense.

8. The program is designed to allow the flexibility of tailoring the curriculum to the needs of the student. Thus, the research tools requirement includes professional tools that facilitate successful academic, government, or industrial careers. Where necessary, satisfaction of the research tools requirement, including approval of appropriate courses, shall be determined by the dissertation committee. The committee can be petitioned regarding significant experience or expertise in these areas, which generally implies the use of a research tool in the context of current or prior employment or internships. The research tools component shall be met when a student successfully accomplishes two of the following tasks:
   a. Demonstrates competence in computer programming and use by receiving a grade of "B" or better in an approved elective computer science course, or by sufficient previous coursework, or by applying programming to a research problem. Such application could be through design and use of a program subroutine to analyze data acquired from a scientific instrument, computer modeling and simulation, design and analysis of algorithms or database management.
   b. Achieves a working knowledge of statistics by receiving a grade of "B" or better in an approved electives course or by showing the ability to apply advanced statistical analysis such as multivariate analysis to a scientific problem.
   c. Shows proficiency in the design or manufacture of electronic circuits and devices by constructing an instrument used in a research project or by receiving a grade of "B" or better in an appropriate course.
   d. Masters the design, repair, and development of the required instrumentation used as part of an upper-level course or in a research project.
   e. Demonstrates a reading knowledge of one of the foreign languages important in the chemical literature or chemical industry (French, German, Russian, Japanese) by receiving a grade of "B" or better in a 401 course in one of the languages, by passing a standardized examination, or by successfully translating a technical article assigned by the department.

9. The Ph.D. candidate must complete and successfully defend a dissertation on a research topic approved by the dissertation committee.

Financial Assistance

The Department of Chemistry offers opportunities for financial support of graduate students through several departmental, University, and grant-funded fellowships and teaching or research assistantships. Information and applications are available from the Department of Chemistry.

Chemistry Courses (CHEM)

Open to Upperclass and Graduate Students

Undergraduates with junior or senior status and 12 credit hours in chemistry may enroll in 500-level courses with prior approval of the department chair.

CHEM 505 Chemical Literature 2 hrs.

An introduction to the use of the various types of chemical literature such as journals, abstracts, monographs, government and institutional publications, and patents. Both manual and computer search techniques are employed in the course of completing assigned problems involving searches in analytical, biological, inorganic, organic, and physical chemistry fields. Prerequisite: Twenty-three hours of chemistry.

CHEM 506 Chemical Laboratory Safety 3 hrs.

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.

CHEM 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.

CHEM 515 Inorganic Chemistry 3 hrs.

This course, along with CHEM 570 and CHEM 575, provides a capstone chemistry experience for undergraduates. The course will present the principles of inorganic chemistry in terms of its relevance to the "real world" of industry and environmental protection. Topics include symmetry, structure, and bonding, as well as a survey of the descriptive chemistry of the elements. Students are strongly advised to have already completed CHEM 570 and to be registered simultaneously in CHEM 575. Prerequisite: CHEM 431 or permission of instructor.

CHEM 520 Instrumental Methods in Chemistry 3 hrs.

An introduction to the theory and application of modern chemical instrumental analysis 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.

CHEM 525 Techniques in Water Analysis 2 hrs.

Analytical techniques and methodology commonly used to determine water quality are presented. Modern instrumental methods are stressed with particular emphasis on spectroscopic and chromatographic measurements. Laboratory provides practical experience in application of principles discussed in lecture. Not available to Chemistry majors. Prerequisite: CHEM 377.

CHEM 528 Chemical Separations 3 hrs.

Principles and applications of chemical separations, including distillation, crystallization, extraction, electrophoresis and a variety of chromatographic techniques.
Laboratory exercises illustrate typical applications of the methods. Prerequisite: CHEM 377.

CHEM 550 Biochemistry I
3 hrs. Third of a three-course sequence. The chemistry, properties, and molecular biology of proteins and nucleic acids. Includes discussions of amino acids, enzymes, and biochemical energetics. Prerequisites: CHEM 377, 378, and 430.

CHEM 552 Biochemistry II with Laboratory
4 hrs. This course consists of 550 plus lab. Experiments involve more advanced techniques and instrumentation than in 356 laboratory. Emphasis will be on purification and properties of proteins and nucleic acids. Prerequisites: CHEM 377, 378, and 430.

CHEM 554 Biochemistry III
3 hrs. Continuation of 550. Chemistry and metabolism of carbohydrates and lipids. Metabolism of amino acids and photosynthesis. Prerequisite: CHEM 550 or 552.

CHEM 558 Toxicology
3 hrs. Fall. Through a lecture/discussion format, the means by which toxicants exert their effects on mammalian, aquatic and ecological systems will be explored. Topics will include bioaccumulation, distribution and excetration of chemicals in the body, the role of metabolism in enhancing or reducing toxicity, mechanisms of toxicity and the effects of toxicants on the major organ systems. Chemodynamic processes which control exposure of organisms will be presented in the context of risk assessment, and the problems inherent in predicting and controlling risks will be discussed. This course is cross-listed with BIOS 560. Prerequisites: BIOS 350, and chemistry through biochemistry, or permission of instructor.

CHEM 570 Advanced Organic Chemistry and Spectroscopy
3 hrs. This course, along with CHEM 515 and CHEM 575, provides a capstone chemistry experience for undergraduates. The course expands on fundamentals of organic reactions and mechanisms through investigations of molecular structure and reactivity. Students will gain experience in modern spectral interpretation and will learn to use the organic chemical literature and databases. Prerequisites: CHEM 377, 378, 431 and 24 hours of Chemistry.

CHEM 575 Advanced Chemical Synthesis
2 hrs. This course provides a synthetic laboratory experience for undergraduates in conjunction with the CHEM 570 and CHEM 515 capstone courses. The fundamentals of synthetic techniques will be exercised through independent synthetic laboratory projects and detailed investigations of molecular structure using modern spectroscopic methods. Students will get hands-on experience with modern spectroscopic instrumentation and will learn to utilize the chemical literature and databases. It is strongly recommended that CHEM 570 be taken before CHEM 575 to prepare students for spectral interpretation. Prerequisites: CHEM 377, 378, 431, 520 or permission of the instructor.

CHEM 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 CHEM 370, 371 and CHEM 375, 376.

CHEM 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. Graded on a Credit/No Credit basis. Prerequisites: Twenty-four hours of chemistry, which includes CHEM 436, and approval of the department chairperson and a faculty director.

Open to Graduate Students Only
CHEM 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.).

CHEM 609 Advanced Topics in Chemistry
3 hrs. Topics are presented at a more advanced level than that used for undergraduate courses. Representative topics would be Organometallic Chemistry, Theories of Liquids and Solutions, Organic Reaction Chemistry, etc., the offering of which would depend on student interest. Repeatable for credit. Prerequisite: Consent of instructor.

CHEM 610 Advanced Inorganic Chemistry
3 hrs. Covers the principles in inorganic chemistry and the chemical elements. Such topics as extraneous structures 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 continues to the chemical elements and their compounds. Prerequisite: CHEM 515.

CHEM 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 515.

CHEM 622 Theory of Analytical Chemistry
3 hrs. A course in the fundamental principles underlying current 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 sampling, experiment design, and interpretation of results. Prerequisite: CHEM 431.

CHEM 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; fluorimetry; and other selected topics. Prerequisite: CHEM 520.

CHEM 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.

CHEM 626 Chemical Instrumentation
3 hrs. Principles and characteristics of construction and design for chemical and optical instruments. Prerequisite: CHEM 520.

CHEM 627 Spectrochemical Instrumentation and Techniques in Environmental Analysis
3 hrs. This course will cover how optical and mass spectrometric methods can be applied to the analysis of environmental samples. The scope will include both theory and applications involving instrumental techniques used for elemental and molecular spectrometric analysis. The course will be arranged in such a manner as to point out that the choice of analytical technique will depend on the type of information being sought, the characteristics of the analyte, and the sample form. Prerequisite: CHEM 520.

CHEM 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 approximate methods 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.

CHEM 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.

CHEM 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.

CHEM 637 Aquatic Chemistry
3 hrs. This course will examine the physical and chemical processes that control the chemical composition of natural water systems, including lakes, rivers, estuaries, oceans, and groundwater. It will examine what effects pertinent factors like pH, Eh, temperature, and salinity have on these processes, and how these processes control the fate of a pollutant when it enters a natural water system. This course requires a knowledge of basic physical chemistry. Prerequisite: CHEM 450 or equivalent.

CHEM 638 Surfaces in the Environment
3 hrs. This course will examine the physical and analytical chemistry of environmentally important interfaces. Topics will include: dry deposition, heterogeneous catalysis, and surface photochemistry in the atmosphere; surface phenomena in liquid-gas exchange; and soil binding of pollutants. Prerequisites: MATH 123, CHEM 430, 431, or equivalent. (MATH 230 recommended.)

CHEM 650 Proteins and Nucleic Acids

CHEM 654 Environmental Influences on Biomolecules
3 hrs. An examination of how environmental factors influence biomolecule expression, stability, metabolism, and evolution. Prerequisites: CHEM 550 or equivalent.
and function. Prerequisites: CHEM 550 and 554.

CHEM 655 Environmental Carcinogenesis 3 hrs.
The effect of environmental agents such as ultraviolet light, ozone, components of cigarette smoke, and auto emissions on human health will be discussed with an emphasis on the biochemical interaction of these agents with DNA and how DNA repair enzymes act to protect organisms from the harmful effects of these agents. Prerequisite: Consent of instructor.

CHEM 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 and reduction, condensation, etc. Prerequisites: CHEM 377, 378.

CHEM 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 377, 378, and 431.

CHEM 667 Atmospheric Chemistry 3 hrs.
An examination of the fundamental physical and chemical processes in the lower and middle atmosphere. Relationships with biogeochemical cycles will be investigated, and issues of human influence will be discussed. Prerequisites: CHEM 377, 430.

CHEM 668 Environmental Organic Chemistry 3 hrs.
An examination of how the environmental fate of organic compounds is influenced both by the physical and chemical properties of those compounds and by the phases occurring in environmental compartments. Focuses on aquatic systems. Prerequisites: CHEM 377, 431.

CHEM 690 Special Investigations in Chemistry 1–6 hrs.
Research or independent study in one of the specialties of a member of the Chemistry Department. Graded on a credit/no credit basis. May be repeated for credit. This course cannot be used to partially satisfy the 600-level distributional degree program requirement of the Chemistry Department. Prerequisite: Consent of Instructor.

CHEM 695 Graduate Coop/Internship 1–4 hrs.
Research or practical training experience outside the department or university. This work is to be summarized in a written report. Consent of the instructor is required so that students can be assigned to an employer in order to best serve both student and employer. Course is repeatable up to 6 credit hours. Graded on a Credit/No Credit basis. Prerequisite: Consent of Instructor.

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

CHEM 700 Master's Thesis 6 hrs.

CHEM 730 Doctoral Dissertation 15 hrs.

COMMUNICATION

Dr. Steven Rhodes, Chair
Main Office: Third Floor, Sprau Tower
Telephone: 387–3130
FAX: 387–3990
URL: http://www.wmich.edu/communication

Sandra Borden
Nancy Cornwell
Loren Crane
Richard Dieker
Leigh Ford
Wendy Ford
Richard Gershon
Melissa Gibson
James Gilchrist
Keith Heart
Joseph Kayary
Maria Lapinski-LaFaeve
Steven Lipkin
Peter Northouse
Paul Nwulu
Mark Orbe
Tommas Pagel
Kathleen Prokop
Steven Rhodes
George Robock
William Santiago-Velles
Thomas Sill
Paul Veterna

Master of Arts in Communication

Advisor and Director, Graduate Program:
Dr. Shirley A. Van Hooven,
Room 312, Sprau Tower

The Master of Arts in Communication has three options:

Option A—Interpersonal Communication,
Option B—Organizational Communication,
and
Option C—Telecommunications.

The option in Interpersonal Communication is designed for students interested in improving their knowledge and ability in interpersonal communication, with potential application in a variety of human service professions. The option in Organizational Communication is designed for those students whose professional interests involve using communication in an organizational setting. The option in Telecommunications is designed for those students who wish to learn about the theory underlying the uses of telecommunication technologies, the practical applications of the technologies by organizations, and the operations of this expanded area of business. Individual programs are designed in consultation with the graduate advisor based on a student’s needs, interests, and professional 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. Submission of Graduate Record Examination (GRE) scores is highly recommended. Undergraduate work in communication, speech, or allied disciplines is expected of all applicants. Academic deficiencies or reservations may be determined at the time of application.

Program Requirements

OPTION A—INTERPERSONAL COMMUNICATION

The Interpersonal Communication option is intended for students who desire a terminal degree or who wish to qualify for further graduate work. Students will take courses with an emphasis in interpersonal communication. A thesis is recommended for those considering further graduate work in communication. Elective credit may include course work in interpersonal, organizational, or telecommunications, and up to 6 hours of graduate credit from another department.

Required Courses 9 hours

COM 601 Introduction to Graduate Study in Communication 3
COM 602 Communication Research Methods 3
COM 674 Theories of Interpersonal Communication 3

Elective Courses 12 hours

Select electives to complete 33 hours, which may include up to 6 cognate hours from other departments, selected in consultation with the advisor.

Total 33 hours

*See the Graduate Advisor for the list of approved courses. Each semester the student is enrolled, he/she must consult with the Graduate Advisor.

OPTION B—ORGANIZATIONAL COMMUNICATION

The Organizational Communication option is designed for those students desiring an understanding of the communication process in organizations, the role of communication among its members, and a knowledge of preparation, presentation, and effects of messages in organizations. The program will prepare individuals for positions in corporate affairs, human resources, public relations and information services, and for such positions as the directors or coordinators of communication in organizations.

This program also is designed for those currently in the field of organizational communication—that is, individuals holding (or expecting to hold) positions in organizations which require high levels of communication activity and ability. Training for such positions involves the development of effective communication functioning organizations as well as dealing with non-routine matters such as: (1) facilitating the flow of ideas and personnel contacts among those individuals and groups concerned with the development of new projects such as action research programs; (2) coordinating diverse members and groups for organizational projects; (3) coordinating efforts to resolve conflicts among individuals and groups within the organization; and (4) 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.
Telecommunications is the process of these new uses of telecommunications

Telecommunications is the study of the use of teleconferencing, and other technologies used for interpersonal point-to-point communication with the aim of competing for business with each other and as decision support systems, video and audio data communications networks, and advanced intelligent networks.

Traditionally, these technologies were used for mass entertainment (television and radio) and for interpersonal point-to-point communication (telephone), but are now widely used by business, government, and education. All of these new telecommunications technologies occur in the context of extensive government regulations, at both the national and international levels. People making use of these technologies, must, therefore, be knowledgeable of the regulatory context.

The telecommunications option is intended for those students who wish to learn about the theory underlying the uses of these telecommunications technologies, the practical applications of the technologies by organizations, and the operations of this expanding area of business.

A thesis is recommended for those considering further graduate work in communication. Elective credit may include course work in interpersonal, organizational, or telecommunications, and up to six hours of graduate credit from another department.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>COM 601</td>
<td>Introduction to Graduate Study in Communication</td>
<td>3</td>
</tr>
<tr>
<td>COM 602</td>
<td>Communication Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>COM 682</td>
<td>Organizational Communication</td>
<td>3</td>
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</tbody>
</table>

**Elective Courses**

Select electives to complete the 33 hours, which may include up to 6 cognate hours from other departments, selected in consultation with the advisor.

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<tr>
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<th>Hours</th>
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<tbody>
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<td>COM 604</td>
<td>Seminar in Organizational Communication</td>
<td>3</td>
</tr>
<tr>
<td>COM 683</td>
<td>Power and Leadership in Organizational Communication</td>
<td>3</td>
</tr>
<tr>
<td>COM 685</td>
<td>Special Topics in Organizational Communication*</td>
<td>3</td>
</tr>
</tbody>
</table>

**Thesis Option Requirements**

An approved statistics course* | 3 |

**Graduate Electives**

Select electives to complete the 33 hours, which may include up to 6 cognate hours from other departments, selected in consultation with the advisor.

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<th>Hours</th>
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<td>Seminar in Organizational Communication</td>
<td>3</td>
</tr>
<tr>
<td>COM 640</td>
<td>Special Topics in Organizational Communication*</td>
<td>3</td>
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</tbody>
</table>

**Thesis Option Requirements**

An approved statistics course* | 3 |

**Graduate Electives**

Select electives to complete the 33 hours, which may include up to 6 cognate hours from other departments, selected in consultation with the advisor.

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<tr>
<td>COM 640</td>
<td>Special Topics in Organizational Communication*</td>
<td>3</td>
</tr>
</tbody>
</table>

**Communication Courses (COM)**

Open to Undergraduate and Graduate Students

Undergraduates with junior or senior status and 15 hours of COM or related courses may enroll in 500-level courses with prior approval of advisor and/or instructor.

**COM 505 Special Topics in Communication**

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 Course Offerings; some are added during the semester. Further information and a full listing of topics may be obtained from the departmental offices, 301 Sprau Tower. Six (6) hours of COM 505 approved by an advisor may be accumulated as credit toward a Master of Arts in Communication.

**COM 506 Special Topics in Telecommunications**

Study of special topics in telecommunications management, law and policy, and technology. Prerequisite: COM 240 and junior or senior standing; or graduate standing.

**COM 507 Freedom of Expression**

3 hrs.

The tradition and justifications for freedom of expression are explored and applied to contemporary concerns from private, interpersonal, organizational, and mass media-based communication. Beginning with the historical roots of freedom of expression, students will trace the rise of modern First Amendment rights, through careful case analysis. Topics to be investigated include free expression on the Internet and in the mass media, hate speech, speech codes, sexual harassment, freedom of expression in the workplace, corporate free speech rights and other topical free speech issues. Prerequisite: Junior, Senior, or graduate standing.

**COM 541 Telecommunications Law and Policy**

3 hrs.

Provides an overview of the essential regulatory and policy issues governing the field of telecommunications. Special attention is given to such topics as libel, privacy, access and right to reply, and copyright. A case study approach is used for the purpose of understanding legal precedent. Prerequisite: COM 200 or graduate standing.

**COM 551 Methods of Media Analysis**

An investigation of the approaches to media analysis (auteur, internationalist, sociological, structural, historical, ideological, psychological) by intensive "reading" and shot sequence examination and evaluation of widely divergent works. Prerequisite: COM 241 or 356 or graduate standing.

**COM 554 Communication Technology**

3 hrs.

This course provides an overview of telecommunications technology and services. The course is intended for the manager who requires a "practical" understanding of the design and performance characteristics of such telecommunication technology as satellite, optical fiber, PBX, and cellular telephone communications. In addition, this course will include an appropriate measure of economic, regulatory, and policy issues as they pertain to the development of new and enhanced telecommunication services. Prerequisite: COM 240 or graduate standing.

**COM 564 Telecommunications Networks**

3 hrs.

This course provides an overview of telecommunication networking technologies, standards, and protocols. Network configurations, switching technologies and signaling standards that sustain voice and data communications networks, corporate networks, and advanced intelligent networks are major sections of the course. Prerequisite: Junior or Senior standing and COM 240 or graduate standing.

Open to Graduate Students Only

**COM 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.
COM 601 Introduction to Graduate Study in Communication 3 hrs.
Introduces Communication graduate students to the research literature, methodology, and theoretical domains of the communication discipline. Students will learn the standards of scholarly writing and be introduced to the criteria for choosing and evaluating research methodologies.

COM 602 Communication Research 3 hrs.
This course is an introduction to the methods of conducting communication research. Although an overview will be provided of all methodologies, the primary focus of the course will be on those applied methods associated with organizational communication. A lecture/discussion/experiential format will be used.

COM 603 Teaching Communication 3 hrs.
Introduces the pedagogy of the communication discipline, focusing on teaching methods appropriate to the undergraduate classroom. Particular attention will be paid to learning theory, teaching methods, course and syllabus preparation, computer use, audiovisual materials, test selection, diversity, encouraging participation, and academic honesty. This course will be required of new teaching assistants in the Department of Communication. Laboratory exercises for the course will be related to students' teaching assignments. Prerequisite: Teaching Assistantship in the Department of Communication or special approval of the Graduate Director and instructor.

COM 604 Seminar in Communication Ethics 3 hrs.
An in-depth examination of a central issue in communication ethics as it manifests itself in different contexts, including mass communication, organizational communication, and interpersonal communication. Issues may vary from term to term. Examples include deception, confidentiality, autonomy, and privacy.

COM 640 Seminar in Telecommunications 3 hrs.
Exploration of selected topics in telecommunication. Possible topics, each of which may be taken for credit, include: A. Communication Technology and B. Effects of Mass Media.

COM 641 Theories of Telecommunications Uses and Effects 3 hrs.
Examines issues related to mass communication and its effects on individuals, organizations, and society. Primary emphasis of this course will be on media effects theory and research, with a consideration of related ethical issues.

COM 643 Telecommunications and Organizational Planning 3 hrs.
An overview of the basic principles involved in the management and implementation of telecommunications services within public and private organizations. Participants are introduced to three sectors of the telecommunications field, including broadcasting, cable, and telephone communications.

COM 644 News Media and the Organization 3 hrs.
This course is designed for students of communication interested in the function and operation of the news media and its relationship to organizations. Focuses upon the effects of the news media on public opinion which can influence an organization's goals, as well as an understanding of the structure of news organizations, the forces that drive them, and the basis of news decisions.

COM 647 Corporate and Organizational Video 3 hrs.
An extensive survey of the many ways television is used by organizations, including sales presentations, on-the-job training, customer information, and employee news. The role of the organizational television (OTV) department and the duties of an OTV producer are discussed. Students develop proposals for new OTV programs and criteria for judging the effectiveness of OTV videos. Teleconferencing, interactive video, and conventional delivery methods will be compared.

COM 670 Seminar in Interpersonal Communication 3 hrs.
Exploration of selected topics in communication theory. Possible topics, each of which may be taken for credit, include: A. Nonverbal Communication; B. Personality and Communication; C. Family Communication; D. Health Communication; E. Female/Male Interaction; F. Intercultural Communication; and G. Intergroup Communication.

COM 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.

COM 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.

COM 674 Theories of Interpersonal Communication 3 hrs.
A study of the dynamics of interpersonal communication from various theoretical perspectives. Emphasis is on the assumptions, conceptualizations, and models which explain how people interact at the content and relationship levels.

COM 680 Seminar in Organizational Communication 3 hrs.
Exploration of selected topics in organizational communication theory. Possible topics, each of which may be taken for credit, include: A. Organizational Communication Ethics; B. Communication and Organizational Culture; C. Advanced Organizational Communication; and D. Corporate Advocacy.

COM 681 Group Communication Processes 3 hrs.
A study of small group communication as it affects problem solving and decision making procedures. Emphasizes 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.

COM 682 Organizational Communication 3 hrs.
This course examines the theoretical foundations and research methodologies of organizational communication. Students will apply this theory and research in analyzing a functioning organization. The focus is on a system analysis in diagnosing communication problems and developing plans for change.

COM 683 Power and Leadership in Organizational Communication 3 hrs.
This course is designed to study power and leadership within the organization from a communication perspective of sender and receiver of messages. Students will examine research in power, leadership traits, styles, contingency theories, and group leadership approaches and make application to individual career development.

COM 685 Special Topics in Organizational Communication Research 3 hrs.
Intensive group study of special topics in applied organizational communication. Possible topics, each of which may be taken for credit, include: A. Communication Training and Development; B. Interviewing for Managers; C. Public Relations for Managers; D. Communication and Customer Service; and E. Organizational Communication Technology.

COM 690 Special Topics in Communication Research 3 hrs.
Offers focused training in specialized methods of communication research. Possible topics, each of which may be taken for credit, include: A. Ethnographic Research in Communication; B. Critical Research in Communication; C. Survey Research in Communication; D. Organizational Communication Assessment; and E. Communication Training Evaluation Methods. Prerequisite: COM 662 or equivalent graduate level research methods course.

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

COM 700 Master's Thesis 6 hrs.

COM 710 Independent Research 2-6 hrs.

COM 712 Professional Field Experience 2-6 hrs.
comparative religion

Dr. E. Thomas Lawson, Chair
Main Office: 223 Moore Hall
Telephone: 387-3931
FAX: 387-4914
E. Thomas Lawson
H. Byron Earhart
David Ede
Nancy Falk
Francis Gross, Jr.
Timothy Light
Jacin Mckeroy
Susanne Mrozik
Rudolf Siebert
Brian C. Wilson

Master of Arts in Comparative Religion

Advisor: Brian C. Wilson
Room 214, Moore Hall

The Master of Arts in Comparative Religion is designed to provide students with a strong foundation of knowledge of at least two religious traditions, the principal classical works in the field of Comparative Religion, and the central issues of theory and method that underlie the discipline of the study of religion.

Admission Requirements
1. The completion of a baccalaureate degree from an accredited institution.
2. The submission of a letter of intent stating specific areas of interest and academic and professional goals.
3. Two letters of recommendation from persons able to evaluate the applicant's potential for graduate study.
4. Submission of Graduate Record Examination scores.

Program Requirements
The Department of Comparative Religion offers course work leading to a Master of Arts in Comparative Religion, with two options:

OPTION I
Students pursuing this option will:
1. Complete a total of at least 27 hours of course work, including 12 hours of required core courses (REL 600, 610, 615, and 620) and 15 hours of electives chosen from approved courses.
2. Pass a master's thesis (6 hours) under the direction of a thesis advisor.
3. Demonstrate reading proficiency in one foreign language relevant to the research area.
4. Defend the master's thesis in oral examination.

OPTION II
This option does not require the preparation of a thesis. Students pursuing this option will:
1. Complete a total of at least 33 hours of course work, including 15 hours of required core courses (REL 600, 610, 615, and 620) and 21 hours of approved electives.
2. Complete satisfactorily a comprehensive examination in the area or areas of concentration.
3. Demonstrate reading proficiency in one foreign language relevant to their research area.

Doctor of Philosophy in Comparative Religion

The Doctor of Philosophy in Comparative Religion is designed to prepare students to teach in colleges and universities, and to initiate new areas of research. It requires of all students a breadth of knowledge in the religious traditions of humankind, depth of knowledge in at least two traditions, a thorough grasp of the principal classical works in the history of the study of religion, and sophisticated grasp of the central issues of theory and method that underlie the discipline as a whole. Ph.D. students will be expected to complete the equivalent of Western Michigan University's M.A. in Comparative Religion, with thesis. Students will become candidates for the Ph.D. after completing the course work, foreign languages, and comprehensive examination requirements. The doctoral dissertation will demonstrate the student's ability to develop comparative approaches to religious traditions, sophistication in method and theory, and understanding of specific religious traditions.

Program Requirements
The Ph.D. in Comparative Religion requires a minimum of 81 semester hours beyond the bachelor's degree. This includes work at the master's level and 15 hours devoted to the doctoral dissertation. Fluency in two foreign languages (one in language of scholarship, the other in a primary language of one religious tradition) is also required but is not counted as part of the minimum credit hours requirement.

Required Courses
Students who are accepted into the program from a baccalaureate program must fulfill the following requirements.
1. REL 600 Classics I (3 credits)
2. REL 601 Classics II (3 credits)
3. REL 610 Theory and Method I (3 credits)
4. REL 611 Theory and Method II (3 credits)
5. REL 615 Survey of Religious of the World (3 credits)
6. REL 616 Teaching Comparative Religion (3 credits)
7. REL 620 Advanced Seminar in Comparative Religion (3 credits)
8. REL 695 Dissertation Tutorial (3 credits)
9. REL 700 Master's Thesis (6 hours) or equivalent
10. REL 730 Doctoral Dissertation (15 hours)

Thirteen (13) credits of approved work on religious traditions. In consultation with the student's advisor, some of this work may be taken outside the Department of Comparative Religion.

Cognate Courses
Approved cognate courses may be drawn from related disciplines such as Anthropology, Philosophy, Sociology, Psychology, English, History, and Art History in consultation with the student's advisor.

Comparative Religion Courses (REL)

Open to Underclass and Graduate Students
Undergraduates with junior or senior status and two previous courses in Religion may enroll in 500-level courses.
REL 500 Historical Studies in Religion 2-4 hrs.
The topic to be announced in the Schedule of Course Offerings. The content of the course will vary from semester to semester. Students may repeat the course for credit as long as the subject matter is different. Topics such as the following will be studied: Scientific Issues in the Study of Religion; the Critical Theory; Myth and Symbol in Religion and Literature.
REL 510 Morphological and Phenomenological Studies in Religion 2-4 hrs.
The topic to be announced in the Schedule of Course Offerings. 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 Yogas; the Occult Tradition.
REL 511 Women in Religion 3 hrs.
Drawing together materials from many religious traditions, this course explores religion's effect on women, and women's effect on religion. It attends especially to women's roles in traditions studied—both roles allotted to women and roles women shape for themselves. It also traces repeating patterns in women's religious experience and evaluates common explanations for such patterns.
REL 520 Methodological Studies in Religion 2-4 hrs.
The topic to be announced in the Schedule of Course Offerings. The content of the course will vary from semester to semester. Students may repeat the course for credit as long as the subject matter is different. Topics such as the following will be studied: Scientific Issues in the Study of Religion; the Critical Theory; Myth and Symbol in Religion and Literature.
REL 521 The Teaching of Religion in the Public School 2 hrs.
This course focuses on methods and issues involved in the teaching of religion in the public school. Particular attention given to the problems of its constitutionality, the distinction between the academic study of religion and religious instruction, and the question of meaning. Various approaches to the teaching of religion are critically evaluated. Teaching methods appropriate to the level of instruction, availability, organization, selection, and use of materials will be discussed. Required of all students following a Secondary Education Curriculum which includes the academic study of religions as a minor.
REL 530 Constructive Studies in Religion 2-4 hrs.
The topic to be announced in the Schedule of Course Offerings. 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 Images of Man; Christian Humanism; the Structure of Religion; the Future of Religion; Religion, Language, and Structuralism.
REL 598 Readings in Religion 1-4 hrs.
Research on some selected period or topic under supervision of a member of the Religion faculty. Approval of instructor involved and Chairperson of the Department must be secured in advance of registration.

Open to Graduate Students Only
REL 600 Classics in Comparative Religion 3 hrs.
A systematic study of the most important scholarly works in Comparative Religion. Special attention will be paid to the historical context in which these classics were produced, their role in intellectual history, and their contributions to the humanities and the social sciences.
REL 601 Classics II 3 hrs.
A continuation of REL 600 with an emphasis upon more recent works in the humanities and
the sciences that have precipitated new forms of inquiry about religious thought and practice. Special attention will be paid to the arguments about interpretive methods typical of the humanities versus explanatory theorizing typical of the sciences and their relevance for understanding religion in comparative perspective.

REL 610 Theory and Method I
3 hrs.
An examination of the major theoretical options for understanding and explaining religion in comparative perspective and the major methods employed by theoreticians in their development of such theoretical options. Particular attention will be paid to intellectualist, symbolist, and structuralist, ideological, emotivist, and cognitive method and theory.

REL 611 Theory and Method II
3 hrs.
A continuation of REL 610 with an emphasis upon case studies for specific historical and cultural contexts. The course will focus specifically on the contributions that the cognitive sciences have made and continue to make to causal explanations of religion. Particular attention will be paid to the developmental literature having to do with the conditions for the acquisition and the transmission of cultural knowledge.

REL 615 Survey of Religions of the World
3 hrs.
A survey of ten major religious traditions; each tradition will be studied through its historical development, its unified system (symbols, beliefs, and rituals), and dynamics (actual practices such as annual celebrations, rites of passage). While learning the content of individual traditions and exploring the comparative questions between/among traditions, students will focus on the issues of teaching about religion generally and the problematics of presenting individual traditions. This course will balance content of religious traditions and pedagogical techniques as a way of preparing students to teach basic courses in religion.

REL 616 Teaching Comparative Religion
3 hrs.
A course introducing the content and pedagogy of comparative religion, focusing on ten major religious traditions and the teaching methods appropriate for the undergraduate classroom. Particular attention will be paid to learning theory, teaching methods, course preparation, syllabus design, computer use (especially the PASS program), audiovisual materials, and text selection. Students will be introduced to the classroom situation under the mentorship of a faculty member by leading discussions, delivering lectures, and preparing and grading examinations.

REL 620 Advanced Seminar in Comparative Religion
3 hrs.
Advanced study in a major problem area of comparative research in the religions of humankind. May be repeated for credit when topics vary. Prerequisite: Consent of instructor.

REL 695 Dissertation Tutorial
3 hrs.
Planning and preparation for the dissertation, including selection of an appropriate topic. The student will work with an advisor to develop a dissertation proposal to be submitted to his/her Ph.D. committee. The tutorial will entail preparation of a preliminary bibliography, readings in basic sources and examination of the ideas and materials related to the subject, selection of essential sources, and sketching of the dissertation outline. (This course is a prerequisite for REL 730, Doctoral Dissertation.)

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

REL 700 Master's Thesis
6 hrs.
REL 710 Independent Research
2-6 hrs.
REL 712 Professional Field Experience
2-12 hrs.
REL 730 Doctoral Dissertation
15 hrs. Prerequisite: REL 695

COMPUTER SCIENCE

Dr. Ajay Gupta, Chair
Main Office: 3308 Friedmann Hall
Telephone: 387-5645
FAX: 387-3999

Elise de Doncker
Ajay Gupta
Donna Kaminski
John Kapenga
Karlis Kaugsers
Mark Kersletter, Director of Undergraduate Programs
Dionysios Kountanis
Mukesh Mohania
Dalia Motzkin
Donald Nelson, Director of Graduate Programs
Thomas F. Padkrowski
Ben Pinkowski
Robert Tremain
Kenneth Williams
Li Yang

Master of Science in Computer Science

Advisor:
Donald Nelson,
Room 3308, Friedmann Hall

The master's program in computer science emphasizes both computer software development and the theoretical foundations of computer science. It is designed to prepare students for professional positions in business, industry, and government and to provide preparation for graduate work at the doctoral level.

Areas of faculty specialization include algorithmic complexity theory, artificial intelligence, computational chemistry, computational geometry, computer architecture, computer graphics, computer networking, computer system performance, cooperative problem solving, data warehousing and mining, distributed and mobile data bases, evolutionary computation, expert systems, fault-tolerant computing, formal specifications, graph algorithms, hardware and software codesign, human-computer interaction and visualization, knowledge-based systems, language and automata theory, logic programming, mathematical and computer modeling, multimedia databases and systems, neural networks, parallel and sequential algorithms, pattern recognition and image processing, scientific computing and numerical analysis, simulation, and software engineering. The program also permits student to acquire expertise in closely related fields such as computer engineering and mathematics.

The master's program is designed to allow a full-time student entering with a strong undergraduate background in computer science to complete all degree requirements within sixteen months. However, it is not uncommon for a student to take somewhat longer.

Admission Requirements
A successful applicant to the master's program in computer science must satisfy:
1. All of the general admission criteria identified in the Graduate Catalog.
2. Submission of transcripts of prior education. Applicant should have earned or expect to earn an undergraduate degree in a program with significant computer science and mathematics content:
   a. In computer science: Computer assembly language, computer organization, data structures, object-oriented and structured programming, file structures, and logic design.
Dr. S. O. Philosophy in Computer Science

The doctoral program in computer science is designed to develop computer scientists with research expertise in computer science. Specific areas of emphasis include theoretical computer science, artificial intelligence, computational geometry, computer architecture, computer graphics, computer networking, computer performance, cooperative problem solving, data warehousing and mining, distributed and mobile data bases, evolutionary computation, expert systems, fault tolerant computing, formal specifications, graph algorithms, hardware and software codesign, human-computer interaction and visualization, knowledge-based systems, languages and automata theory, logic programming, mathematical and computer modeling, multimedia databases and systems, neural networks, parallel and sequential algorithms, pattern recognition and image processing, scientific computing and numerical analysis, simulation, and software engineering. The plan also permits student to acquire expertise in closely related fields such as computer engineering and mathematics.

Students completing the program are typically well qualified for teaching and research positions in colleges and universities as well as national and international industries and laboratories.

The doctoral program is designed to allow a full-time student entering with a Master's of Science in Computer Science to complete all degree requirements within three years. However, it is not uncommon for doctoral programs to take somewhat longer.

Admission Requirements

A successful applicant to the doctoral program in computer science must satisfy:

1. All of the general admission criteria identified in the Graduate Catalog.
2. Submission of transcripts of prior education:
   a. Applicant should have earned or expect to earn a master's degree in computer science. Ann applicant with a master's degree in electrical or computer engineering, mathematics or a related field with at least a 3.5 GPA (on a 4.0 scale) in their master's-level computer science courses will also be considered.
   b. An outstanding student who has not completed a master's degree but who has met all other admission requirements may be considered for admission to the Ph.D. program.
3. Submission of the results of the verbal, analytical, quantitative, and computer science area portions of the Graduate Record Examination (GRE).
4. Submission of three letters of reference from persons able to assess the student's qualifications for doctoral-level study and likelihood of success; the student and referees would use the forms and procedures available from the department.
5. Submission of a resume that includes a description of academic background and professional experience.
6. Submission of an essay describing the applicant's academic and professional objectives.
7. For international students, the submission of the TOEFL examination result.

Program Requirements

The plan of study allows for considerable variety of emphasis; student can take advantage of the strengths of the department in matching their interest in professional development.

A successful candidate for the Ph.D. in Computer Science is responsible for all the general requirements for a doctoral degree as stated in the Graduate Catalog. The remainder of this section restates some of the general requirements and includes additional requirements specific to the doctoral program in computer science.

1. A student having prerequisite requirements as a condition of admission must complete all prerequisites before being considered for admission to the doctoral program.
2. The Ph.D. in Computer Science requires beyond the student's master's degree the completion of at least 30 hrs. of course work and 12 to 24 hours of dissertation credits. This implies a total of at least 72 credit hours of graduate work. The following courses are required of each student prior to completion of the Ph.D. program: CS 525, 526, 554, 581, 625, 626, 631, 632, 655, 680, 681, and 730.
3. Each Ph.D. candidate must obtain departmental approval and demonstrate mastery of two of the following three research skills:
   a. A foreign language other than English, with competency equivalent to a 400-level course at WMU.
   b. Statistics or probability at the level of MATH 362 or MATH 364.

4. Before admission to Candidacy for the doctoral degree, the student must pass a general qualifying examination in Computer Science. Students admitted with a master's degree in computer science or qualifying examination no later than the first time offered after completion of 15 credit hours and must take a secondary examination no later than the first time offered after completion of 30 credit hours. All students must complete all their qualifying examinations no later than the first time offered after completion of 45 credit hours. A student has one opportunity to repeat the qualifying examination. There are five examination topics in two categories as follows:
   a. Systems: Computer architecture (CS 525, CS 625); Compiler design (CS 581, CS 681); Operating systems (CS 554, CS 655).
   b. Theory: Design and analysis of algorithms (CS 531, CS 631); Theory of computation (CS 580, CS 680). The student must select three of the five areas for his or her qualifying examination, with at least one exam from each category. The student will have the opportunity to repeat a portion of the qualifying examination once, but may not change the selected areas.

The department will determine what area(s) of the examination, if any, the student must take:

5. Each doctoral candidate must obtain approval from his or her dissertation committee for a dissertation topic and research plan. This approval process is called the preliminary examination and is structured by each dissertation committee to fit each candidate's program.
preliminary examination must be completed within one year after passing the qualifying examination and at least one year in advance of the dissertation defense. A candidate has one opportunity to repeat the preliminary examination.

A doctoral dissertation, which is the culmination of an original and substantive research effort by the candidate, must be completed and publicly defended. This study is done under the supervision of a dissertation director and dissertation committee. A dissertation director is appointed by the department, typically within the candidate's first two years in the doctoral program and based on the candidate's interests. The doctoral dissertation committee is comprised of the dissertation director and at least two other members of the graduate faculty, at least one of whom shall be from outside the department. The committee members facilitate and guide the candidate's academic and research development.

Before a candidate is awarded the Ph.D. degree, a member of the doctoral dissertation committee must approve the dissertation. The completed dissertation is presented by the candidate at a public seminar and oral defense.

Financial Assistance

Students accepted into the doctoral program may apply for one of the department's numerous graduate teaching and research assistantships. In addition, advanced Ph.D. students may apply for one of a limited number of departmental assistantships. Graduate internship opportunities with local industries are also available. Applications for research and assistantships should be sent directly to the Department of Computer Science. The forms and instructions for applying for financial assistance can be obtained from the department and at the departmental website. Information about non-departmental assistantships and fellowships, tuition remission, special assistance for minority graduate students, general research funds, and tuition grants is available from The Graduate College. Information about student loans and other federal, state, and University need-based financial aid programs is available from the Office of Financial Aid and Scholarships.

Computer Science Courses (CS)

Open to Undergraduate Students Undergraduates with junior or senior status who have met the specific course prerequisites or have the permission of the instructor may enroll in 500-level courses.

CS 503 Programming the Microcomputer for Teachers 3 hrs.

A course in programming at an intermediate level for teachers. An introduction to file handling and graphics on small computers will be provided. Flowcharting, top-down design and the algorithms are stressed. Some programming projects in each teacher's area of interest will be assigned. Not for Computer Science majors or minors (except teaching). Prerequisite: CS 502 or equivalent experience.

CS 518 Introduction to Computer Modeling and Simulation 3 hrs.

This course provides an overview of both model development and computer simulation. A methodology is introduced which is generally applicable to simulation projects. The relationships between real systems, models, and simulation are presented, and the concept of experimental frames is discussed. General purpose simulation languages (e.g. Simscript, GPSS, CSMP, Simula) and the formalisms they support are presented. An introduction to random variables and elementary frequency distributions is provided. Simulation as a tool for exploring ill-defined systems will also be discussed. Several small programs and a simulation project will be assigned. Prerequisites: CS 331 and a course in probability or statistics.

CS 525 Computer Architecture 3 hrs.

General topics in computer architecture, memory systems design and evaluation, pipeline design techniques, RISC architectures, vector computers, VLSI systems, and computer architecture. Prerequisites: ECE 250, CS 223 or ECE 251, and CS 331.

CS 526 Parallel Computations I 3 hrs.

Covers architecture, synchronization and communication aspects of parallel and distributed systems. This course will focus on the design and analysis of algorithms which have a prototype treatment on current machines. These algorithms may include parallel sorting, combinatorial search, graph search and traversal, applications in graphics, 2-d finite differences, 2-d finite element techniques, matrix algorithms and the Fast Fourier Transform. Prerequisite: CS 331.


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: CS 331 and MATH 230.

CS 530 Artificial Neural Systems 3 hrs.

An introduction to neural net concepts, algorithms, and applications. A history of neural nets will be presented along with some discussion of models of biological neural systems. The salient features of a neural net (architecture, activation functions, weighting scheme) will be characterized. Standard algorithms will be presented including Hopfield nets, linear associative models, bidirectional associative memories, and adaptive resonance models. The student will use neural net software to experiment with standard models and to develop an application for a project. Prerequisite: CS 331. An introductory statistics course is recommended.

CS 531 Design and Analysis of Algorithms 3 hrs.

A continuation of the study of data structures and algorithms. It provides a theoretical foundation in computer science. The focus is on the advanced analysis of algorithms and on how the selections of different data structures affect the performance of algorithms. Algorithmic paradigms such as divide and conquer, greedy method, dynamic programming, backtracking and branch, and bound are studied. Trees and a variety of graph structures are discussed along with their applications to algorithm implementation. Algorithms will be analyzed for their complexity. NP-completeness will be introduced.

Prerequisites: CS 331 and MATH 145 or equivalent.

CS 532 Introduction to Evolutionary Computation 3 hrs.

Introduction to optimization algorithms which operate using the principles of Darwinian evolution. Both underlying theory and practical applications. Genetic algorithms, evolutionary programs, and evolution strategies. This course is cross-listed with ECE 532. Prerequisite: CS 331.

CS 543 Principles of Database Management Systems 3 hrs.

The fundamental concepts of database design and efficient usage are presented. Topics include: an overview of data bases; the three data models—relational, hierarchical, and network; conceptual, logical, and physical database design and evaluation. The design theory of relational data models will be emphasized. Query languages, query optimization, security, integrity, and concurrency protocols will also be covered. A student may not receive credit for both CS 443 and CS 543. Prerequisite: CS 331.

CS 554 Operating Systems 3 hrs.

The internal and external views of computer operating systems are presented. A historical survey of the development and growth of operating systems is given. Fundamentals of systems and system design are stressed. Basic concepts and terminology are emphasized. Processes, communication and synchronization, deadlocks, scheduling, shared resources, resource allocation, and deadlock, memory management, files management, and protection are discussed. Applications to real systems are investigated to motivate the ideas presented. Students build or run simulations and modify the internals of a working operating system. Prerequisites: CS 224 and CS 331.

CS 555 Computer Networks and Distributed Systems 3 hrs.

The design and evaluation of computer networks using current hardware and software are explained. Various types of computer buses, local area networks, and long haul networks are defined. Case studies of popular networks are presented. These include local area and long haul networks. Prerequisites: CS 224 and CS 331.

CS 580 Theory of Computation 3 hrs.

Provides an introduction to the theory of computation in the framework of programming languages. Basic definitions and concepts dealing with algorithms, sets, relations, functions, induction, operations on functions and cardinality are covered. Primitive and partial recursive functions are defined, and their properties treated with application to coding techniques. The Church-Turing hierarchy of languages, including recursive and recursively enumerable sets and their acceptors, is introduced. Students are assigned theoretical as well as implementation oriented problems. Prerequisites: CS 331 and MATH 145.

CS 581 Compiler Design and Implementation 3 hrs.

Students are introduced to major aspects of compiler design. These include lexical analysis, parsing, and translation. Each student will implement a small compiler using modern compiler writing tools. Prerequisite: CS 485 or CS 580.
This course provides an overview of artificial intelligence including basic A.I. techniques and concepts, e.g., production systems, heuristic techniques, knowledge representation, predicate calculus, and pattern recognition. It introduces A.I. application areas such as game playing, expert systems, vision, natural language processing, and learning. Prerequisite: CS 33.

CS 595 Advanced Topics in Computer and Information Science 1–3 hrs.

The content of this course varies. It is intended to introduce the student to advanced topics which are normally offered as separate courses. The course may be taken more than once with approval of the student's advisor. Prerequisite: Approval of department.

Open to Graduate Students Only

CS 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. Prerequisite: Approval of department.

CS 625 Advanced Computer Architecture 3 hrs.

Multiprocessor architectures, various interconnection networks, communication and synchronization techniques, data flow architectures. Prerequisite: CS 525

CS 626 Parallel Computations II 3 hrs.

This course will focus on advanced topics in Parallel Computations, such as on algorithms in the areas of graph algorithms, numerical algorithms, computer graphics and VLSI design, and on aspects of operating systems and languages. Students will be expected to read research papers and complete a semester project involving the use and implementation of parallel programming paradigms on current machines. Prerequisite: CS 526

CS 627 Computer Graphics II 3 hrs.

A course in advanced computer graphics topics selected from current research. Some of the areas of interest include: visualization of complex processes, full motion video, virtual reality, client/server protocols and parallel image rendering. Emphasis is on research, and students are expected to participate in a research project with a faculty member during the course. Prerequisite: CS 527

CS 628 Parallel Scientific Computations 3 hrs.

This course will focus on the design and analysis of parallel numerical algorithms to solve problems such as singular value decomposition and the solution of linear systems for structured/banded and sparse matrices; partial differential equations; and multivariate numerical integration. Applications may include the solution of wave equations, hydrodynamic flow, particle dynamics, finite element applications and Monte Carlo methods. Prerequisites: CS 526 and MATH 230.

CS 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. The uses of data structures in a variety of application areas are covered. Introduces complex data structures. Prerequisite: CS 531.

CS 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 computer organization 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: CS 531 and 580.

CS 633 Computational Geometry 3 hrs.

Design and analysis of algorithms for computational geometry problems and discussion of applications in databases, computer graphics and VLSI design. Specific topics may include Geometric Formulation, Geometric Searching, Point Location, Multidimensional Problems, Range Trees, Convex Hulls, Simple Polygons, Voronoi Diagrams, and the Geometry of a Rectangle. Prerequisite: CS 631.

CS 634 Combinatorial Optimization 3 hrs.

This course will treat the foundations of mathematical programming and analyze the computational complexity of algorithms in this area. The topics may include: linear programming, algorithms for max-flow, min-cost and shortest path problems, weighted matching, integer and 0/1 linear programming, nonlinear programming techniques, approximation algorithms, branch-and-bound and dynamic programming methods of 0/1 programming, and properties of local search. Prerequisite: CS 631.

CS 643 Advanced Data Base Management Systems 3 hrs.

This course is an in-depth study of data base management systems with concentration on efficient design and implementation. Topics covered include: the design of data models, the theory of relational data bases, query optimization, recently developed protocols to guarantee consistency of data bases, the design of physical models, and performance analysis techniques. Algorithms and data structures such as B-trees, transposed files, phantom files and hybrid structures are also studied. Distributed data bases, data base machines and current query languages will be covered. Prerequisites: CS 331 and CS 543.

CS 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 environments involving simulation and performance evaluation will be required. Prerequisite: CS 554.


Students will be introduced to various models of software life cycles. The remainder of the course will focus on formal methods for specifying requirements and design. Students will be introduced to a number of formal systems using axiomatic specification, abstract models (e.g., VDM), set theoretic systems (e.g., Z), predicate logic systems (e.g., Larch), and specification based on programming languages such as Alphard, CLU, and Ada. Also discussed will be formal specification of real-time systems using Petri Nets, PAISLEY, CSP, SF and others. Examples and exercises illustrating use of formal systems will be given. Student teams will be expected to complete the specification of requirements and design of a project using one of the methods presented. Prerequisites: CS 331 and MATH 145.

CS 661 Software Engineering II: Verification and Validation of Software Systems 3 hrs.

Students will become familiar with the terminology and will learn the limitations of verification and validation (V and V) approaches. Five approaches will be presented: technical reviews, testing, proofs of correctness, simulation and prototyping, and requirements tracing. Students will define a V and V plan and carry it out for several stages in the development cycle of a project. Prerequisite: CS 660.

CS 672 Pattern Recognition 3 hrs.

A survey of modern methods for computer recognition of patterns in varied applications such as digital images, human speech and sound, and grammar-based sequences. Various approaches are developed, including heuristic search, Fourier analysis, Markov models, template matching, and grammatical inference. Computational aspects and efficiency of different methods and algorithms are emphasized. Students must complete a project using methods developed in the course. Prerequisites: CS 531 or CS 531, and MATH 364.

CS 679 Theory of Computation II 3 hrs.

Recursive, partial recursive and primitive recursive functions, properties of recursive and recursively enumerable index sets, decidability, Turing computability and reducibility are treated in depth, while certain problems are proved to be unsolvable. Concepts from computational complexity, including relationships between complexity classes are covered. Prerequisite: CS 580.

CS 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, relation to models of automata. Prerequisite: CS 580.

CS 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: CS 581.

CS 682 Artificial Intelligence 3 hrs.

This advanced A.I. course examines current research in one or more artificial intelligence application areas, e.g., computer vision and image processing, natural language and speech processing, expert systems, computer learning or other A.I. topics. Prerequisite: CS 582.

CS 685 Foundations of System Specification 3 hrs.

Semi- formal and formal specification of abstract and real-life systems, with emphasis
on computer software and hardware systems and using the State-System Specification Language. State and behavior modeling approaches and specification design philosophy. Theoretical foundations with practical application examples. Implications for validation, implementation, and testing. Alternative modeling techniques.

Prerequisites: Graduate level competence in one of the following areas: computer architecture (ECE 357 or CS 525) or operating systems (CS 554); or computer networking (CS 555), or control theory, or switching and automata theory (CS 580); or permission of instructor.

CS 691 Seminar in Computer Science 1-3 hrs.

CS 697 Master's Project 2-6 hrs.

Students will work on a special project in the computer science area. A technical report on the results of each student's project must be approved by the course instructor and published as a departmental technical report. Graded on a Credit/No Credit basis. Credit cannot be used for both CS 697 and CS 700 in a student's master's program. Prerequisites: Graduate level competency in computer science and the subject areas of the project. Approval of the instructor and the department required.

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

CS 700 Master's Thesis 6 hrs.

CS 710 Independent Research 2-6 hrs.

CS 712 Professional Field Experience 2-6 hrs.

CS 725 Doctoral Research Seminar 2-6 hrs.

CS 730 Doctoral Dissertation 15 hrs.

CS 735 Graduate Research 2-10 hrs.

ECONOMICS

Dr. Werner SicHEL, Chair
Main Office: 5307 Friedmann Hall
Telephone: 387-5536
FAX: 387-3999

Donald L. Alexander
ExKander Alvi
Sisay Asfah
Phillip P. Caruso
Bassam E. Harik
Salim E. Harik
Matthew L. Higgins
Emily P. Hoffman
Kevin M. Hollenbeck
Susan N. Houseman
Wei-Chiao Huang
Timothy L. Hunt
William S. Kern
Jean Kimmel
Shohreh Majin
Donald J. Meyer
Jon R. Neill
Christopher J. O'Leary
Michael J. Ryan
Susan Pozo
Werner Sichel
Mark V. Wheeler
Huizhong Zhou

Master of Arts in Applied Economics

Advisor:
Mark Wheeler,
Room 5453, Friedmann Hall

The Master of Arts in Applied 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 WMU or at another university.

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 be required to complete satisfactorily ECON 403 and 406.
3. Satisfactory completion of at least one course in calculus.

The M.A. in Applied Economics is designed for those who expect to pursue a career in business or government and prefer a course of study leading to a terminal degree that emphasizes the applications of economics to the problems of these areas. The program may include a professional internship with a local firm or non-profit institution. The degree is awarded on the basis of the satisfactory completion of thirty hours in a planned program prepared in consultation with the graduate advisor.

Program Requirements

1. The satisfactory completion of either twenty-four hours of courses plus a master's thesis or thirty hours, if additional courses are submitted lieu of the thesis, in a planned program prepared in consultation with the graduate advisor.
2. At least an overall "B" average in the Economics courses that the student takes in an advisor-approved program of study.

Doctor of Philosophy in Applied Economics

Advisor:
Mark Wheeler,
Room 5453, Friedmann Hall

The Doctor of Philosophy in Applied Economics is designed to meet the needs of future high-level practicing economists, primarily in non-academic settings. Recent studies have found that non-academic employers of Ph.D.-level economists are concerned about the training that existing programs give their graduates. In an early 1990s report commissioned by the American Economic Association, Dr. Anne O. Krueger reported that the proportion of new economics doctorates taking their first job in academia has significantly declined and that universities are not adequately serving the non-academic portion of the market. She wrote that "... our major concern focuses on the extent to which graduate education in economics may have become too removed from real economic problems ... and that the focus on developing skills required for applied research should be stronger. ..." The Ph.D. program offered by the WMU Economics Department is designed to address this need.

The Applied Economics Ph.D. program retains a core curriculum as is required by traditional Ph.D. programs in economics, but requires that students participate in a series of applied economics workshops and complete a one-year internship in a non-academic setting. Doctoral students intern with organizations such as city, county, or state government agencies; consulting or research firms; financial institutions; businesses; and hospitals. This internship is conducted under the aegis of an employee of the organization as well as a Department of Economics faculty member. The purpose of this internship is to give students the incentive and opportunity to apply their knowledge of economic theory and empirical methods to actual problems faced by organizations. The internship is also intended to provide the subject of the student's dissertation and therefore send the Department's graduates into the job market with a somewhat different orientation than that of graduates from traditional economics Ph.D. programs.

The Applied Economics Ph.D. program is designed to be completed within four years by a student entering with good undergraduate economics and quantitative methods (mathematics and statistics) training or a Master of Arts in Economics.

Admission Requirements

Admission to the Ph.D. program in Applied Economics requires:
1. GRE scores (verbal, quantitative, analytical).
2. Satisfactory completion of high-level undergraduate or M.A.-level microeconomic and macroeconomic theory courses.
3. Satisfactory completion of undergraduate calculus and statistics courses.
4. A personal statement discussing your career plans.
5. Three letters of reference from persons in a position to assess your qualifications for doctoral-level study and likelihood of successful completion of the Ph.D. degree.

Program Requirements

A minimum of eighty-one Ph.D.-level credit hours is required in this program. This includes
eighteen hours of workshops, twelve hours of internship, and twelve hours of doctoral dissertation.

Required Core Courses:
- ECON 604 Mathematical Economics
- ECON 619 Introduction to Econometrics
- ECON 622 Economic Statistics
- ECON 665 Microeconomic Theory I
- ECON 666 Microeconomic Theory II
- ECON 675 Macroeconomic Theory I
- ECON 676 Macroeconomic Theory II
- ECON 670 Advanced Econometrics I
- ECON 671 Advanced Econometrics II

At or near the beginning of the fall semester of the second year, students are administered a qualifying examination in economic theory. Upon passing this examination, the student is considered a candidate for the Ph.D. degree.

Each student is required to specialize in econometrics and in two of the following fields: Economic Development, Human Resource Economics, Business/Industrial Organization, Monetary Economics, and International Economics. (Not all of the five fields will be offered in any particular year.) To specialize in a field, students take a sequence of two courses. Students are required to pass a field qualifying examination in econometrics and in each specialization they select. Third- and fourth-year candidates devote their time to their workshops, internship, and dissertation. Doctoral candidates are required to participate in six workshops designed to help them develop their understanding of theoretical and empirical economics by giving them the opportunity to discuss the research being conducted by the Department's faculty, economists from other institutions, and graduate students.

ECON 501 Studies in Economic Problems: Variable Topics
- 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 industry, farm problems, misallocation of resources, welfare programs, unemployment, the growth of coalitions, etc. May be repeated for credit with a different topic. Prerequisites: ECON 201 and 202, plus 6 additional credit hours of economics or consent of instructor.

ECON 503 Economic Computing
- This course provides students with basic skills needed for gaining access to economics databases and for using data management programs on personal and mainframe computers. It provides instruction and lab experience in transferring files and performing operations widely employed by economists. Prerequisites: ECON 403 and 406 or permission of instructor.

ECON 504 Mathematics for Economists
- This course presents the mathematical material necessary as background for the topics covered in graduate-level economics courses. Topics covered include differential calculus, optimization, comparative statics, and mathematical programming. These techniques are applied to selected economic problems. Prerequisites: ECON 201 and 202, MATH 122 or consent of instructor.

ECON 505 History of Economic Thought
- This course surveys the origins and developments of economic analysis from the Ancient Greeks to the present. Prerequisites: ECON 201, 202.

ECON 507 Monetary Theory and Policy
- This course concentrates on the main elements of monetary policy 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 different economic sectors with different possible social goals in mind, and stabilizing international trade and financial relationships. Prerequisites: ECON 201, 202, 320 or 406, plus 6 additional credit hours of intermediate level economics.

ECON 515 Economics of Human Resources
- 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, training, health and mobility, and issues of manpower policy. Prerequisites: ECON 201 and 202.

ECON 525 State and Local Government Finance
- 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.

ECON 588 Economic Development
- 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. Prerequisites: ECON 201 and 202.

ECON 591, ECON 592 Guest Economists 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.

ECON 598 Readings in Economics
- 1–3 hrs.
- An independent program of study for qualified students to be arranged in consultation with the instructor. Prerequisites: 12 credit hours of Economics and the consent of instructor and Department Chairperson.

Open to Graduate Students Only
- ECON 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.

ECON 601 Basic Economic Analysis
- 3 hrs.
- This course is designed to provide students with an understanding of fundamental economic concepts. Students become acquainted with the basic tools that economists use to analyze issues and apply the science of economics. After completing the course, students will be better able to understand and analyze problems from an economic perspective. Students are introduced to basic concepts in the fields of microeconomics and macroeconomics. Knowledge of these concepts is prerequisite for further study in business, public and development administration.

ECON 602 Applied Economics
- 3 hrs.
- Emphasis will be placed on decision-making under conditions of uncertainty. Topics will include advanced material in linear programming, game theory, capital budgeting and forecasting. Prerequisite: ECON 600.

ECON 603 Advanced Price Theory
- 3 hrs.
- An advanced study in the logic of the pure theory of production; joint production and joint costs, and introduction to the multiperiodic 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). Prerequisite: MATH 122 or equivalent.

ECON 604 Introduction to Mathematical Economics
- 3 hrs.
- This course is intended to introduce graduate students to the concepts of multivariate calculus and mathematical analysis commonly used in the mathematical analysis of economic problems. Its primary objective is to teach students the rudiments of mathematical programming as they apply to economic theory. Thus, students will also be introduced to selected topics from consumer theory and the theory of the firm. Prerequisites: MATH 122, MATH 123 or equivalents.
ECON 607 Uncertainty and Information
3 hrs.
Analysis of individual decision making and market equilibria under conditions where economic agents are unsure about their own situations and/or the opportunities offered by market dealings. Topics covered include expected utility, decisions to produce and acquire information, information and contract design, and the effect of information in situations of strategic economic interaction. Prerequisite: ECON 504 or ECON 603.

ECON 609 Seminar in Economics
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 instructor. Topics will vary, and course may be repeated.

ECON 610 Human Resources I
3 hrs.
This course is an introduction to human resource economics. Its objective is to provide students with the theoretical background needed to undertake studies relating to human resource and labor problems. Thus, this course will present an initial survey of the theory that forms the core of modern labor economics. Prerequisite: ECON 603 or equivalent.

ECON 611 Human Resources II
3 hrs.
The course is the second course in a two course sequence required for the Ph.D. field in human resource economics. The objective of this course is to apply theory and quantitative methods to various topics areas in human resource and labor economics, such as discrimination, employment and training policies, income distribution, turnover and migration, unions and collective bargaining, and household production and family decisions. Prerequisite: ECON 610.

ECON 616 Collective Bargaining in Public Employment
3 hrs.
The course examines collective bargaining developments in local, state, and federal governments, including bargaining units, negotiations, grievance procedures, strikes, and dispute settlements. Prerequisites: ECON 201 and 202 or consent of instructor. Not open to Economics graduate students.

ECON 617 Economics of Health and Human Services
3 hrs.
Economic problems of health and human services will be considered. Alternative policy solutions are viewed from the economist’s point of view. Prerequisites: ECON 201 and 202 or consent of instructor. Not open to Economics graduate students.

ECON 619 Introduction to Econometrics
3 hrs.
The course is an introduction to econometric models and their use in economic analysis. The course covers multiple regression models, the implications and treatment of serial correlation and heteroskedasticity. Prerequisite: ECON 622 or equivalent.

ECON 620 Economic Forecasting
3 hrs.
The course covers the construction, evaluation, and presentation of econometric forecasts. Students are taught to model and forecast economic data which contain trend, seasonal, and cyclical components. Both univariate and multivariate forecasting techniques are examined. A forecasting project is required of each student. Prerequisite: ECON 619 or equivalent.

ECON 622 Economic Statistics
3 hrs.
This course focuses on the theory and practice of testing hypotheses, statistical estimation theory, the basic theory underlying the linear model, and introduction to econometric models, and the nature of difficulties which arise in applying statistical models to economic research problems. Prerequisites: MATH 122 or equivalent, ECON 402 or equivalent.

ECON 624 Public Finance I
3 hrs.
This course is devoted to a study of welfare and public sector economics. The objective is to acquaint students with the framework used by economists to analyze and evaluate public policy. Prerequisite: ECON 603 or equivalent.

ECON 625 Public Finance II
3 hrs.
Selected topics from public sector economics will be presented. Foremost among these is benefit-cost analysis. Thus, consumers’ surplus, the social discount rate, and decision making under uncertainty are other topics that will be covered regularly. The main purpose of this course is to provide students with the background necessary to conduct research in public finance. Prerequisites: ECON 624, ECON 665.

ECON 650 Industrial Organization/Business Economics I
3 hrs.
This course will survey the major topics in industrial organization, antitrust economics, and the economics of regulation. Prerequisite: ECON 603 or equivalent.

ECON 651 Industrial Organization/Business Economics II
3 hrs.
This course will cover selected topics in industrial organization, antitrust economics, and the economics of regulation. Prerequisites: ECON 650, ECON 665.

ECON 652 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 403 and 406.

ECON 655 Microeconomic Theory I
3 hrs.
Core ideas in theoretical microeconomics will be introduced. The course will address a number of standard microeconomic topics, including the theories of consumption and production, cost and expenditure functions, market structures, and input demand. Prerequisites: MATH 122, MATH 123 or equivalents.

ECON 656 Microeconomic Theory II
3 hrs.
Course presents an advanced treatment of consumer and producer theory. It will be composed of selected topics in microeconomic theory, including general equilibrium and welfare analysis. Prerequisites: ECON 604, ECON 665.

ECON 670 Advanced Econometrics I
3 hrs.
The first course in the advanced econometrics sequence. This course presents sample distribution theory for the estimation and testing of econometric models. Applications will be made to SUR systems, error components, nonlinear regression, limited dependent variables, and sample selection bias. Prerequisite: ECON 619.

ECON 671 Advanced Econometrics II
3 hrs.
This is the second course in the advanced econometrics sequence. This course considers the specification and evaluation of dynamic econometric models. Both single and multiple time series models are examined. The issue of nonstationarity and the role of vector autoregressions and cointegration are emphasized. Prerequisite: ECON 670.

ECON 675 Macroeconomic Theory I
3 hrs.
This course develops a general equilibrium macroeconomic model reflecting the recent developments in the literature. Prerequisites: MATH 122, MATH 123 or equivalents.

ECON 676 Macroeconomic Theory II
3 hrs.
The second course in the Ph.D. level macro sequence. A rigorous analysis of macro theory and macro policy issues with an emphasis on empirical testing. Prerequisites: ECON 604, ECON 675.

ECON 680 International Economics I
3 hrs.
In this course the interaction of the domestic economy with the international financial world will be studied. Topics include: Exchange rate determination, balance of payments, and the international monetary system. Prerequisites: ECON 622, ECON 662 or equivalents.

ECON 681 International Economics II
3 hrs.
This course examines the reasons for and implications of international trade. Topics include: Models of international trade, policies used to influence trade and the welfare effects of international trade policies. Prerequisite: ECON 603 or equivalent.

ECON 686 Monetary Economics
3 hrs.
In this course the interaction between macroeconomic activity and the quantity of money in the economy is studied. Both theoretical and empirical models are examined. Topics include empirical evidence on money and output, money and transactions, money and procedures, and interest rates and monetary policy. Prerequisites: ECON 619 and ECON 676 or equivalent.

ECON 688 Economic Development I
3 hrs.
An intensive examination of a number of selected key topics in development economics, centering on issues of crucial importance to developing nations. Examples of such issues are primary products, capital formation, technological change, inflation, debt servicing, population, etc. Prerequisites: ECON 201 and 202.

ECON 689 Economic Development II
3 hrs.
This course will concentrate on analysis of development theory and examine its relevance to the problems facing extant developing economies. Different approaches to economic development will be examined using advanced economic theory and methodology. Prerequisites: ECON 665, ECON 675, ECON 688.

ECON 699 Economics Workshop
3 hrs.
A workshop designed to deepen a student’s understanding of theoretical and empirical economics by discussing the research being conducted by the Department’s faculty economists and economists from other institutions, and Ph.D. candidate graduate students. Prerequisites: ECON 666, ECON 670, ECON 676. Topics will vary and course may be repeated.
ENGLISH
Dr. Arnold Johnston, Chair
Main Office: 620 Sprau Tower
Telephone: 387-2572
FAX: 387-2562
JoNiNa Abron
Thomas Bailey
Miriam Bat-Ami
Ellen Brinkley
Allen Carey-Webb
Norman Carlson
John Cooley
Seamus Cooney
Clifford Davidson
Richard Digby-Junger
JD Dolan
Rollin Douma
Stuart Dybek
Scott Dykstra
Philip Egan
Nancy Eimers
Gwendolyn Etter-Lewis
Luis GamoZ
Stephanie Gauper
C.J. Gianakaris
Jaimy Gordon
Georgina Hill
Robert Hinkel
Paul Johnston
W. Arnold Johnston
Elsie B. Jorgens
Katherine Joslin
Jil Larson
Mary Anne Loewe
Oliver Olsen
Gwen Raaberg
Mark Richardson
John Saillant
Herbert Scott
Thomas Seiler
Jocelyn Steinke
John StropuE
Gwen Tarbox
Larry tenHarmsel
Grace Tiffany
Daneen Wardrop
Constance Weaver
Witschi, Nicolas S.

Master of Arts In English
Advisor: Gwendolyn Etter-Lewis, Room 618, Sprau Tower
The Master of Arts in English provides advanced study of literature, literary history, literary theory, and other literary concerns. A student desiring to enter the program should present a thirty-hour undergraduate major with a grade-point average of at least 3.0 and a sample of critical writing about literature. Applicants must take the Graduate Record Examinations, both the General Test and the Subject Test in Literature in English, and forward their scores to the Department of English.

At least twenty hours of the undergraduate major must be in courses in literature. Applicants seeking admission to the program should present at least twenty hours of work in English with a substantial number of courses in literature and who are otherwise judged eligible may be granted admission to the program on condition that they remedy deficiencies in preparation by taking some undergraduate courses as prerequisites.

Required courses in the program are (a) 3-6 hours of courses as prerequisites.

ENGLISH 59

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 thirty-eight-hour degree program designed to meet the increasing demand for people with liberal arts education and with a particular skill in writing non-fiction prose.

A student desiring to enter the program should present a thirty-hour undergraduate major with a grade-point average of at least 3.0 and samples both of critical writing about literature and of other expository writing. At least twenty hours of the major must be in courses in literature; no more than fifteen of the thirty should be at the freshman-sophomore level. Applicants lacking an undergraduate major but who have at least 20 hours of work in English with a substantial number of courses in literature and who are otherwise judged eligible may be granted admission to the program on condition that they remedy deficiencies in preparation by taking some undergraduate courses as prerequisites. Applicants must take the Graduate Record Examinations, both the General Test and the Subject Test in Literature in English, and forward their scores to the Department of English.

On admission, students should consult with the advisor at the earliest opportunity concerning their program of study.

For more detailed information and for an application form, write to the department's pages on the World Wide Web at the following URL: http://www.wmich.edu/english.

Master of Arts in English with an Emphasis on Teaching
The Master of Arts in English with an Emphasis on Teaching is designed to meet the needs of English teachers, most especially those teaching in secondary schools, but also those teaching English and the language arts in middle and elementary schools. (Note: The degree does not provide teacher certification.)

A student desiring to enter the program should present a thirty-hour undergraduate major with a grade-point average of at least 3.0 and a sample of creative writing about literature. At least twenty hours of the major must be in courses in literature; no more than fifteen of the thirty should be at the freshman-sophomore level. Applicants lacking an undergraduate major but who have at least 20 hours of work in English with a substantial number of courses in literature and who are otherwise judged eligible may be granted admission to the program on condition that they remedy perceived deficiencies in preparation by taking some undergraduate courses as prerequisites.

Required courses in the program are (a) 3-6 hours of courses as prerequisites.

ENGLISH 59
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 is the minimal academic qualification appropriate for those who wish to teach the craft of writing at the college or university level.

A student desiring to enter the program should present a thirty-hour undergraduate major with a grade-point average of at least 3.0 and samples both of writing in the genre in which he or she expects to specialize and of critical writing about literature. Applicants must take the Graduate Record Examinations, both the General Test and the Subject Test in Literature, and forward their scores to the Department of English.

For more detailed information and for an application form, write to the department's pages on the World Wide Web at the following URL: http://www.wmich.edu/english.

Doctor of Philosophy in English

The Doctor of Philosophy in English is designed to meet the needs of future scholars and writers, particularly those who intend to teach at undergraduate institutions. The program requires all candidates to have broad knowledge of English and American literature, acquaintance with non-traditional literature, practical and/or theoretical background in the teaching of English, and a specialization in one or more of the discipline's fields—literature, English language, creative writing, and pedagogy. Whatever their specialization, all candidates will receive essential experience in scholarship, teaching, and writing in the profession, and will develop the breadth required of teachers in relatively small English departments.

Applicants must take the Graduate Record Examinations, both the General Test and the Subject Test in Literature, and forward their scores to the Department of English.

On admission, students should consult with the advisor at the earliest opportunity concerning their program of study.

For more detailed information and for an application form, write to the graduate director or see the department's pages on the World Wide Web at the following URL: http://www.wmich.edu/english.

Program Requirements

Candidates entering with an MA or an MFA in English with 30 credits (or more if their transcripts warrant it). Those entering directly from a baccalaureate program will be expected to complete the courses designated as "prerequisites" as early as possible in their studies.

1. Prerequisites (equivalent courses from other institutions are accepted) — 12 hours
   a. For candidates in literature, language, or pedagogy: Literary Criticism;
      Research and Writing; The Nature of Poetry; and an approved English
      language course.
   b. For candidates in creative writing: Literary Criticism; an approved course
      in one or more of the discipline's fields; a genre-specific course; an
      approved English language course.

2. Distribution requirement — 18 hours
   Six graduate level courses from the following list of areas, selected so that no
   two contiguous periods are skipped.
   Candidates in creative writing must choose one or more of the following:
   • American literature before 1865
   • American literature 1865-1945
   • British literature to 1500
   • British literature 1500-1800
   • Restoration and 18th-century British literature
   • 17th-century British literature
   • Renaissance and early-modern English literature
   • Modern British literature
   • Contemporary literature
   • American literature
   • American literature before 1865
   • American literature 1865-1945
   • British literature to 1500
   • British literature 1500-1800
   • Restoration and 18th-century British literature
   • 17th-century British literature
   • Renaissance and early-modern English literature
   • Modern British literature
   • Contemporary literature

3. Non-traditional literature — 3 hours
   At least one course in literature in English by an ethnic minority group, by
   post-colonial writers, or by other groups not traditionally included in the
   canon.

4. Teaching component — 6 hours
   Six hours of credit elected from courses or practica in the teaching of composition,
   literature, English language, or creative writing.

5. Area of specialization — 12 hours
   At least 12 credit hours in an area (or for creative writing students, a genre) chosen
   in preparation for the dissertation. The areas include the periods listed in the
   Distribution Requirement as well as English Literature, and the Theory and Practice of
   Teaching English at the college level.

   Cognate or support area — 6-8 hours
   An optional area to complement the specialization. May include courses from
   other departments.

6. Candidacy Examination
   After satisfying the distribution requirement, students will take four
   three-hour written examinations over their chosen areas, including an exercise in
   practical criticism. These examinations should be completed within three years of
   admission. May be repeated once.

7. Foreign Language Requirement
   Students must demonstrate by examination or by completion of two 400-level courses
   basic reading competence in at least one foreign language.

8. Doctoral Readings and Oral Examination — 3-6 hours
   Near the completion of course work and before beginning the dissertation, students
   will take ENGL 711, Readings in Doctoral Specialization, a course of readings
   designed by the candidate in conjunction with a faculty supervisor. An oral
   examination over the chosen books will follow.

9. Dissertation — 15 hours
   The dissertation is to be a book-length manuscript of scholarship, criticism,
   research, or creative writing comprised of either a single piece of work or a coherent
   collection of shorter pieces that are methodologically, structurally, or thematically related.

Financial Assistance

A small number of doctoral fellowships are awarded each year, together with a number of
doctoral teaching assistantships.

English Courses (ENGL)

Open to Underclass and Graduate Students

ENGL 522 Studies in American Literature
3 hrs.
Study of a movement or a recurring theme in American literature, such as romanticism, realism, naturalism, humor, or racial issues.

ENGL 530 Medieval Literature
3 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.

ENGL 532 English Renaissance Literature
3 hrs.
Readers in representative writers of the period 1500-1600.

ENGL 534 Restoration and Eighteenth Century Literature
3 hrs.
Readers in representative writers of the period 1660-1800, focusing on the diversity of literary forms in the period.

ENGL 536 Romantic Literature
3 hrs.
Readers in poetry and criticism, with emphasis on such writers as Blake, Burns, the Wordsworths, Coleridge, Scott, Byron, the Shelleys, and Keats.

ENGL 537 Victorian Literature
3 hrs.
Readers emphasizing such writers as Carlyle, Mill, Dickens, Thackeray, Eliot, Tennyson, the Brownings, and Arnold.

ENGL 538 Modern Literature
3 hrs.
Readers in representative writers in the period 1890-1945, not exclusively in British and American literature.
ENGL 539 Post-Colonial Literature 3 hrs. Readings in representative writers from colonial and post-colonial cultures.

ENGL 540 Contemporary Literature 3 hrs. Readings in representative writers who have come to prominence chiefly since 1945.

ENGL 555 Studies in Major Writers 3 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.

ENGL 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.

ENGL 574 Grammar for Teachers 4 hrs. Deals with issues surrounding the teaching of grammar, various aspects of grammar itself, and ways of teaching grammar and developing students' grammatical competence.

ENGL 582 Studies in Children's Literature 3 hrs. A study in depth of significant themes, movements, and types of children's literature. Prerequisite: ENGL 282 or permission of the department.

ENGL 583 Multi-Cultural American Literature for Children 3 hrs. A course designed to develop an understanding of the cultural diversity of the American experience through multi-cultural oral and written literature for young people. Attention will be paid to developing criteria for selecting and evaluating literature which reflects diversity within the American heritage. Prerequisites: 16 hrs. of English course work, including ENGL 282.

ENGL 597 Studies in English: Variable Topics 1–3 hrs. Group study of special topics in literature, film, English language, and writing. Many of these special courses are organized around special events or speakers on campus or in the community, or in response to special needs or interests of students. Some topics are announced in the Schedule of Course Offerings; some are added during the semester. Further information and full listing of topics may be obtained from the English Department, sixth floor Sprau Tower.

ENGL 598 Readings in English 1–3 hrs. Advanced students with good scholastic records may elect to pursue independently the study of some topic having special interest for them. Topics are chosen and arrangements are made to suit the needs of each student. Approval of English advisor required. May be elected more than once.

ENGL 610 Seminar 3 hrs. Study of a problem in literary history or criticism. May be repeated once with the permission of the graduate advisor.

ENGL 615 Literary Criticism 3 hrs. Readings in several significant theorists on the nature of literature, the characteristics of audience response to literature, and principles underlying the analysis and evaluation of literature. Works in at least two genres will be examined in light of these theoretical writings.

ENGL 621 Studies in British Literature 3 hrs. The advanced study of selected aspects of British literature. May be repeated once with the permission of the graduate advisor.

ENGL 622 Studies in American Literature 3 hrs. The advanced study of a topic in American literary history, such as The American "Renaissance," The 1920's, The Transcendental Tradition in American Literature, Fiction (or Poetry, or Drama) in America, or The Development of Modern American Prose Style. May be repeated once with the permission of the graduate advisor.

ENGL 630 Introduction to Graduate Studies 3 hrs. This course is intended to provide graduate students with an introduction to the theory and practice of literary criticism at the professional level. The goal of course readings and discussion generally will be to aid students in the completion of a substantial research project of a kind suitable for publication.

ENGL 631 Essay Writing 3 hrs. A course in the writing of informal expository prose in the forms used for addressing general audiences. There will be a generous amount of reading in exemplary works and a concern for understanding the rhetorical principles underlying good modern prose. Prerequisite: A bachelor's degree.

ENGL 632 Article Writing 3 hrs. A course in the writing of informative prose directed toward a non-specialist audience. There will be study and practice in the methods of gathering and analyzing information and in the effective organization and presentation of factual material.

ENGL 633 Professional Writing: Form and Technique 3 hrs. A course in writing in the various formats needed by large institutions, whether academic, corporate, or public. Particular emphasis will be placed on the use of the interview to gather information, on preparing speeches, brochures, journals, newsletters, and other publications, and on the techniques of non-personal prose.

ENGL 640 The Nature of Poetry 3 hrs. A study of styles, techniques, forms, and conceptions of poetry, involving practice in explication, both oral and written, of individual poems.

ENGL 641 Studies in Modern Poetry 3 hrs. An intensive study of the work of several modern poets.

ENGL 642 Studies in Drama 3 hrs. Selected areas of drama from classical times to the present.

ENGL 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.

ENGL 645 Studies in the Modern Novel 3 hrs. An intensive study of the works of some important novelists of the twentieth century.


ENGL 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 16 hours in all. M.F.A. candidates must take at least 6 hours in their area of specialization. Prerequisite: Open to graduate students accepted into the M.F.A. program and, with the permission of the instructor, to other graduate students.

ENGL 669 Methods of Teaching College Writing 3 hrs. A course required of those teaching the freshman composition course, ENGL 105, for the first time. Establishes the basic structure and methodology for teaching such a course. Participants prepare assignment sequences for their classes, design appropriate learning activities, and practice evaluating and responding to student writing. Participants are introduced to activities that reflect different theories and approaches to the teaching of composition.

ENGL 672 Language, Dialects, and Sociolinguistics 3 hrs. A course focusing on specific varieties of American English studied from historical, linguistic, literary, and/or social perspectives as the basis for application of sociolinguistic theory and research to a variety of topics. These may include the study of American culture and literature, educational implications of dialect diversity in monolingual and multilingual settings, the links between language and social identity, and gender/ethnic differences in language. Issues such as language change, attitudes toward language, and implications for teaching English will be explored in detail.

ENGL 673 Psycholinguistics in Reading 3 hrs. An examination of psycholinguistic insights into the nature of the reading process, with emphasis on practical implications and applications for the classroom.

ENGL 676 Old English 3 hrs. A course dealing with the grammatical structures of Old English and the sociolinguistic context in which this language was spoken and written, with a view to applying this linguistic study to translating ancient pre-1066 English literary texts, both poetry and prose, including Beowulf.

ENGL 677 Middle English 3 hrs. A course dealing with the grammatical structures of Middle English and the sociocultural context in which this language was spoken and written, with a view to applying this linguistic study to translating and interpreting Middle English texts, both prose and poetic, Chaucerian and non-Chaucerian, stemming from various regions of English-speaking Britain.

ENGL 679 Studies in Composition Theory 3 hrs. A course which examines various approaches to the teaching of composition. Aims to increase awareness of the relationship between theory and practice, acquaint participants with ongoing dialogues within the field, and help them identify and formulate their own professional stances. Attention will
be given to the impact on composition theory of scholarship in fields such as classical rhetoric, linguistics, literary theory, cognitive psychology, human development and learning, social constructionism, and ethnology. Prerequisite: Teaching experience.

ENGL 680 Advanced Methods in Teaching Literature 3 hrs.
A study of theories and methods of teaching literature.

ENGL 681 Advanced Methods in Teaching Language and Composition 3 hrs.
A study of theories and methods of teaching language and composition.

ENGL 690 Scholarship and Writing in the Profession 3 hrs.
In this seminar students will prepare the capstone Essay to be submitted as the culminating requirement for the M.A. in English. The course will include analysis and evaluation of journals and articles in areas relevant to the student's research topic; "workshop" review and editing of the paper; and preparation for oral presentation and discussion of the student's work in a Master's Colloquium. Graded on a Credit/No Credit basis. Prerequisites: ENGL 630 and prior completion of at least 21 hours of credit toward the Master of Arts in English.

ENGL 691 Research and Scholarship in English Education 3 hrs.
As reflective practitioners in English classrooms, participants in this seminar will develop a research question, review relevant professional literature, conduct classroom and/or academic research using appropriate research techniques, and present findings orally and in a written paper or report that will be the capstone paper for the MA in English with an Emphasis on Teaching. Prerequisites: Students in the program who have completed at least 24 hours of the course of study and who have completed the core courses, the teaching of English courses, the English language course and the multicultural literature course may enroll.

ENGL 697 Studies in English: Variable Topics 1–3 hrs.
Group study of special topics in language, literature, and composition. These special courses and workshops may be offered on campus, in the off-campus centers, or as in-service work in schools. Students may repeat this course, providing topics vary. For further information, consult the graduate advisor.

ENGL 699 M.F.A. Project 3–6 hrs.
A collection of short fiction, a collection of poetry, a collection of one-act plays, a full-length play, or a novel. The work presented in fulfillment of this requirement must be 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.

ENGL 700 Master's Thesis 6 hrs.

ENGL 710 Independent Research 2–6 hrs.

ENGL 711 Readings in Doctoral Specialization 3–6 hrs.
In consultation with a faculty member, the doctoral student will design a reading list of 20 to 30 books in a specialized area; students wishing additional guided reading may register a second time. The student will master these works independently and, in consultation with faculty members, select a representative list of approximately 20 works on which to be evaluated in a two-hour oral exam, conducted by a committee of at least two faculty members. Prerequisite: Doctoral candidacy.

ENGL 712 Professional Field Experience 2–12 hrs.
A practicum in teaching in the discipline will be done as collaborative teaching with an experienced faculty member in a broad-based undergraduate course in literature, language, creative writing, or advanced composition. There will opportunity for both guided praxis and reflection on praxis. May be repeated. Prerequisite: Consent of advisor.

ENGL 730 Doctoral Dissertation 15 hrs.

FOREIGN LANGUAGES AND LITERATURES

Dr. John Benson, Chair
410 Sprau Tower
Telephone: 387-3001
FAX: 387-3103
John Benson
Gary E. Bigelow
Peter Bickie
Vincent Desroches
Jorge Feibies
Robert Felkel
Jeffrey Gardiner
Robert Griffin
Diether H. Haenicke
Carolyn Harris
Antonio Isea
Rand H. Johnson
Peter W. Krawutschke
Ierna Lópex
Molly Lynde-Fraccia
Patricia Montilla
Holly Nibert
Dasha Nisula
Joseph Reish
Cynthia Running-Johnson
Martine Sauret
Mercedes Tasende
Herman Teichert
Benjamin Torres
Camille Vande Berg
Robert Vann
Lindsey Wilhite

FRENCH

French Courses (FREN)

Open to Upperclass and Graduate Students

500-level courses may be taken only by advanced undergraduate students. Advanced undergraduate students are defined as those who have satisfactorily completed a minimum of four courses, or equivalent, applicable toward a major or minor in any one language. Each course, however, may have more specific and/or additional prerequisites.

FREN 510 Studies in French and Francophone Culture 3 hrs.
An intensive study of selected aspects of French and Francophone culture. Course varies according to topic and may be repeated for credit with permission of advisor. Representative topics might include Women in French Society, The French Tradition in Quebec, Francophone Cinema. Prerequisites: FREN 316, 317, either 322 or 323, plus one additional course at the 300-, 400-, or 500-level.

FREN 528 French Literature from the Middle Ages to the Revolution 3 hrs.
The study of selected literary texts from the Middle Ages to the end of the eighteenth century. Prerequisites: FREN 316, 317, and 325.

FREN 529 French Literature from the Revolution to the Present 3 hrs.
The study of selected literary texts from the late eighteenth century to the present. Prerequisites: FREN 316, 317, and 325.

FREN 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. Repeatable for credit. Prerequisite: A minimum grade point average of 3.0 in the major.
FREN 560 Advanced Readings in French
3 hrs.
Topics of literary, cultural, or linguistic merit will be analyzed. Topics will vary from semester to semester. May be repeated for credit. Prerequisite: FREN 316, 317, 325, or permission of instructor.

GERMAN

German Courses (GER)

Open to Upperclass and Graduate Students

500-level courses may be taken only by advanced undergraduate students. Advanced undergraduate students are defined as those who have satisfactorily completed a minimum of four courses, or equivalent, applicable toward a major or minor in any one language. Each course, however, may have more specific and/or additional prerequisites.

GER 528 Survey of German Literature
3 hrs.
A comprehensive study of German literature from its beginning through Romanticism. Prerequisites: GER 316, 317; 322 or 325 or equivalent.

GER 529 Survey of German Literature
3 hrs.
A comprehensive study of German literature from German Realism to the present. Prerequisites: GER 316, 317; 322 or 325 or equivalent.

GER 550 Independent Study in German
1–3 hrs.
Directed, individual study of a specific topic in a German literary or linguistic area. Departmental approval is required for admission. Repeatable for credit. Prerequisite: One 500-level course in the major; a minimum grade point average of 3.0 in the major.

GER 559 History of the German Language
1–3 hrs.
Survey of the development of the German language. Prerequisite: Six hours of 300-level German or above.

GER 560 Studies in German Literature
3 hrs.
Topic varies according to genre, author, or period and will be announced. Each of these courses carries separate credit, although all are listed under 560. Thus, a student may take any or all of the offerings at various times. Prerequisites: GER 316, 317; 322 or 325 or equivalent. Representative topics which may be treated in this area include:

The Novel—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.

LANGUAGE

Language Courses (LANG)

Open to Upperclass and Graduate Students

LANG 550 Independent Study in Classics
1–3 hrs.
Directed, individual study of a specific topic related to Classical languages, literature, and/or culture. Department approval required for admission. Prerequisite: Completion of four courses or equivalent in classics; minimum grade point average of 3.0 in the major; departmental approval required. May be repeated for credit.

LANG 558 Modern Language Instruction (in French, German, Spanish, or other language)
3 hrs.
Required for modern language teaching majors and minors. 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. Students should complete this course before beginning directed teaching. This course will be offered regularly. (The comparable methods course for Latin is LAT 557, Teaching of Latin.)

LANG 580 Foreign Language for Special Purposes
1–12 hrs.
The study of or practice in a specialized area in the field of foreign language and culture such as court interpreting, medical or engineering terminology, or public school administration. The content of this course may vary from semester to semester. Students may repeat the course for credit, provided the subject matter differs. Prerequisite: Completion of four courses in area of specialization; departmental approval required.

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

LANG 710 Independent Research
2–6 hrs.

LATIN

Latin Courses (LAT)

Open to Upperclass and Graduate Students

500-level courses may be taken only by advanced undergraduate students. Advanced undergraduate students are defined as those who have satisfactorily completed a minimum of four courses, or equivalent, applicable toward a major or minor in any one language. Each course, however, may have more specific and/or additional prerequisites.

LAT 550 Independent Study in Latin
1–3 hrs.
Directed individual study of a specific topic in Latin literature or linguistics. Departmental approval required for admission. Repeatable for credit. Prerequisite: A minimum grade point average of 3.0 in the major.

LAT 557 Teaching of Latin
3 hrs.
The purpose of the course is to acquaint the prospective teacher with theory and practice appropriate to the Latin language, literature and culture in its classical context and as it relates to the modern world. Required of Latin teaching majors and minors.

LAT 560 Medieval Latin
4 hrs.
A survey of the development of Medieval Latin from late antiquity to the Renaissance. Specimens will include major literary and documentary sources of the medieval centuries including new genres such as hagiography, monastic rules, hymns, and horten. Prerequisite: One of LAT 200, LAT 201, LAT 204, LAT 324, or equivalent, or permission of department.

LATVIAN

Latvian Course (LATV)

Open to Upperclass and Graduate Students

500-level courses may be taken only by advanced undergraduate students. Advanced undergraduate students are defined as those who have satisfactorily completed a minimum of four courses, or equivalent, applicable toward a major or minor in any one language. Each course, however, may have more specific and/or additional prerequisites.

LATV 550 Independent Study in Latvian
1–3 hrs.
Directed individual study of a specific topic in a Latvian language, literature, or culture area. Department approval required for admission. Repeatable for credit. Prerequisite: Permission of Department and instructor.

RUSSIAN

Russian Course (RUSS)

Open to Upperclass and Graduate Students

500-level courses may be taken only by advanced undergraduate students. Advanced undergraduate students are defined as those who have satisfactorily completed a minimum of four courses, or equivalent, applicable toward a major or minor in any one language. Each course, however, may have more specific and/or additional prerequisites.

RUSS 550 Independent Study in Russian
1–3 hrs.
Directed individual study of a specific topic in Russian language, literature, or culture. May be repeated for credit. Department and instructor approval required.

SPANISH

Master of Arts in Spanish

Advisor:
Irma López,
511 Sprau Tower
EMAIL: Irma.lopez@wmich.edu
Telephone: 387–3040

The Master of Arts in Spanish enables students to extend and deepen their knowledge of language, literature and culture in the Hispanic world. The program provides advanced study for those who intend to pursue professions in Spanish or related fields as well as for those students who desire to do further graduate work.

Admission Requirements
1. Possess a baccalaureate degree with a major of thirty hours in Spanish, or equivalent
2. Have a minimum 3.0 grade point average in the undergraduate Spanish major.
Spanish Courses (SPAN)

Open to Upperclass and Graduate Students

500-level courses may be taken by advanced undergraduate students. Advanced undergraduate students are defined as those who have satisfactorily completed a minimum of four courses, or equivalent, applicable toward a major or minor in any one language. Each course, however, may have more specific and/or additional prerequisites.

SPAN 510 Studies in Hispanic Culture

3 hrs.

An intensive study of various aspects of Spanish and Spanish American culture. Emphasis is on cultural understanding as an avenue to increased proficiency in the Spanish language. Specific topic will vary each semester; this course may be repeated for credit. Prerequisites: SPAN 316 and 317, 322, 323, or 324, plus one additional course at the 300-level or above.

SPAN 526 Survey of Spanish Literature to the 18th Century

3 hrs. A survey of Spanish literature from its origin to, and including, the seventeenth century. Prerequisites: SPAN 316, 317, and 325.

SPAN 527 Survey of Spanish Literature from the 18th Century to the Present

3 hrs. A survey of Spanish literature from the eighteenth century to the present. Prerequisites: SPAN 316, 317, and 325.

SPAN 528 Survey of Spanish American Literature to Modernismo

3 hrs. A survey of Spanish American literature from its origin to the era of Modernismo (late 19th century). Prerequisites: SPAN 316, 317, and 325.

SPAN 529 Survey of Spanish American Literature from Modernismo to the Present

3 hrs. A survey of Spanish American literature from late 19th century to the present. Prerequisites: SPAN 316, 317, and 325.

SPAN 550 Independent Study in Spanish

1-3 hrs. Directed, individual study of a specific topic in a Spanish literary or linguistic area. Departmental approval required for admission. Repeatable for credit. Prerequisite: One 500-level literature course in the major; a minimum grade-point average of 3.0 in the major.

SPAN 560 Studies in Spanish Literatures

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: 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—Development of the regional novel from Fernan Caballero through Blasco Ibanez. Generation of 98—Thought and works of typical representatives such as Unamuno, Azorin, 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.

Open to Graduate Students Only

SPAN 600 Don Quijote

3 hrs. An in-depth study of Cervantes' masterpiece. Emphasis is on literary analysis, but attention will also be paid to Cervantes' language. Prerequisite: SPAN 527.

SPAN 610 Topics in Hispanic Culture

3 hrs. The advanced study of selected aspects of Hispanic culture. Course varies according to topic and may be repeated with permission of advisor. Representative topics include: Non-Castilian Spanish Cultures: Galicia, Euskadi and Catalunya; The Way of St. James and Medieval Tradition; Contemporary Spanish Cinema; Women in Spanish Society; Hispanic Culture in the United States; Ideas and Ideology in Contemporary Latin America; Spanish American Popular Culture.

SPAN 620 Topics in Spanish Literature

3 hrs. The advanced study of selected aspects of Spanish literature. Course varies according to topic and may be repeated with permission of advisor. Representative topics include: Medieval Spanish Literature; Golden Age Poetry and Theatre; Golden Age Prose; Cervantes: Galatea, Novelas ejemplares, Persiles y Sigismunda; Nineteenth Century Literature; Generation of 1898; Contemporary Spanish Theatre; Modern Spanish Theatre; Modern Spanish Poetry.

SPAN 630 Topics in Spanish American Literature

3 hrs. The advanced study of selected aspects of Spanish American Literature. Course varies according to topic and may be repeated with permission of advisor. Representative topics include: Literature of the Colonial Period; Nineteenth Century Literature; Spanish American Modernismo; Contemporary Spanish American Fiction; Spanish American Essay, Spanish American Poetry.
The goals of the Master of Arts in Geography are: 1) to assist students in acquiring the skills needed for independent geographic research, including organizational and communication skills; and 2) to enable the student to develop a concentration in a particular aspect of the field.

At the same time, each program is designed to suit career or personal objectives. Students may prepare for a geographic career in government, business and industry, or education, at any degree. A minimum of 30 graduate hours is required.

**Admission Requirements**

Experience indicates that geography majors/minors, or social/biological/physical science majors with some geography normally can meet program requirements. Prior to the successful completion of ten graduate hours, the following admission requirements must be met or the student will not be admitted to further 600- or 700-level courses.

1. The attainment of passing scores on the comprehensive qualifying examinations in the major and minor. If the student is still unsuccessful, the student may retake an examination.
2. Successful completion ("C" grade or better) of GEOG 375 Principles of Cartography or approved equivalent.

**Program Requirements**

1. Completion of a minimum of three courses in one of the following areas of concentration:
   a. Community Development and Planning
   b. Environmental and Resource Analysis
   c. Geographic Techniques
2. Completion of 30 hours of approved graduate-level credits in all concentrations, except Community Development and Planning. Where 36 hours are required, at least 20 hours to be completed in the Geography Department.
3. Completion of GEOG 661 (Geographic Research), GEOG 567 (Computerized Geodata Handling and Mapping), and GEOG 666 (Professional Development Seminar). GEOG 556a (Urban Planning and Zoning) also is required for the Community Development and Planning option.
4. Completion of 6 hours of GEOG 700 (Master's Thesis) or two to six hours of GEOG 710 (Independent Research). In addition, students may enroll in GEOG 712 (Professional Field Experience), and

g.s. students with the Community Development and Planning concentrations must complete a six-hour internship (enrolling in GEOG 712).

**Master of Arts in the Teaching of Geography**

**Advisor:**

Joseph Stoltman,
Room 3610, Wood Hall

The 34-hour Master of Arts in the Teaching of Geography is designed to improve the classroom teacher's competencies. There are two major objectives: to provide elementary and secondary teachers with a graduate degree option which combines the content of geography and related disciplines with professional development, and to provide elementary and secondary teachers with the skills and knowledge necessary for providing educationally sound learning experiences for their students.

**Admission Requirements**

The prospective candidate should examine state teacher certification requirements if those have not been fulfilled in an undergraduate program. Before the completion of ten graduate hours, all students must meet the following requirements:

1. Completion of GEOG 460, Concepts and Strategies in the Teaching of Geography, or an approved equivalent with a grade of "B" or better.
2. The attainment of passing scores on the comprehensive qualifying examinations in physical and human geography.

**Program Requirements**

The minimal requirements for the Master of Arts in the Teaching of Geography include the following:

1. Completion of 34 hours of graduate-level courses, at least one half of which at the 600-level or higher.
2. Completion of at least 20 hours of 500- and 600-level geography courses.
3. Completion of ED 601 (Fundamentals of Educational Research) or GEOG 661 (Geographic Research).
4. Completion of at least six hours of graduate-level education courses (not including ED 601).
5. Completion of GEOG 666 (Professional Development Seminar).
6. Completion of one or three-hour capstone experience, consisting of either GEOG 710 (Independent Research) or GEOG 712 (Professional Field Experience).

**Geography Courses (GEOG)**

**SYSTEMATIC GEOGRAPHY**

Open to Upperclass and Graduate Students

Prerequisites applicable to all 500-level courses in Geography are 14 credit hours of geography, including the specific prerequisite for each course, or consent of advisor or instructor.

- GEOG 521 Studies in Climatology and Hydrology 3 hrs.
- Studies at an advanced level in climatology and meteorology. Topics of current interest to atmospheric scientists, such as global climate change, are examined in depth. Regional climatic phenomena and their relation to atmospheric circulation patterns are also investigated. Prerequisite: GEOG 225 or consent.

GEOG 544 Studies in Economic Geography 2-3 hrs.

Prerequisites: GEOG 205 or consent.

1. 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.
2. 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.
3. 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.

GEOG 545 Studies in Human Geography 2-3 hrs.

Each course listed under this general title is a concentrated study of one of the principal subdivisions of human geography. The scope and principal themes of each specialized field are reviewed, with consideration given to current research on selected topics. Prerequisite: GEOG 203 or GEOG 205 or GEOG 244, or by consent of instructor. Course may be repeated for credit.

1. Cultural Geography. Techniques of spatial analysis applicable to the study of humans and their environment. The place of origin, diffusion and present distribution of selected cultural patterns will be traced with emphasis given to cultural traits which strongly influence human occupancy of the earth's surface.
2. Historical Geography. Studies of geographic and related features which have combined to influence the course of historical development. This course will concentrate on a particular region and/or period of time during each semester in which it is offered. Each specialization will be designated in the Schedule of Course Offerings.
3. Political Geography. General survey of the principles and the applied aspects of political geography; primary emphasis on the physical and cultural resource bases and conflicts of national states, the assessment of location, boundary delimitation and the territorial sea, politically organized territories within the administrative hierarchy, and electoral geography.

GEOG 553 Water Resources Management 3 hrs.

Examination of water resources management with emphasis on the effects of water uses and runoff on water quality and quantity. Topics include water resource systems, estimating consumptive and nonconsumptive water uses and runoff with computer models, and multiple socio-economic and hydrological factors in water resources management. Prerequisites: SOC 122, GEOG 105 and 225, and CS 105, or consent of instructor.
3. the size, function, 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
GEOG 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. Prerequisite: One of several advanced courses in physical geography, geology or biology, or consent of instructor.

GEOG 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 556 (1.0) or 570.

REGIONAL GEOGRAPHY
Open to Graduate Students Only
Prerequisites applicable to all 500-level courses in Geography include 14 credit hours of geography, or consent of advisor and/or instructor.

GEOG 510 Anglo American 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 received credit for GEOG 381.

GEOG 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 received credit for GEOG 351.

GEOG 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 received credit for GEOG 352.

GEOG 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 received credit for GEOG 353.

GEOG 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 received credit for GEOG 358.

GEOG 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.

Open to Graduate Students Only
GEOG 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 conjunction 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
Prerequisites applicable to all 500-level courses in Geography include 14 credit hours of geography, or consent of advisor and/or instructor.

GEOG 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.

GEOG 566 Field Geography 2–4 hrs.
The theory and application of geographic techniques and instruments of field investigations: collection and analysis of field data, preparation and presentation of material. The course is based primarily upon field observations. (One hour lecture and three hours laboratory.) Prerequisites: GEOG 265 or 375 and 562 or consent of instructor.

GEOG 567 Geodata Handling and Mapping 4 hrs.
Introduction to fundamental principles and procedures of representation and analysis of geographic data, in a variety of applications. The course combines theoretical discussions with practical data analysis. Topics include geographic measurement and representation; methods and software for descriptive and inferential statistics, with emphasis on spatial data analysis; computer mapping techniques; geographic modeling; and exploration of data resources. Prerequisites: GEOG 357 or consent of instructor; senior or graduate standing.

GEOG 568 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: GEOG 567 or consent.
GEOG 569 Intermediate Geographic Systems 4 hrs.
Principles and applications of Geographic Information Systems (GIS). Examines the nature and accuracy of spatially referenced data, as well as methods of data capture, storage, retrieval, visualization, and output. Emphasis is placed on developing solutions to problems involving spatial entities and attributes by employing logical conceptual analysis using the tools provided by a typical geographic information system. Prerequisite: GEOG 375.

GEOG 580 Advanced Cartography 4 hrs.
A review of current trends and philosophies of cartography. A combination of lectures, demonstrations, and independent projects provide the advanced cartography student with opportunities to practice state-of-the-art map design, multicolor production, photo-reproduction and computer-assisted mapping. It is recommended that GEOG 567 be taken before 580. Prerequisite: GEOG 375 or equivalent.

GEOG 582 Remote Sensing of the Environment 3 hrs.
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. Prerequisite: GEOG 375 or equivalent.

GEOG 597 Independent Study 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 the guidance of the departmental staff advisor and instructor. Prerequisite: Written consent of departmental advisor and instructor.

Open to Graduate Students Only

GEOG 661 Geographic Research 4 hrs.
Problem formulation and research design are introduced in light of modern geographic thought and current practice. Other course emphases are 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 advisor.

GEOG 665 Seminar in Geography 1–3 hrs.
Designed for the advanced student interested in and teaching problems related to various topics in geography. Prerequisite: Consent of instructor. May be repeated.

GEOG 666 Professional Development Seminar 1 hr.
Students participate in selected activities related to professional development. These activities include critiques of professional presentations, participation in professional meetings, and presentations of papers to faculty and colleagues. This course cannot be repeated for credit. This course is graded on a Credit/No Credit basis.

GEOG 669 Advanced GIS Seminar 3 hrs.
This course extends the focus of GEOG 569, Geographic Information Systems, from concepts and procedures to project applications and techniques in both individual projects and in seminar. Each student will be required to determine a Geographic Information Systems (GIS) problem and devise an efficient, innovative, and practical solution using advanced techniques in spatial analysis, spatial statistics, and cartographic programming. This course will increase the exposure to the state of the art in GIS software, theory, and practice. Seminar topics will include professionally relevant issues such as interfaces of GIS with spatial analysis, spatial statistics, remote sensing, and spatial modeling and customizing GIS with internal and external programming languages, project design, and management. Prerequisites: GEOG 567, 569, and an introductory computer programming course (Visual Basic, C, C++, FORTRAN, PASCAL, or the equivalent).

GEOG 682 Advanced Remote Sensing 3 hrs.
This course focuses on acquisition and interpretation of remotely sensed data, including data collection with several instruments. The main body of this course stresses interactive interpretation of digital image data collected from aircraft or satellites and manipulated within image processing/geographic information system software. Prerequisite: GEOG 567, 569, and an introductory computer programming course (Visual Basic, C, C++, FORTRAN, PASCAL, or the equivalent).

GEOG 686 Content Standards in Geography/Social Studies Teaching 3 hrs.
The course develops the content that is essential for teaching content standards based social studies in Michigan schools with an emphasis upon geography. The content basis, including theories, concepts, and principles of the social sciences and the inquiry processes they employ, will be applied to the instructional expectation of social studies teachers. Course is repeatable for credit when topics vary. Prerequisite: Consent of departmental advisor.

GEOG 687 Assessment in Geography/Social Studies 3 hrs.
The course develops classroom and large-group assessment theory and principles of practice in geography/social studies for grades K–12 students. Selected, constructed and extended response items that conform to the MEAP model for social studies are the assessment form for development, design, and analysis. Emphasis will be on classroom tests that assess higher level thinking skills in geography/social studies. Course is repeatable for credit when topics vary. Prerequisite: Consent of departmental advisor.

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

GEOG 700 Master's Thesis 6 hrs.

GEOG 710 Independent Research 2-6 hrs.

GEOG 712 Professional Field Experience 2-12 hrs.

GEOSCIENCES

Dr. Alan Kehew, Chair
Main Office: 1183 Rood Hall
Telephone: 387-5485
Fax: 387-5513
Estella Atekwana
David Barnes
Daniel Cassidy
Ronald B. Chase
William B. Harrison, III
Duane Hampton
Alan E. Kehew
Michelle Komink
Carla M. Koresky
R. V. Krishnamurthy
William A. Sauck
Christopher J. Schmidt

The Department of Geosciences offers the Master of Science in Geology as well as the Master of Science in Earth Science, which is an interdisciplinary program having two options, with geology as a core. The Department also offers the Doctor of Philosophy in Geology.

Master of Science in Geology

Advisor:
David Barnes,
Room 1135, Rood Hall

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

Admission Requirements

Undergraduate major in geology. Consideration of other preparation will be handled on an individual basis.

Program Requirements

1. Thirty semester hours (excluding deficiencies) 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 advisor. Areas of specialization in the Geology Department include Sedimentary Geology-Paleontology, Structural Geology, Petrology-Mineralogy, Environmental and Surficial Geology, Hydrogeology, Geophysics, and Stable Isotope Geochemistry.

2. All students are expected to attend Departmental seminars and are required to give one presentation in residence. Students may enroll for credit in GEOG 660 for seminar.

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

4. Satisfactory completion of GEOG 700, Master’s Thesis (6 hrs.).

5. Successful completion of an approved rock-oriented field course if not completed in the student’s undergraduate program.

6. Pass an oral thesis defense examination. In the case of failure, one retake is possible.

Master of Science in Earth Science

The Master of Science in Earth Science permits students to design programs of study, in consultation with the program advisor, that are compatible with the individual’s goals. The program may be adapted for students with backgrounds in biology, geography, agriculture, geology, junior college science
education, journalism, landscape architecture, anthropology, and physics. Some remedial work may be necessary for students entering the program with a minimal background. Courses for the program will be drawn from geology, geography, biology, anthropology, economics, political science, communication, chemistry, physics, agriculture, and others.

Program Requirements
1. A minimum of thirty-five hours is required for the degree without a master's thesis or thirty-nine hours with a thesis.
2. A core of eighteen semester hours in geology is required, including GEOL 438 (or equivalent).
3. May include satisfactory completion of four hours of GEOL 710 (Independent Research) or three hours of GEOL 712 (Field Experience), or both, but not to exceed seven hours.
4. Pass a comprehensive oral examination. If the first attempt at the oral exam is not considered satisfactory, then a second oral exam or a written exam will be required.
5. Students are expected to attend Departmental seminars and are required to give one presentation. Students may enroll for credit in GEOL 660 for seminar presentations.

Master of Science in 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 one semester each of college chemistry and physics. Students planning to teach in secondary schools should complete certification requirements.

Program Requirements
1. A minimum of thirty hours of graduate credit in earth science or related disciplines with consent of graduate advisor.
2. Students are expected to attend Departmental seminars and are required to give one presentation. Students may enroll for credit in GEOL 660 for seminar presentations.
3. Complete a general exploratory examination in earth science 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. Oral defense of the thesis or independent research will substitute for the comprehensive exam.

Doctor of Philosophy in Geology
Advisor: Alan E. Kehew, Room 1183, Rood Hall

The Doctor of Philosophy in Geology with emphasis in hydrogeology is a research degree designed for persons intending to take leadership roles in teaching and research and in applied areas of hydrogeology. Applicants will be expected to meet the entrance requirements of The Graduate College and to demonstrate that they have an interest in, and aptitude for, conducting high quality research.

As soon as possible after matriculation, students will be assigned a graduate advisor. After admission to candidacy for the doctoral degree, the student will be assigned an individual doctoral research committee chairperson and two faculty sponsors. The composition of the committee will be based on the student's expressed interests. In special cases a third faculty sponsor from another institution or research facility may also be appointed to the doctoral research committee. These members of the Graduate Faculty will facilitate and guide the students' development within the academic and research programs of the Department and University.

Admission Requirements
1. Master's degree in hydrogeology or related field, e.g. geology, geophysics, or geochemistry. Applicants with degrees in chemistry, biology, environmental engineering, civil engineering, and geology, or major area if other than geology, portions of the Graduate Record Examination.

Program Requirements
1. Complete at least sixty (60) hours of coursework and dissertation credits beyond the master's degree. Programs will be developed by the student in consultation with the student's doctoral committee.
2. Two research skills from the following:
   a. Reading proficiency in one foreign language to translation level in consultation with the graduate advisor; and/or
   b. Research skill in mathematics, statistics, or computer science. For specific details concerning approved research skills, students will consult with the graduate advisor.
3. Qualifying Examination. Before admission to candidacy for the doctoral degree, the student must pass a general examination in hydrogeology. This examination is intended to determine the student's fundamental knowledge of the field in several areas of specialization including: hydrogeology, geological measurements and interpretation, geochemistry, and modeling. The examination shall consist of an initial written portion, and an oral portion that will be conducted within six months of the successful completion of the written part of the examination. The student will have the opportunity to repeat the written portion of the examination in order to qualify as a Ph.D. candidate.
4. Complete and successfully defend a dissertation on a research topic approved by the student's doctoral committee. Fifteen credit hours are required for the doctoral dissertation.

General Plan and Sequence of Program
As soon as possible after admission, and with the advice of the departmental doctoral committee, the student will select an advisor who will chair his/her dissertation committee. The doctoral program will be planned by the student in consultation with his/her advisor and the doctoral committee.

Minimum requirements in ancillary fields include mathematics through differential equations and approved upper division courses in chemistry, biology, physics, geography, and statistics. Additional outside course work applicable to the dissertation program may be required by the doctoral committee. The student will present a seminar on the results of his or her dissertation research to the University and defend his/her dissertation.

Students entering the Ph.D. program in hydrogeology will consider the following in developing the curricular sequences in their program:
1. If curricular deficiencies exist, required courses are to be taken beginning in the first semester in residence. A minimum of one deficiency must be satisfied each semester or term until all are removed. All exceptions must be approved by the Graduate Committee.
2. Research tool courses are to be taken as early as practicable in the program of study.
3. Courses that are logical precursors to other courses should be taken in their proper sequential order. Each student will develop a "proper sequencing" of courses with his/her graduate committee.

Sample Program for a Student Entering with a Bachelor's Degree in Geology

Master's degree component of program
Courses Credit Hours
GEOL 512 Hydrogeology ........................................ 3
GEOL 609 Surface Water Hydrology ............................ 3
GEOL 545 Environmental Geology ............................... 3
GEOL 525 Surface Geophysics .................................. 2
GEOL 526 Principles and Practices of Water Analysis ...... 2
GEOL 585 Groundwater Hydraulics ............................. 3
GEOL 606 Hydrochemistry ..................................... 3
GEOL 615 Contaminant Hydrology ............................... 3
GEOL 605 Groundwater Modeling ......................... 3-6
CHEM 525 Techniques in Water Analysis .................. 3
GEOL 700 Master's Thesis ...................................... 6

Entering students who do not have MATH 274, Ordinary Differential Equations, or CHEM 365, Introduction to Organic Chemistry, will be required to take these courses to correct deficiencies during their first year in the program.

Students who have had the equivalent of any of the courses listed will be permitted to take alternate courses from a list of elective courses. Entering students will be encouraged to take courses to develop "tool skills" early in their program.

Doctoral degree component of program
GEOL 516 Geochronology and Global Change .............. 3
GEOL 536 Glacial Geology ...................................... 3
GEOL 563 Electrical Methods .................................. 3
GEOL 608 Advanced Hydrogeology ............................ 3
GEOL 611 Mineral Analysis ..................................... 3
GEOL 612 Advanced Hydrogeology ............................. 3
GEOL 614 Environmental Regulatory Overview ............ 3
GEOL 617 Stable Isotope Geochemistry ...................... 3
GEOL 666 Advanced Seminar in Hydrogeology ................ 3

Research and professional field experience
GEOL 710 Independent Research ............................... 5
GEOL 712 Professional Field Experience .................... 3
GEOL 735 Graduate Research .................................. 10
GEOL 730 Doctoral Dissertation ............................... 15
Sample Program for a Student Entering with a Master's Degree in Geology

Students who have had the equivalent of any of the courses listed will be permitted to take alternate courses from the list of elective courses. Entering students will be encouraged to take courses to develop "tool skills" early in their program.

<table>
<thead>
<tr>
<th>Basic or Core courses required in this program</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>CHEM 525 Techniques in Water</td>
<td>3</td>
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<tr>
<td>GEOL 515 Applied Hydrogeology</td>
<td>3</td>
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<tr>
<td>GEOL 523 Hazardous Waste Operation and Emergency Response</td>
<td>1</td>
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<tr>
<td>GEOL 524 Remediation Design and Implementation</td>
<td>1</td>
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<tr>
<td>GEOL 525 Surface Geophysics</td>
<td>1</td>
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<tr>
<td>GEOL 526 Principles and Practices of Aquifer Testing</td>
<td>1</td>
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<tr>
<td>GEOL 527 Principles of Well Drilling and Installation</td>
<td>1</td>
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<tr>
<td>GEOL 528 Principles/Practices of Groundwater Sampling/Monitoring</td>
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<tr>
<td>GEOL 600 Hydrogeochemistry</td>
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Research and Professional Field Experience

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<tr>
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<tr>
<td>GRAD 730 Doctoral Dissertation</td>
<td>15</td>
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<tr>
<td>GRAD 735 Graduate Research</td>
<td>10</td>
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Elective courses

| GEOL 506 Introduction to Soils             | 3            |
| GEOL 516 Geochronology and Global Change   | 3            |
| GEOL 536 Glacial Geology                   | 3            |
| GEOL 561 Reflection Seismology             | 3            |
| GEOL 562 Gravity and Magnetic Exploration  | 3            |
| GEOL 563 Electrical Methods                | 3            |
| GEOL 564 Environmental Field Geophysics    | 3            |
| GEOL 544 Environmental Geology             | 3            |
| GEOL 610 Geochemistry                      | 3            |
| GEOL 611 Mineral Analysis                  | 3            |
| GEOL 613 Wetlands Hydrology                | 3            |
| Other courses approved by the student's graduate committee. |            |

Research experiences required in this program

<table>
<thead>
<tr>
<th>Research experiences required in this program</th>
<th>Grad Credits</th>
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<tbody>
<tr>
<td>GEOL 710 Independent Research</td>
<td>5</td>
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<tr>
<td>GEOL 730 Doctoral Dissertation</td>
<td>15</td>
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<tr>
<td>GEOL 735 Graduate Research</td>
<td>10</td>
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<thead>
<tr>
<th>Financial Assistance</th>
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<tbody>
<tr>
<td>Several departmental, University and grant-funded fellowships, teaching assistantships, and research assistantships are available. Application forms and additional information are available from the Department of Geology and from The Graduate College.</td>
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<tr>
<th>Geosciences Courses (GEOL)</th>
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<tbody>
<tr>
<td>Open to Upperclass and Graduate Students</td>
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<tr>
<td>Prerequisites applicable to all 500-level courses in Geology are junior status or above and 12 or more credit hours of course work in geology, including the specific prerequisites for each course, or consent of instructor.</td>
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<tr>
<th>GEOL 502 Problems in Geology and Earth Science</th>
<th>1-3 hrs.</th>
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<tbody>
<tr>
<td>Individual problems involving topical reading and/or research problems in earth sciences. May be repeated for credit. Prerequisite: GEOL 300, 301, 440, or consent of instructor.</td>
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<tr>
<th>GEOL 503 Environmental Consulting Practice</th>
<th>2 hrs.</th>
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<tr>
<td>An introduction to the principles and practices that are peculiar to environmental consulting. Emphasis is placed on the legal, business, and practical considerations needed to conduct a consulting practice. This course is not to be counted toward the 60 credits beyond the master's in the Ph.D. program. Prerequisite: Graduate standing in Geology or Earth Science.</td>
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<tr>
<th>GEOL 506 Introduction to Soils</th>
<th>3 hrs.</th>
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<tbody>
<tr>
<td>Properties of natural and engineered soils. Interactions between soils and plants, microorganisms, water, atmosphere, and contaminants. Soil uses, remediation, and conservation. Prerequisite: CHEM 100 or placement in CHEM 101 or above.</td>
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<tr>
<th>GEOL 512 Hydrogeology</th>
<th>3 hrs.</th>
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<tr>
<td>The study of surface water and groundwater with special emphasis on groundwater movement and relation to the geologic environment. Prerequisites: GEOL 301 or GEOL 335; MATH 122. MATH 123 to be taken concurrently.</td>
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<tr>
<th>GEOL 515 Applied Hydrology</th>
<th>3 hrs.</th>
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<tbody>
<tr>
<td>Application of hydrogeologic theory to water supply networks. Topics include: well installation, well testing, aquifer testing, and distribution systems. Prerequisite: 12 hours of geology, earth science, or consent of instructor.</td>
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<tr>
<th>GEOL 516 Geochronology and Global Change</th>
<th>3 hrs.</th>
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<tr>
<td>Application of the concepts of nuclear physics and chemistry to geological problems. Topics to include absolute and relative dating, formation of the elements, global change and causes of global change. Prerequisites: Basic knowledge of chemistry, physics, and math; GEOL 335.</td>
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<tr>
<th>GEOL 520 Economic Geology</th>
<th>3 hrs.</th>
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<tr>
<td>Origin, occurrence, and utilization of metallic and non-metallic mineral deposits, and mineral fuels. Three lectures a week. Prerequisite: GEOL 301 or GEOL 335.</td>
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<tr>
<th>GEOL 523 Hazardous Waste Operation and Emergency Response</th>
<th>1 hr.</th>
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<tr>
<td>Training in safety procedures for working on hazardous sites. Training in the safe handling of hazardous materials which might be encountered during drilling, soil sampling, or water sampling. Review of State and Federal regulations. Use of personal protection equipment. Satisfies OSHA 40 hour training requirements. Prerequisites: GEOL 412 or 512.</td>
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<tr>
<th>GEOL 524 Remediation Design and Implementation</th>
<th>1 hr.</th>
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<tr>
<td>Principles and techniques for the remediation or cleanup of ground water and soils contamination. Introduction to pump and treat systems, bioremediation, soil vapor extraction, air sparging, and others. Choosing the appropriate system and sizing it for economical application to a specific site. Field trips required. Prerequisites: GEOL 412 or 512.</td>
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<tr>
<th>GEOL 525 Surface Geophysics</th>
<th>1 hr.</th>
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<tr>
<td>An introduction to the use of those surface geophysical methods used in the investigation of ground water. Includes shallow seismic, electrical, and magnetic methods; and ground penetrating radar. Prerequisite: GEOL 412 or GEOL 512.</td>
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<tr>
<th>GEOL 526 Principles and Practices of Aquifer Testing</th>
<th>1 hr.</th>
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<tr>
<td>Introduction to the methods of aquifer testing with emphasis on step drawdown pump tests, forty-hour pumping test with recovery, slug tests and bail tests data processing, using computer software, wells, data loggers and water level metering equipment. Prerequisite: GEOL 412 or GEOL 512.</td>
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<tr>
<th>GEOL 527 Principles of Well Drilling and Installation</th>
<th>1 hr.</th>
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<tr>
<td>An introduction to hollow-stem auger drilling and well installation, rotary drilling with mud and air, cable tool drilling, monitoring well design, sample collection and description, cuttings, spilt spoon, and Shelby tube borehole geophysics, and installation and development of wells. Prerequisite: GEOL 412 or GEOL 512.</td>
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<tr>
<th>GEOL 528 Principles/Practices of Groundwater Sampling/Monitoring</th>
<th>1 hr.</th>
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<tbody>
<tr>
<td>An introduction to state-of-the-art techniques for sampling, monitoring, and evaluating groundwater systems and surface water interactions. Includes quality control and assurance procedures, groundwater sampling equipment and procedures, field hydrochemical equipment and procedures, and vadose zone sampling of water and gas. Prerequisite: GEOL 412 or GEOL 512.</td>
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<tr>
<th>GEOL 530 Plate Tectonics and Earth Structure</th>
<th>3 hrs.</th>
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<tr>
<td>Major tectonic features and internal structure of the earth in relation to plate tectonics, critical examination of the tenets of plate tectonics. Prerequisites: GEOL 301 or GEOL 335, 430, or consent of instructor.</td>
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<tr>
<th>GEOL 536 Glacial Geology</th>
<th>3 hrs.</th>
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<tr>
<td>A study of the mechanics of glacial 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 301 or GEOL 335.</td>
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<tr>
<th>GEOL 544 Environmental Geology</th>
<th>3 hrs.</th>
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<tr>
<td>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. Prerequisites: GEOL 131, GEOL 301 or GEOL 335, or consent of instructor.</td>
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<tr>
<th>GEOL 560 Introduction to Geophysics</th>
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<tr>
<td>Introduction to geophysical exploration methods including seismic reflection and refraction, gravity, magnetics, electric, and electro magnetics. Prerequisites: Two semesters of college physics; GEOL 430; MATH 122; or consent of instructor.</td>
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<tr>
<th>GEOL 561 Reflection Seismology</th>
<th>3 hrs.</th>
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<tr>
<td>Reflection seismology and related techniques as applied to petroleum exploration and deep crustal exploration. Theoretical background, data collection, data processing and interpretation will be discussed. Prerequisites: GEOL 560 and MATH 123.</td>
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</tbody>
</table>
GEOL 562 Gravity and Magnetic Exploration 3 hrs. 
Gravitational and magnetic methods applied to tectonic, mineral exploration, hydrogeologic, and crustal studies. Theoretical background, instrumentation, surveying techniques, data reduction, processing, computer modeling, and interpretation will be discussed. Two lectures and three hours of laboratory, problem solving, and field exercises. Prerequisites: GEOL 560 and MATH 123.

GEOL 563 Electrical Methods 3 hrs. 
Resistivity sounding and profiling, induced polarization, spontaneous potential, electromagnetic methods using natural and artificial fields and ground penetrating radar. Two lectures and three-hour laboratory with field studies and laboratory modeling. Prerequisites: GEOL 560, MATH 123, and PHYS 440; or consent of instructor.

GEOL 564 Environmental Field Geophysics 3 hrs. 
Field studies utilizing seismic gravity, and magnetic, electromagnetic, georadar, and electrical resistivity methods for glacial geology and ground-water, engineering, and environmental problems in the Kalamazoo area. Course also includes field work at local sites. Prerequisite: GEOL 560, or consent of instructor.

Open to Graduate Students Only

GEOL 600 Hydrogeochemistry 3 hrs. 
Geochemical origin and characteristics of surface water and groundwater; equilibrium thermodynamics, the carbonate system, redox processes, ion exchange, organic compounds and isotopes. Prerequisites: GEOL 512 or consent of instructor.

GEOL 605 Groundwater Modeling 3 hrs. 
Study of groundwater flow and contaminant transport rates using analytical and numerical models. Prerequisites: GEOL 512, 600, FORTRAN or Basic, MATH 274, or consent of instructor.

GEOL 608 Advanced Hydrogeochemistry 3 hrs. 
Investigation of selected topics in hydrogeochemistry. A problem-oriented approach to the study of classical and current topics dealing with natural and contaminated groundwater. Prerequisite: GEOL 600.

GEOL 609 Surface Water Hydrology 3 hrs. 
Hydrology describes the waters of the earth, their occurrence, circulation and distribution, and their reaction with the environment. Emphasis is on quantitative aspects of surface water. Topics include, stream flow, precipitation, evapotranspiration, hydrographs, runoff, probability analysis and modeling.

GEOL 610 Geochemistry 3 hrs. 
An introduction to the basic principles and theories of geochemistry. Prerequisites: GEOL 440 or permission.

GEOL 611 Mineral Analysis 3 hrs. 
X-ray diffraction and fluorescence techniques applied to mineralogical and petrological problems. Prerequisites: GEOL 335 or permission.

GEOL 612 Advanced Hydrology 3 hrs. 
Analytical and numerical analysis of groundwater flow and contaminant transport. Topics include well hydraulics, flow in unsaturated soils, multiphase flow, and advection-dispersion. Prerequisites: GEOL 512, 606, and MATH 123.

GEOL 613 Wetlands Hydrology 3 hrs. 
Introduction to hydrologic function of wetlands, wetlands classification, and the relationship between hydrology and soil and plants. Emphasis will be placed on the use of these parameters in wetlands delineation. Prerequisite: GEOL 512 or consent of instructor.

GEOL 614 Environmental Regulatory Overview 3 hrs. 
Study of those federal and state laws that govern the distribution, use and pollution of natural waters. Emphasis is placed on current interpretations and policy. Prerequisite: GEOL 512 or consent of instructor.

GEOL 615 Contaminant Hydrology 3 hrs. 
Theory and field methods related to the transport of contaminants in groundwater. Includes theoretical considerations, case histories, low, analysis of problems, and preparation of hydrogeological reports.

GEOL 617 Stable Isotope Hydrology 3 hrs. 

GEOL 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 hand specimens to large map areas. Prerequisites: GEOL 430 and consent.

GEOL 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).

GEOL 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. Prerequisite: GEOL 440 or equivalent.

GEOL 645 Carbonate and Clastic Petrology 3 hrs. 
Identification, recognition, and analysis of sedimentary rocks in hand specimen and thin section. Study of the distribution of sediments in basin settings. Prerequisites: GEOL 433 and 435, or consent of instructor.

GEOL 646 Carbonate and Evaporite Depositional Systems 3 hrs. 
Processes, characteristics, and relationships of modern and ancient basin! carbonate and evaporite facies. Course includes an 11-day field trip (Winter break) 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, interpretation of cores and slabs at the mesoscopic level. Two lectures and one 3-hour laboratory per week. Prerequisites: GEOL 433, GEOL 435.

GEOL 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 to be offered during a semester or term. Will be announced in advance.

GEOL 655 Quantitative Basin Analysis 3 hrs. 
Theory and practical application of sequence stratigraphy and backstripping; two fundamental tools of the petroleum industry and academic community. Prerequisites: GEOL 435 and GEOL 560 or consent of instructor.

GEOL 656 Clastic Depositional Systems 3 hrs. 
Description and analysis of clastic depositional systems and discussion of the sediment they produce. Laboratory investigations include stratigraphic and seismic analysis. Prerequisite: GEOL 435 or consent of instructor.

GEOL 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.

GEOL 686 Advanced Hydrology Seminar 1–3 hrs. 
Topics in theoretical and applied hydrology. Course is repeatable for credit. Prerequisite: Graduate standing.

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

GEOL 700 Master's Thesis 6 hrs.

GEOL 710 Independent Research 2–6 hrs.

GEOL 712 Professional Field Experience 2–12 hrs.

GEOL 730 Doctoral Dissertation 15 hrs.

GEOL 735 Graduate Research 2–10 hrs.
academic records but deficient in • undergraduate course work in history may be admitted with stipulation to complete appropriate undergraduate course work.
2. Graduate Record Examination (GRE) general aptitude test scores.
3. Three letters of recommendation.
4. A brief essay concerning applicant's academic and professional objectives, and a writing sample.
5. Students whose native language is other than English must achieve a TOEFL score of 600 or above, or otherwise demonstrate a command of English judged adequate by the department to pursue graduate study in the discipline.

Program Requirements
Three options for completing the degree are available.

THESIS OPTION (30 hrs.):
Designed for students who anticipate doctoral studies in history, or other subsequent graduate study, and/or careers in research.
Requirements:
1. HIST 601.
2. A broad field of specialization built around readings courses and research seminars. At least two readings courses (HIST 602-620) may be required and additional course work in this area is strongly recommended. At least one research seminar (HIST 670, 675-688) is required.
3. Students must take at least two courses (one in the 600-level) which focus as a major part of the course work on the tools that historians use, such as cartography, paleography, oral history, anthropology, ethnology, and history, material culture, art, architecture, archeology, etc. These courses are designated by the Graduate Studies Committee.
4. Students must take at least two courses (one in the 600-level) which focus as a major part of the course work on the tools that historians use, such as cartography, paleography, oral history, anthropology, ethnology, and history, material culture, art, architecture, archeology, etc. These courses are designated by the Graduate Studies Committee.
5. An internship/field experience (HIST 640 or 645) may substitute a second research seminar (HIST 670, 675-688). Research seminars have prerequisite readings courses.

GENERAL OPTION (33 hrs.):
Designed for in-service teachers, general enrichment, multidisciplinary studies, and other purposes for which the master's degree normally is a terminal degree. Requirements:
1. HIST 601.
2. At least one research seminar (HIST 670, 675-688). Research seminars have prerequisite readings courses.
3. Students must take at least one course which focus as a major part of the course work on the tools that historians use, such as cartography, paleography, oral history, anthropology, ethnology, material culture, art, architecture, archeology, etc. These courses are designated by the Graduate Studies Committee.

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GENERAL OPTION (33 hrs.):
Designed for in-service teachers, general enrichment, multidisciplinary studies, and other purposes for which the master's degree normally is a terminal degree. Requirements:
1. HIST 601.
2. At least one research seminar (HIST 670, 675-688). Research seminars have prerequisite readings courses.
3. Students must take at least one course which focus as a major part of the course work on the tools that historians use, such as cartography, paleography, oral history, anthropology, ethnology, material culture, art, architecture, archeology, etc. These courses are designated by the Graduate Studies Committee.
4. Up to 12 hrs. of course work may be taken outside the department in an advisor-approved program of study, and up to 6 hrs. of appropriate course work in history at the 400-level, exclusive of 496-499, may be elected with the approval of the Graduate Advisor.
5. Comprehensive examination: a course-based written examination following completion of at least 24 hrs. of course work including required core courses and a research seminar. An oral examination may also be required by the student's exam committee.

PUBLIC HISTORY OPTION (39 hrs.):
Designed for students entering or continuing in public history professions. Requirements:
1. HIST 601.
2. At least one research seminar (HIST 670, 675-688). Research seminars have prerequisite readings courses.
3. Students must take at least three courses (two at the 600-Level) which focus as a major part of the course work on the tools that historians, particularly public historians use or courses which focus on tools of particular importance to public historians. These courses are designated by the Graduate Studies Committee.
4. Up to 12 hrs. of course work may be taken outside the department in an advisor-approved program of study, and up to 6 hrs. of appropriate course work in history at the 400-level, exclusive of 496-499, may be elected with the approval of the Graduate Advisor.
5. An internship/field experience (HIST 640 or 712: 6 hrs.).
6. Comprehensive examination: a course-based written examination following completion of at least 24 hrs. of course work including required core courses and a research seminar. An oral examination may also be required by the student's exam committee.

Doctor of Philosophy in History
The Doctor of Philosophy in History is designed to prepare students for careers in education, teaching, and public history.
modern Europe, public history, and indigenous peoples of the Americas. Preparation extends beyond archival research techniques to include oral history and oral tradition, ethnography, the arts and humanities, museum studies, historic preservation, gender studies and documentary editing. Students are provided with opportunities to teach in the undergraduate program under the direction of senior colleagues and receive training in additional professional skills.

Faculty research and instruction emphasize the social and cultural aspects of historical change. Resources include the Medieval Institute, the Institute of Cistercian Studies, the Rawlinson Centre for Anglo-Saxon and Manuscript Studies, the Kercher Center for Social Research, the Diether Haenicke Center for Social Research, the Medieval Manuscript Studies, the Kercher Center for Social Research, the Digital History Studies and the holdings of the French Michilimackinac Translation Project.

Admission Requirements

1. Admission normally requires a master's degree in history or a closely related discipline, or substantial prior course work in history. Students holding baccalaureate degrees may be admitted directly to the program but must complete Master of Arts comprehensive examinations after approximately 18 hours of course work with a recommendation by the examining committee to continue doctoral studies.

2. Graduate Record Examination (GRE) general aptitude test scores; applicants with a master's degree in a discipline other than history may be asked also to complete the GRE subject test in history.

3. Three letters of recommendation.

4. A brief essay concerning applicant's academic and professional objectives, and a writing sample.

5. Reading proficiency in foreign languages appropriate to the proposed program of study is strongly recommended; studies to meet deficiencies in this area must be begun during the first year of doctoral study. Students whose native language is other than English must achieve a TOEFL score of 600 or above, or otherwise demonstrate a command of English judged adequate by the department to pursue graduate study in the discipline.

Program Requirements

Award of the Doctor of Philosophy in History is based upon successful completion of quantitative examinations in several fields and demonstration in seminars and the dissertation of the ability to conduct original research. Programs of study are developed in consultation with the Graduate Advisor and appropriate faculty. The program requires a minimum of 75 hours of credit beyond the baccalaureate degree or 45 hours beyond the master's degree. The Master of Arts thesis option and the Doctor of Philosophy program share many common structures and requirements, and may be planned as a single program of study. Candidates admitted with a master's degree from another institution or discipline may need more than the minimum of 45 hours of course work to complete the field requirements.

All students must complete two core courses in their first year of study: HIST 601 and HIST 698. These courses serve several roles. They provide students with historical and theoretical underpinnings of the profession of historian in all its myriad forms and applications; they train students in the various skills needed to succeed as professional historians in various venues; and they help students become part of the graduate student community in the department. Core courses must be completed by the end of the first year of graduate course work. Each student must also complete course work in theory and research techniques in an allied social science or humanities discipline appropriate to the student's research agenda.

Major Field

The major field is usually a chronologically broad teaching field covering a major civilization of national experience. Within the major field, students then identify, in consultation with the Director of Graduate Studies and appropriate faculty, chronological, geographic, and topical research emphases. See the department's graduate handbook for additional information.

Minor Field

The minor field may be a chronological, geographical, or topical adjunct to the major field, but may also be a concentration in theory, research, or application skills. Public history course work may also be prepared as a minor field.

Outside Field

The outside field may comprise work in a single discipline, or may be a series of courses with an interdisciplinary focus appropriate to the major field and dissertation topic.

Foreign Language Requirement

Students must demonstrate reading proficiency in at least one foreign language appropriate for their programs of study prior to qualifying examinations. Proficiency is demonstrated by satisfactory completion of a 201-level or 401-level foreign language course, or by a department-approved equivalency test. Many major fields have additional foreign language requirements. All required course work to achieve necessary proficiency must be completed prior to qualifying examinations.

Theory, Research, and Applications Course Work

Each student must complete approved course work in theory and research techniques in an allied social science or humanities discipline appropriate to the candidate's research agenda. Course work is selected in consultation with the student's examination committee and must be approved by the Director of Graduate Studies.

Research Tools

Three research tools are required. Competence in one foreign language is a research tool requirement for all doctoral students in the history program. In addition, competence in quantitative, statistical, or qualitative methodology must be exhibited to meet the second and third tool requirements. Competence in a tool is normally shown by a grade of "B" or better in approved course work, or by an advanced degree in an allied social science or humanitie discipline. In some instances, a student may substitute a second foreign language for one of the tools in quantitative, statistical, or qualitative methodology. Course work is selected in consultation with the student's examination committee and must be approved by the Director of Graduate Studies.

Qualifying Examinations

Written and oral qualifying examinations are taken after the satisfactory completion of all course work and foreign language requirements. Examinations cover the major and minor fields and in some cases the outside field.

Dissertation

The dissertation may comprise from 12 to 18 hours of graduate course work depending upon other characteristics of the program of study.

History Courses (HIST)

Open to Underclass and Graduate Students

Undergraduates with junior or senior standing and 12 or more credit hours of course work in history may enroll in 500-level courses with prior approval of the department chair.

HIST 500 Studies in History

1–3 hrs.

Topics announced in Schedule of Course Offerings. May be repeated under different topics.

HIST 510 Colloquium

1 hr.

Research presentations by department faculty, advanced graduate students and invited scholars. Specific topics may be listed in Schedule of Course Offerings. May be repeated to a maximum of 3 hrs. Graded on a Credit/No Credit basis.

HIST 515 Topics in Public History

1–3 hrs.

Selected topics in aspects of public history including museology, historic preservation and cultural resource management, historical administration, information science, and applied research. Topics listed in Schedule of Course Offerings. May be repeated under different topics.

HIST 517 Topics in Economic and Social History

1–3 hrs.

Selected topics in the history of economic and social conditions and change such as the development of world trade and world economy, development and modernization, urbanization, social and political movements, demography and migration, family structure, etc. Topics announced in Schedule of Course Offerings. May be repeated under different topics.

HIST 519 Topics in Intellectual and Cultural History

1–3 hrs.

Selected topics in the history of ideas, literary and artistic expression, intellectual and cultural character of various periods and civilizations, examination of historical conditions through philosophy and the arts, etc. Topics announced in Schedule of Course Offerings. May be repeated under different topics.

HIST 530 Studies in Early American History

3 hrs.

Topics listed in Schedule of Course Offerings. May be repeated under different topics.

HIST 535 Studies in Recent American History

3 hrs.

Topics listed in Schedule of Course Offerings. May be repeated under different topics.

HIST 550 Studies in Medieval History

3 hrs.

May be crosslisted with MDVL 500. Topics listed in Schedule of Course Offerings. May be repeated under different topics.

HIST 565 Studies in Modern European History

3 hrs.

Selected approaches to European history since the Renaissance. Topics listed in Schedule of Course Offerings. May be repeated under different topics.

HIST 585 Studies in Asian and African History

3 hrs.

Topics listed in Schedule of Course Offerings. May be repeated under different topics.
HIST 590 Proseminar 3 hrs.
Research and writing on selected themes. Topics listed in Schedule of Course Offerings. May be repeated under different topics.

HIST 591 Topics in Theory and Practice 1–3 hrs.
Select theoretical, technical, and interpretive issues in the field of history: interaction with methodologies of other social science and humanities disciplines; innovative forms and techniques of documentation and data collection; major historical interpretations currently before the academic world and the public. Topics listed in Schedule of Course Offerings. May be repeated under different topics.

HIST 592 Computers in Historical Research 1–3 hrs.
Computer applications to historical and related research projects including manuscript analysis techniques, text-oriented databases, museum and historical agency database and registration systems, simulations, etc. Survey of applications in closely related disciplines. Maybe repeated. Prerequisite: CS 105 or equivalent.

HIST 595 History Writing Workshop 1–3 hrs.
Practicum in the writing of history: editing and publishing; preparation of written materials for lay readers and audiences outside the discipline. May be repeated to a maximum of six semester hours.

HIST 596 Local History Workshop 1–3 hrs.
Practicum in research techniques for problems in local and small community history, including oral tradition, genealogy, and interdisciplinary method. May be repeated to a maximum of six semester hours.

Open to Graduate Students Only

HIST 600 Historical Method 3 hrs.
Introduction to the field of history and its recent development. Practice in the use of oral and written communication skills for conveying historical knowledge to various audiences. Survey of major journals and bibliographical tools for general research. Examination of interaction between historical techniques and those of related disciplines.

HIST 601 Historiography 3 hrs.
Study of the major figures, ideas, and developments in historiography. Students may conduct research in their fields of concentration.

HIST 602 Historical Theory 3 hrs.
Study of the literature, research, and explanatory strategies of contemporary historical theory with emphasis on social and cultural history.

HIST 605 Readings in Early United States History 3 hrs.
Intensive study of historiography, interpretations, major works, serials, and databases in United States history from colonial times until the late nineteenth century. May be repeated under different instructor.

HIST 608 Readings in Recent United States History 3 hrs.
Intensive study of historiography, interpretations, major works, serials, and databases in United States history from the late nineteenth century to the present. May be repeated under different instructor.

HIST 612 Readings in Medieval History 3 hrs.
Intensive study of historiography, major works, serials, and databases in medieval history. May be repeated under different instructor.

HIST 616 Readings in Modern European History 3 hrs.
Intensive study of historiography, major works, serials, and databases in European history from approximately 1750 to the present. May be repeated under different instructor.

HIST 618 Readings in Global and Contemporary History 3 hrs.
Intensive study of historiography, interpretations, major works, serials, and databases dealing with issues in modern world history, such as colonialism, nationalism, international conflict and cooperation, economic integration, etc. Topics may be listed in Schedule of Course Offerings. May be repeated under different topics.

HIST 620 Bibliographical Research 1–3 hrs.
Research in the literature of specialized topics and issues as they pertain to thesis or dissertation preparation, and preparation of a bibliographical essay. Topics may be listed in Schedule of Course Offerings.

HIST 625 Problems in Cultural Resource Management 1–3 hrs.
History and practice of various facets of administration, conservation, development and interpretation of cultural and historical sites, agencies and institutions. Topics may be listed in Schedule of Course Offerings. May be repeated under different topics.

HIST 635 Research Techniques in Medieval History 3 hrs.
Introduction to the sources and methods used in the study of medieval Europe. Interpretation of written sources including narratives, chronicles, charters, early government records, etc., with emphasis on authentication, dating and locating these materials. Survey of techniques for interpreting artifacts and material culture such as archaeology, numismatics, and epigraphy.

HIST 636 Documentary Latin Paleography, 1100–1500 3 hrs.
Introduction to medieval Latin paleography and diplomatics, focusing on the Latin, scripts, abbreviations, and form of documents from historical archives of the High and Late Middle Ages, i.e., 1100–1500. Taught as a practicum offering students maximum practice in the transcription and reading of materials reproduced from various Spanish and Italian ecclesiastical and notarial archives, and from the royal Aragonese and papal chancelleries.

HIST 640 Museums Practicum 3–6 hrs.
Supervised field assignment with focus on a research project dealing with a specific aspect of museum or site administration such as registration, collections development, conservation, interpretation, etc. Registration requires approval of the Department Chair. May be repeated to a maximum of six hours.

HIST 642 Oral History 3 hrs.
Techniques and methodology of orally transmitted historical data. Considers oral history in various cultural settings under both literate and nonliterate conditions.

HIST 644 Material Culture and the Built Environment 3 hrs.
Social and cultural studies of artifacts, the design and furnishing of domestic space, and the social construction of the built environment in selected historical periods. Topics listed in Schedule of Course Offerings. May be repeated under different topics.

HIST 646 Historical Archaeology 3 hrs.
Development of approaches and perspectives that link documentary sources and material culture. Considers archaeology's artificial focus and its application in areas such as ethnology, art history, the history of technology, and submerged cultural resources. Topics listed in Schedule of Course Offerings. May be repeated under different topics.

HIST 650 Special Projects 1–3 hrs.
Participation in departmental research and interpretive projects. Topics may be listed in Schedule of Course Offerings. Registration requires approval of the Department Chair. May be repeated to a maximum of six hours. Prerequisite: HIST 600, HIST 601, and possession of or admission to candidacy for a graduate degree.

HIST 670 Seminar in History 3 hrs.
Selected issues and problems in historical studies. Topics announced in Schedule of Course Offerings. May be repeated under different topic.

HIST 671 Seminar in Theory and Philosophy of History 3 hrs.
Advanced research. Topics may be announced in Schedule of Course Offerings. May be repeated under different topics.

HIST 672 Seminar in Local History Methodology 3 hrs.
Research design and execution organized around interdisciplinary methodology. Presentations and research supervision by faculty with interest in exhaustive, small-scale historical reconstruction in a variety of time periods and geographical settings such as American, medieval, African and non-Western traditional, etc. Topics may be listed in Schedule of Course Offerings. May be repeated under different topics.

HIST 675 Seminar in Early United States History 3 hrs.
Advanced research. Topics may be listed in Schedule of Course Offerings. May be repeated. Prerequisites: HIST 605 or consent of instructor.

HIST 678 Seminar in Recent United States History 3 hrs.
Advanced research. Topics may be listed in Schedule of Course Offerings. May be repeated. Prerequisites: HIST 608 or consent of instructor.

HIST 682 Seminar in Medieval History 3 hrs.
Advanced research. Topics may be listed in Schedule of Course Offerings. May be repeated. Prerequisites: HIST 612 or 635 or consent of instructor.

HIST 686 Seminar in Modern European History 3 hrs.
Advanced research. Topics may be listed in Schedule of Course Offerings. May be repeated. Prerequisite: HIST 616 or consent of instructor.
MATHEMATICS AND STATISTICS

Dr. Jay Wood, Chair
Main Office: 3319 Everett Tower
Telephone: 387-4513
FAX: 387-4530

Christine Browning
Robert Buck
Joseph T. Buckley
Dwayne Channon
Gary Chartrand
Clifton Ealy
Paul Eeningburg
Theresa Grant
Christian Hirsch
Terrell Hodge
Kate Kline
Robert Laing
Yuri Ledyeav
Nilo hiệu Mackey
John Martino
Joseph McKean
Daniel Mihalko
Clifton Mingus
Robert Buck
Christian Hirsch
Annegret Paul
Jung Chao Wang
Arthur White

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

Financial Assistance
The Department of Mathematics and Statistics 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 and Statistics Graduate Office (3325 Everett Tower) or the Department Office (Room 3319, Everett Tower).

Master's Programs in Mathematics

Dr. John Martino, Graduate Committee Chair
Mathematics and Statistics Graduate Office
3325 Everett Tower
Telephone: 387-4512
EMAIL: grad@math-stat.wmich.edu

Master of Arts in Mathematics

See Mathematics and Statistics Office, 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 this 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 approved 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 522, Introduction to Topology, 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, Advanced Calculus II, or have had the equivalent prior to entering the program;
   d. MATH 630, Abstract Algebra I;
   e. One of the following: MATH 670, Real Analysis I; or MATH 676, Complex Analysis;
   f. An approved graduate level sequence.

2. A student must get a "B" or better in MATH 522, 530, and 571.

The specific requirements for an Master of Arts in Mathematics with concentration in Statistics are listed under the master's degree program in Statistics.

Master of Arts in Mathematics Education

See Mathematics and Statistics Office, Room 3319, Everett Tower

This program deepens and extends secondary school mathematics teachers' understanding of mathematics and its learning and teaching. Through a focus on both theory and practice, this program enables teachers to strengthen their classroom effectiveness, to assume curriculum and instructional leadership roles and, if so desired, continue with doctoral study in mathematics education.

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 secondary teaching minor in mathematics, equivalent to that offered at Western, and fifteen hours of undergraduate work in professional education of its equivalent.

Program Requirements
1. Complete at least fifteen approved semester hours in graduate level mathematics courses, usually selected from:
   MATH 530 Linear Algebra
   MATH 560 Applied Probability
   MATH 580 Number Theory
   MATH 611 Mathematical Applications
   MATH 612 Data Analysis
   MATH 615 Intermediate Analysis
   MATH 616 Survey of Algebra
   MATH 617 Discrete Dynamical Systems
   MATH 649 Studies in Geometry
2. Complete twelve semester hours of approved mathematics education courses:
   MATH 653 Studies in Teaching Secondary Mathematics
   MATH 654 Secondary School Mathematics Curriculum Studies
   MATH 695 Seminar in Mathematics Education

3. Complete an approved three-semester hour, 600-level elective, selected from mathematics, mathematics education, or professional education.

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.

Master of Science in Applied Mathematics
See Mathematics and Statistics Office, Room 3319, 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 careers in industry or government. Those completing this program would 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, probability, advanced calculus, courses in linear algebra, modern algebra, probability, advanced calculus, and experience with programming languages FORTRAN and Pascal. A student may substitute approved electives listed below for any of the specified courses which were previously taken as an undergraduate.

2. Complete at least 6 semester hours of approved electives which are different from the above selected courses. These 6 hours are to be selected from the following courses.
   **Mathematics**
   MATH 566 Nonparametric Statistical Methods
   MATH 571 Advanced Calculus II
   MATH 572 Vector Calculus and Complex Variables
   MATH 605 Optimization
   *MATH 609 Studies in Applied Mathematics
   MATH 660 Statistical Inference I
   MATH 664 Design of Experiments I
   MATH 667 Introduction to Random Processes
   MATH 676 Complex Analysis
   MATH 680 Topics in Statistical Computing
   *MATH 690 Applied Mathematics Seminar (1 hr.)
   *MATH 699 Reading and Research
   *MATH 712 Professional Field Experience

**Computer Science**
   CS 527 Theory of Computer Graphics
   CS 580 Theory of Computation
   CS 581 Advanced Data Structures
   CS 680 Mathematical Theory of Formal Languages

**Electrical Engineering**
   EE 530 Power System Analysis

**Industrial Engineering**
   IE 611 Operations Research for Engineers

**Management**
   MGMT 664 Simulation

*These courses may be repeated for credit.

Master of Science in Biostatistics
See Mathematics and Statistics Office, 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 pharmaceutical-related industries and in medical or health-related research facilities. This program is administered through the Department of Mathematics and Statistics with the assistance of faculty in the Department of Biological Sciences. The program requirements contain an equivalent of thirty-one credit hours of graduate work, including a five credit hour internship experience.

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 biological sciences, or a major in biological sciences and a minor in mathematics or statistics, or the equivalent. Most specifically, the undergraduate program should have included the following (numbers refer to WMU courses that would be acceptable):

1. Biological Sciences:
   Courses in at least three of the following four areas—ecology (BIOS 301), genetics (BIOS 250 or BIOS 302); physiology (BIOS 350 or BIOS 310 or BIOS 527); microbiology (BIOS 312); or sufficient undergraduate course work so that three 500-level biological sciences courses can be taken in the graduate program.

2. Mathematics and Computer Science:
   Multivariate calculus (MATH 272), differential equations (MATH 274),

   elementary linear algebra (MATH 230), probability (MATH 362 or MATH 560), introduction to FORTRAN programming (CS 306).

3. Chemistry:
   Organic chemistry (CHEM 360 or 365), biochemistry (CHEM 355).

4. Physics:
   General physics (PHYS 113 and 115).

Admission Procedures
1. The Biostatistics Admission Committee will admit candidates to the program based on the following criteria:
   a. Strength and breadth of the undergraduate course work.
   b. Availability of internships. (Admission to the program is limited by the number of opportunities available.)

2. A promising student may be admitted to the program with deficiencies in the admission requirements and be required to complete this work as extra program requirements.

3. Students are urged to submit scores received on the Graduate Record Exam (GRE).

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. **Statistical Computing Component (3 credit hours)**: MATH 680 Topics in Statistical Computing.

3. **Biological Sciences Component (6 credit hours)**: Two approved 500-level biological sciences courses. These courses are chosen to fit a student's individual interest.

4. **Elective Component (3 credit hours)**: An approved 500-600 level course from Statistics or Biological Sciences.

5. **Internship Component (5 credit hours)**: A professional field experience internship with a health-related industry. Normally this is taken as MATH 712.

6. Final Examination: Before beginning the internship, each program student must have successfully passed a written comprehensive examination covering the material of MATH 562, 565, and 652.

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

Master of Science in Computational Mathematics
See Mathematics and Statistics Office, Room 3319, Everett Tower

The Master of Science in Computational Mathematics emphasizes numerical and computer methods which have become very significant in the solution of computer intensive scientific problems, including large scale problems. The primary objective of the program is to prepare students in the development and implementation of critical computational techniques from conception to algorithm to software.

Admission Requirements
In addition to the general requirements of The Graduate College, the entering student will be expected to have two years of calculus, including multivariate calculus and differential equations, courses in linear algebra, probability, advanced calculus, numerical analysis, a knowledge of the programming languages FORTRAN and Pascal, and a course in data structures. The
courses at WMU which satisfy the admission requirements are: MATH 122, 123, 272, (230 and 274) or 374, 330, (362 or 560), 570, 507, and CS 111, (201 or 306), 112, (alternately CS 331 recommended).

A promising student may be admitted with some deficiencies in these admission requirements. The missing work would then become an extra program requirement.

Program Requirements
1. Complete the following 17 semester hours of specified courses:
   - MATH 562 Statistical Analysis I
   - MATH 571 Advanced Calculus II
   - MATH 607 Numerical Analysis II
   - MATH 637 Numerical Linear Algebra
   - MATH 690 Applied Mathematics Seminar (1 hr.)
2. Complete 6 semester hours consisting of two of the following three courses:
   - MATH 802 Mathematical Modeling
   - MATH 805 Optimization
   - MATH 808 Linear Programming
   With the approval of the advisor, a student may substitute approved electives listed below for any of the specified courses in 1 or 2 above which were previously taken as an undergraduate.
3. Complete at least 9 semester hours of approved electives which are different from the above courses:
   - Mathematics (MATH 510 Applied Matrix Algebra or MATH 530 Linear Algebra)
   - MATH 527 Differential Geometry of Curves and Surfaces
   - MATH 602 Mathematical Modeling
   - MATH 605 Optimization
   - MATH 606 Linear Programming
   - MATH 609 Studies in Applied Mathematics
   - MATH 660 Statistical Inference I
   - MATH 662 Applied Linear Models
   - MATH 676 Complex Analysis
   - MATH 680 Theory of Computation
   - MATH 690 Applied Mathematics Seminar (1 hr.)
   - MATH 699 Reading and Research
   - MATH 712 Professional Field Experience
   *These courses may be repeated for credit.

Computer Science
- CS 527 Theory of Computer Graphics
- CS 631 Advanced Data Structures
- CS 632 Analysis of Algorithms

Master's Programs in Statistics

See Mathematics and Statistics Office, Room 3319, Everett Tower

Two types of master's programs in Statistics are offered. The Department of Mathematics and Statistics. Option I, Theoretical, is offered as a concentration within the Master of Arts in Mathematics. Option II, Applied, is a discrete program resulting in a Master of Science in Statistics. Each option is described below.

Master of Arts in Mathematics with a Theoretical Concentration in Statistics

Option I, Theoretical, 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 660 and 665 and three of the following—MATH 681, 662, 663, 664, 667, 669.

Master of Science in Statistics

Option II, Applied, 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. The student is encouraged to apply for an internship experience (MATH 712) where it is expected that students will collaborate with professional statisticians in an actual work environment with real problems. A minimum of thirty-two hours is required, and the resulting degree is a Master of Science in Statistics.

Admission Requirements
For admission to this option, candidates must have completed an undergraduate program containing a substantial amount of mathematics, including a complete calculus sequence, a course in probability, a course in statistical methods, and a course in linear algebra. A complete undergraduate mathematics major is not required since the requirements in pure mathematics are not as extensive as in Option I.

Program Requirements
This option requires at least thirty-two hours of approved courses from the following groups:
1. MATH 562, 660, 662, 664, and 680.
2. Four of the following: MATH 563, 565, 566, 661, 663, 665, 666, 667, 668, 669, 681, 682, 683, and 684. Students who want to enter a Ph.D. program in Statistics are encouraged to take their electives from MATH 661, 663, 665, 666, 681, 682, 683, and 684.
3. MATH 712, or an approved elective.
4. Pass the Department Graduate Exams in Statistics which cover material in MATH 562, 660, 662, and 664.

Doctoral Programs:
The Department of Mathematics and Statistics offers programs leading to the Doctor of Philosophy degree in either Mathematics, Mathematics Education, or Statistics. Doctoral work in mathematics can be in pure mathematics, applied mathematics, or collegiate mathematics education. The program is designed to give the student a broad but intensive background in a variety of fields of mathematics, with special emphasis on some selected areas in which the student will be prepared to work, and participate in, creative mathematical research. More specifically, the area of specialization may be chosen from among algebra, approximation theory, collegiate mathematics education, complex analysis, differential equations, graph theory, group theory, optimization theory, and topological graph theory.

Financial Assistance
The Department of Mathematics and Statistics offers opportunities for financial support of graduate students through Graduate Assistantships, Fellowships, and Fellowships. Individuals desiring further information about such opportunities, or about the graduate program as a whole, should contact the Mathematics and Statistics Graduate Office (3325 Everett Tower) or the Department Office (Room 3319, Everett Tower).

Doctor of Philosophy in Mathematics

See Mathematics and Statistics Office, Room 3319, Everett Tower

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 admission requirements of The Graduate College, the student must have acquired a sufficient level of mathematical background as determined by the Mathematics Faculty of the Department. A student entering the program in Collegiate Mathematics Education must have sufficient background in mathematics and education as determined by the Collegiate Mathematics Education Committee, a joint committee of the Mathematics and Mathematics Education faculty.

Program Requirements

MATH/SCIENCE
A student must complete the following requirements:
1. Take at least 60 hours beyond the bachelor's degree—45 hours, excluding MATH 730. There must be 30 hours of mathematics courses numbered 600 or above, excluding MATH 730. It is required by the University that the 150 hours and 30 hours of course work be completed after admission to the doctoral program. The 60 hours will include the following courses:
   • A two-semester graduate sequence in Algebra (MATH 630–631)
   • A two-semester graduate sequence in Analysis (MATH 670–671)
   • A two-semester graduate sequence in Topology (MATH 621–624)
   • A course in Complex Analysis (MATH 676)
   • An approved course in applied mathematics or probability/statistics
2. Take three comprehensive examinations.
   • A student in Algebra, Analysis, or Topology must take comprehensive examination in each of these areas.
   • A student planning to do a dissertation in any other area of mathematics may, with approval of the advisor and the Mathematics Graduate Committee, replace either the Algebra or Topology examination with one in the student's specialty.
3. Demonstrate competency in two research tools, including at least one foreign language.
   • The foreign language tool may be satisfied by completing courses numbered 400 in foreign languages with a "B" or better or by demonstrating the ability to read mathematics in foreign languages as certified by the Mathematics Graduate Committee, or by demonstrating
2. A student must take the comprehensive examination class at the 200-level or higher.

3. Demonstrate competence in two research tools. This is offered. Each exam will be offered twice in a given area of mathematics in which a comprehensive examination is offered.

4. A semester course in Complex Analysis (MATH 676)

5. Five additional courses, including at least one in Applied Mathematics and at least two in Probability or Statistics

6. Fifteen graduate hours in mathematics education

2. Pass three comprehensive examinations in:

   • Algebra
   • Mathematics Education
   • One other approved area in Mathematics

3. Demonstrate competence in two research tools. This may be satisfied by demonstrating competence in computer usage, usually through 3 hours of MATH 688, and in educational research methods, usually through EDLD 648 and EDLD 648.

4. Teach an undergraduate course in mathematics at the 200-level or above.

5. Complete and successfully defend a dissertation. This requires 15 hours of MATH 730.

Doctor of Philosophy in Mathematics Education

See Mathematics and Statistics Office, Room 3319, Everett Tower

The Doctor of Philosophy in Mathematics Education focuses on K-12 mathematics curricula, teaching and learning mathematics, and research in mathematics education. Programs may focus on preparation for mathematics education faculty positions in colleges and universities, supervision of mathematics education, or development positions in school systems, or evaluation positions in education-related institutions.

Admission Requirements

Although a student may enter the program with a bachelor's degree, most candidates for admission will have completed a master's degree in mathematics and statistics, mathematics education, or mathematics methods courses (selected from MATH 522, 530, 535, 551, 552, and 560). The remaining courses are to be selected, with advisor's approval, from the 600- and 700-level department offerings in applied mathematics, pure mathematics, and statistics.

1. Complete the following course work:
   - At least thirty approved graduate credit hours in research methods including general topology (MATH 522), algebra (MATH 530), analysis (MATH 570 or 615), abstract algebra (MATH 630), linear algebra (MATH 640), geometry (MATH 649), and statistics (MATH 612 or 662).
   - At least six approved graduate credit hours in research methods including issues and trends in mathematics education (MATH 658), research in mathematics education (MATH 659), and two advanced methods courses (selected from MATH 651, 652, and 653).
   - Additional approved graduate credit hours selected from mathematics, statistics, mathematics education, research methodology, psychology, and professional education sufficient to meet the minimum program requirements.

2. Pass three comprehensive examinations in:

   • K-12 mathematics curriculum and instruction
   • Psychological foundations and mathematical reasoning
   • Research and design in mathematics education

3. Acquire competence in two research tools.

4. As soon as a student passes the comprehensive examinations and completes the research tools, the student will, in consultation with the advisor, form a dissertation committee and apply for candidate status. The dissertation committee will consist of the dissertation advisor, a second reader, at least one other faculty member from outside the department. This committee must be approved by the committee supervising the Ph.D. program. A student will not be allowed to take MATH 730 hours until these requirements are completed.

5. At least one year before the final oral defense of the dissertation, each student will give an oral presentation of their proposed dissertation and answer questions on the proposal. The dissertation committee will consider the merits of the proposal and allow the student to continue with the proposed problem, request the student to expand the scope of the research, or require the student to find a new topic.

6. After completing a dissertation and all other requirements for the Ph.D., a student will present an oral defense of the dissertation. This will be an open presentation with an open question period. The committee will then decide to accept or reject the dissertation and defense. All committee members must agree on acceptance for the student to pass.
2. A student will schedule comprehensive examinations in consultation with the program advisor. The examinations in curriculum and in psychology will each be three-hour written examinations. The examination in research and design will be a take-home examination written over a period of one week, followed within two weeks of submission by a one-hour oral defense conducted by at least two graduate faculty in mathematics education. If a student fails a comprehensive examination, the student must retake the examination within a year of the first attempt. A student who fails a comprehensive examination twice will be dismissed from the program at the end of the semester when the exam was taken.

3. By the time a student has passed comprehensive examinations in curriculum and instruction and in psychology, the student will have a plan of study written by the dissertation advisor with the goal of developing a proposed research, the student may be allowed to take MATH 730 credits only after a dissertation committee has been formed and the dissertation proposal is accepted by all its members.

4. After completing a dissertation and all other requirements for the Ph.D., a student will present an open public presentation of the dissertation research and answer questions on the proposal. A student will be allowed to take MATH 730 credits only after a dissertation committee has been formed and the dissertation proposal is accepted by all its members.

5. After completing a dissertation and all other requirements for the Ph.D., a student will be allowed to take MATH 730 credits only after a dissertation committee has been formed and the dissertation proposal is accepted by all its members.

Program Requirements

1. As soon as possible, a student must pass the Departmental Graduate Examination in Statistics at the doctoral level. This consists of two, three-hour examinations in the areas of theoretical statistics (including probability) and applied statistics from the courses MATH 562, 660, 662, and 664. The Departmental Graduate Examination will be given only once a year, usually in the Spring.

2. Course and dissertation work, at least 75 credit hours, including:
   a. MATH 562, 660, 682, 664, 680.
   b. The doctoral preliminary examination sequences MATH 661, 663, 665, and 666.
   c. Eighteen credit hours in advanced statistics courses: MATH 681, 681, 683, 689, 691, 682, 683, and 690.
   d. Six credit hours in an approved cognate area related to statistical applications (such as computer science, computational or applied mathematics, engineering, biological science, management, or economics), or statistical electives from the list in c. above.
   e. Four credit hours of seminar work, MATH 691 or 696.
   f. Research and dissertation, fifteen credit hours.

3. A student must pass Preliminary Examinations in Linear Models/Design (MATH 663, 684), in Statistical Inference (MATH 685, 666) and in a third area to be chosen, with the approval of the Statistics Doctoral Committee, from Advanced Statistics, Analysis, Algebra or a cognate area depending on the career interests of the student. The student will present an open public presentation of the dissertation research and answer questions on the proposal. A student will be allowed to take MATH 730 credits only after a dissertation committee has been formed and the dissertation proposal is accepted by all its members.
functions, central limit theorem, special
A first course in probability for upper division
spaces, expectation, moment generating
discrete and continuous distributions.

3 hrs.

have taken MATH 362 or 660.

extensively to solve problems.

methods. Not recommended for students who
MATH 567 Statistical Design and Analysis of
problems is selected from number

This course provides experiences in
decompositions, generalized inverses,
Hermitian symmetric matrices, position definite
matrices and the Spectral Theorem.
Applications from multivariate calculus will be
discussed. Prerequisites: Either MATH 230 and
MATH 272 or MATH 374.

MATH 523 Introduction to Topology
3 hrs.

Topics to be chosen from: Topological spaces
and continuous functions, metric spaces,
connectivity, separation axioms, compactness,
product and quotient spaces, paracompactness, and
manifolds. Prerequisite: MATH 330 or MATH 570.

MATH 527 Differential Geometry of Curves
and Surfaces
3 hrs.

An introduction to Riemannian Geometry with
emphasis on curves and surfaces. Topics may
include isometries, orientation, differential
forms, curvature, metrics, and geodesics.
Prerequisites: MATH 272 and either MATH 230
or 374. (MATH 314 is recommended.

MATH 530 Linear Algebra
3 hrs.

Properties of finite dimensional abstract vector
spaces, linear transformations, and matrix
algebra are studied. Prerequisite: MATH 330.

MATH 552 Teaching of Elementary
Mathematics
3 hrs.

This course covers curriculum issues and
trends in K-8 mathematics education.
Specifically, it focuses on methods and
materials for teaching mathematics effectively
to K-8 students. This course is not open to
undergraduate students who have completed
MATH 352 with a "C" or better. Prerequisite:
MATH 150 with at least a "C" or better or a
course equivalent to MATH 150.

MATH 554 Algebra in the Elementary/Middle
School Curriculum
3 hrs.

This course is devoted to the teaching and
learning of algebra in elementary and middle
grades. Concepts and skills are developed
and reinforced using a variety of approaches
and materials. Calculators and computers are
used throughout the course to develop
concepts to model numerical methods, and
to explore the connections between symbolic
and graphic representations of mathematical
ideas. Prerequisite: MATH 352 or 552 with a
grade of "C" or better or consent of instructor.

MATH 555 Mathematical Problem Solving in
the Elementary/Middle School Curriculum.
3 hrs.

This course provides experiences in
mathematical problem solving for
elementary/middle school teachers. Content
for the problems is selected from number
theory, algebra, geometry, probability and
statistics. Emphasis is placed upon teaching
problem solving. Computers are used
extensively to solve problems. Prerequisite:
MATH 352 or 552 with a grade of "C" or better
or consent of instructor.

MATH 560 Applied Probability
3 hrs.

A first course in probability for upper division
and graduate students interested in
applications. Topics will include: probability
spaces, expectation, moment generating
functions, central limit theorem, special
discrete and continuous distributions.
Applications will include reliability and
production problems, and Markov chain
methods. Not recommended for students who
have taken MATH 362 or 660. Prerequisite:
MATH 272.

MATH 561 Applied Multivariate Statistical
Methods
3 hrs.

An applied treatment of multivariate
procedures is presented. Classical
procedures such as Hotelling's T-squared
methods are discussed for the one and
two sample problems and MANOVA for standard
designs. Topics that will be accentuated are
principal components, discriminant analysis,
classification methods, and factor analysis.
Emphasis will be on graphical methods and applications.
Prerequisites: An introductory course in
statistics and a course in linear algebra.

MATH 562 Statistical Theory
4 hrs.

A first course in statistical theory. Topics
include random variables, distributions of
statistics, limiting distributions, and elementary
theory of estimation and hypothesis testing.
Prerequisites: MATH 230, 364, 660 (460) or equivalent.

MATH 563 Sample Survey Methods
3 hrs.

This course consists of a broad overview of the
techniques of survey data collection and
analysis and contains a minimum of theory.
Topics may include: simple random, stratified,
 systematic, single-stage cluster, and
two-stage cluster sampling; ratio and
regression estimation; participation analyses;
problems of nonresponse; surveys of sensitive issues;
minimum of survey costs; sample size determination.
Real surveys are discussed and actual survey data are
analyzed. Prerequisites: An introductory
statistics course and consent of instructor.

MATH 565 Design of Experiments for Quality
Improvement
3 hrs.

This course covers statistical methods useful
for improving the quality of products and
systems in an industrial setting. It provides
a comprehensive set of tools to use in building
better products and in reducing manufacturing
and other costs. The focus will be on solving
real engineering problems through case
tudies. Taguchi methods will be discussed
along with modifications from standard
statistical practice. Topics will include planning
an experiment, experimental strategy, Analysis
of Variance concepts, factorial designs,
orthogonal arrays, loss functions, signal-to-noise ratios, identifying significant
dependent factors, graphical methods, parameter
design and tolerance design. Prerequisite:
An introductory course in statistics.

MATH 566 Nonparametric Statistical Methods
3 hrs.

This course presents a broad overview of
statistical methods commonly referred to as
nonparametric or distribution-free methods.
Topics include: inferences for proportions,
contingency tables, goodness of fit problems,
estimation and hypothesis testing based on
ranking methods, measures of rank correlation,
efficiency. Emphasis will be on the application of
nonparametric statistical methods to data
from many different applied fields.
Prerequisite: An introductory statistics course.

MATH 567 Statistical Design and Analysis of
Experiments
4 hrs.

A course in experimental design and the
analysis of variance with particular emphasis
on industrial experiments. Topics include:
completely randomized, randomized complete
block, Latin square, and split-plot designs;
orthogonal contrasts and polynomials; multiple
comparisons; factorial arrangement of
treatments; confounding; fractional replication.
This course is molded around the complete
analysis of good applied problems.
Prerequisite: An introductory statistics course.
MATH 599 Independent Study in Mathematics
1-6 hrs.
Advanced students with good scholastic records may elect to pursue independently a study of some topic having special interest for them. Topics are chosen and arrangements are made to suit the needs of each particular student. May be repeated for credit. Prerequisite: Approval of chairperson of department.

Open to Graduate Students Only
MATH 602 Mathematical Modeling I
3 hrs.
This course considers the methodology of modeling a series of practical problems. The mathematical tools used may include dimensional analysis, optimization, differential and difference equations, graph theory and network flow theory. The practical problems may include population dynamics, economic theory of prices and production, scale models, scheduling problems, pollution, social group interaction, epidemics, and facility location. Prerequisite: MATH 574 or consent of instructor.

MATH 605 Optimization
3 hrs.
This course will cover one or several topics from the area of optimization. The topic(s) may include nonlinear programming, dynamic programming, optimal control, variational analysis, stochastic optimization, and network optimization. If the material covered is significantly different, this course may be repeated for credit with approval of the instructor. Prerequisites: MATH 272 and consent of the instructor.

MATH 607 Numerical Analysis II
3 hrs.
The analysis and use of numerical algorithms for the solution of ordinary and partial differential equations, and approximation theory. Prerequisite: MATH 507.

MATH 608 Linear Programming
3 hrs.
Linear inequalities; convex geometry; optimization in linear systems; zero-sum games; applications. Prerequisite: An introductory course in linear algebra.

MATH 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 611 through 619 are primarily for teachers and ordinarily will not apply towards the Master of Arts in Mathematics.

MATH 611 Mathematical Applications
3 hrs.
An introduction to the philosophy of, machinery for, and methodology in applications 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 advisor.

MATH 612 Data Analysis
3 hrs.
Variation is the central concept of the course—how to understand it, what techniques to use, how to draw conclusions from data and evaluate the strength of such conclusions. Emphasis will be placed on graphical methods, simulations, computer usage, sampling, and experience with real data from the world around us and from experiments. Statistical thinking will be stressed. Prerequisite: Consent of advisor.

MATH 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 advisor.

MATH 616 Survey of Algebra
3 hrs.
This course will discuss groups, rings, integral domains and fields, including such topics as homomorphisms and isomorphisms, subalgebras and ideals, with examples involving permutation groups, matrix groups, transformation groups, polynomial rings and finite fields. Prerequisite: Consent of advisor.

MATH 617 Discrete Dynamical Systems
3 hrs.
This course features a blend of theory and experimentation using computer software to study dynamical systems with a special emphasis on chaotic systems. Topics investigated include iteration and orbits, graphical analysis, periodic points, bifurcation theory, fractals, Julia Sets, the Mandelbrot Set, and symbolic dynamics. Prerequisite: Consent of advisor.

MATH 619 Computer Methods in Secondary School Mathematics
3 hrs.
This course will discuss groups, rings, integral domains and fields, including such topics as homomorphisms and isomorphisms, subalgebras and ideals, with examples involving permutation groups, matrix groups, transformation groups, polynomial rings and finite fields. Prerequisite: Consent of advisor.

MATH 621 Algebraic Topology — Fundamental Group
3 hrs.
Topics may include: Homotopy, the fundamental group, covering spaces, the classification of covering spaces, the classification of compact surfaces, the Seifert-Van Kampen Theorem, and applications. Prerequisite: MATH 522.

MATH 624 Algebraic Topology — Homology Theory
3 hrs.
Topics will include simplicial complexes, homology and cohomology theories, including singular homology theory. Prerequisite: MATH 522.

MATH 625 Differential Topology
3 hrs.
Topics may include: Differentiable manifolds and smooth maps, tangent bundles, immersions, imbeddings, submanifolds, transversality, Sard's Theorem, intersection theory, and additional topics. Prerequisite: MATH 522.

MATH 626 Algebraic Topology — Homotopy Theory
3 hrs.
Topics may include: Homotopy groups, fibrations, the action of the fundamental group, Hurewics Theorem, Whitney's Theorem, Freudenthal Suspension Theorem, Eilenberg-Maclane Spaces, killing homotopy, and obstruction theory. Prerequisites: MATH 621 and MATH 624.

MATH 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. Prerequisite: Approval of instructor.

MATH 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.

MATH 631 Abstract Algebra II
3 hrs.
A continuation of 630. Modules, structure theory of modules over principal ideal domains, applications to finitely generated abelian groups, rational and Jordan canonical forms of a linear transformation, bilinear and quadratic forms. Prerequisite: MATH 630.

MATH 633 Topics in Group Theory
3 hrs.
Advanced work organized around topics in the theory of groups. Possible topics include: Finite Groups, Groups and geometries, Group Representations, Infinite Groups or Combinatorial Group Theory. Prerequisite: MATH 631.

MATH 637 Numerical Linear Algebra
3 hrs.
The analysis and use of numerical algorithms for solving problems from linear algebra, including matrix norms, singular value decompositions, Gaussian elimination, least square methods, eigenvalues and iterative methods. Prerequisites: MATH 510 or 530, and 507.

MATH 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.

MATH 640 Graph Theory I
4 hrs.
This course and MATH 641 cover the following topics: Fundamental concepts; eulerian graphs; adjacency and incidence matrices; trees; planar graphs; graph embeddings; connectivity; hamiltonian graphs; matchings; factorization; graphs and graphs; Cayley color graphs; line graphs; the Reconstruction Problem; spectra of graphs; graph and map colorings; extremal graph theory; Ramsey theory. Prerequisite: Approval of advisor.

MATH 641 Graph Theory II
4 hrs.
Continuation of MATH 640. Prerequisite: MATH 640.

MATH 644 Graphs, Groups, and Surfaces
3 hrs.
Study of the interaction of graphs, groups, and surfaces. Topics covered include map-coloring problems, symmetrical maps, automorphism groups of graphs, Cayley graphs of groups, genus of graphs, genus of groups, generation of block designs, and applications to church bell ringing. Prerequisite: Consent of instructor.

MATH 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. Prerequisite: Approval of instructor.

MATH 649 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 in Mathematics.

MATH 651 Studies in Teaching Elementary School Mathematics
3 hrs.
This is an advanced methods class devoted to analysis of current theoretical and research-based perspectives on mathematics
teaching and learning and their implications for instructional practice and evaluation of student performance at the elementary school level. Explicit attention is given to the impact of technology on the teaching/learning process. Prerequisite: Consent of advisor.

MATH 652 Studies in Teaching Middle School Mathematics
3 hrs.
This is an advanced methods class devoted to analysis of current theoretical and research-based perspectives on mathematics teaching and learning and their implications for instructional practice and evaluation of student performance at the middle school level. Explicit attention is given to the impact of technology on the teaching/learning process. Prerequisite: Consent of advisor.

MATH 653 Studies in Teaching Secondary School Mathematics
3 hrs.
This is an advanced methods class devoted to analysis of current theoretical and research-based perspectives on mathematics teaching and learning and their implications for instructional practice and evaluation of student performance at the secondary school level. Explicit attention is given to the impact of technology on the teaching/learning process. Prerequisite: Consent of advisor.

MATH 654 Secondary School Mathematics Curriculum Studies
3 hrs.
Participants in this course examine curricular issues and trends in secondary school mathematics and analyze recent experimental and commercial curricula materials. This course may be taken more than once with the approval of the student's advisor. Prerequisite: Consent of advisor.

MATH 656 Teaching of College Mathematics
2 hrs.
In this course consideration is given to curriculum problems and trends in post-high school mathematics; research on specific problems of teaching mathematics effectively to college students will be emphasized. Prerequisite: Consent of advisor.

MATH 657 Issues and Trends in Mathematical Education
3 hrs.
This course focuses on curricular and instructional issues and trends in K-14 mathematics education, including an examination of major historical themes that have shaped mathematics policy and practice at these levels. Prerequisite: Consent of advisor.

MATH 658 Psychology of Learning Mathematics
3 hrs.
This course focuses on theories of mathematical thinking and knowing and on an examination of major research paradigms and research findings on mathematical learning in children and adults and their implications for instruction. Prerequisite: Consent of advisor.

MATH 659 Research in Mathematics Education
3 hrs.
This course focuses on research issues, methodologies, and trends within mathematics education along with techniques for critical analysis of research. Students are expected to design and present an individual research study. Prerequisite: Consent of advisor.

MATH 660 Statistical Inference I
4 hrs.
An advanced course in statistical theory. Topics include measures of quality of estimation, theories of estimation, functions of sufficient statistics, confidence intervals, theories of testing, likelihood ratio tests, and selected topics in statistics. Prerequisite: MATH 562.

MATH 661 Multivariate Statistical Analysis
3 hrs.
A theoretical treatment of multivariate statistical problems and techniques. Topics include: multivariate normal distribution; quadratic forms; multiple and partial correlation; sample 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 663.

MATH 662 Applied Linear Models
3 hrs.
An advanced course in applied statistics. Linear models will be used to treat a wide range of regression and analysis of variance methods. Topics include: matrix review; multiple, curvilinear, nonlinear, and stepwise regression; correlation, residual analysis; model building; use of the regression computer packages at WMU; use of indicator variables for analysis of variance and covariance models. Prerequisite: MATH 562.

MATH 663 Linear Models
3 hrs.
A theoretical study of the general linear model including random vectors, quadratic forms, multivariate normal distributions, least squares estimation, hypothesis testing for full and reduced model, generalized inverses. Prerequisites: MATH 660 and 662 and 510.

MATH 664 Design of Experiments I
3 hrs.
An applied course in the design and analysis of experiments. Topics include: general considerations 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 contrasts and polynomials; factorial arrangement of treatments; fixed, random, and mixed models; confounded designs; fractional replication. Prerequisite: MATH 662.

MATH 665 Statistical Inference II
3 hrs.
Mathematical statistics is considered in a decision theoretic framework. The decision problem; loss and risk function; Bayes procedures; minimax procedures; admissibility; complete classes; sufficiency; hypothesis testing and estimation. Prerequisite: MATH 660.

MATH 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. Prerequisites: MATH 571 and 660.

MATH 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-Kolmogrov systems; transient and limiting behavior; examples and illustrations; random walks, birth-and-death processes, etc.; stationary processes. Prerequisites: MATH 571, 510 or 530, and one probability course.

MATH 668 Categorical Data Analysis
3 hrs.
Statistical methods for discrete multivariate data and contingency tables will be discussed. The log linear model for two way and higher dimensional tables will be emphasized. Subtopics include: maximum likelihood estimates, iterative proportional fitting, model selection, goodness of fit, logistic models, incomplete tables, symmetry, marginal homogeneity, and conditional independence models. Prerequisite: MATH 662.

MATH 669 Studies in Probability and Statistics
3 hrs.
The subject matter for this course is variable. Advanced work is considered and organized around topics not usually considered in the other courses.

MATH 670 Real Analysis I
3 hrs.
The first of a two semester sequence in real analysis. Topics covered in the two semesters will include topology and continuous functions, Lebesgue and general measure and integration, differentiation and the Radon-Nikodym theorem. Hilbert spaces, Banach spaces, and product spaces and Fubini's theorem. Prerequisites: MATH 522 and 571.

MATH 671 Real Analysis II
3 hrs.
The second of a two semester sequence in real analysis. Topics covered in the two semesters will include topology and continuous functions, Lebesgue and general measure and integration, differentiation and the Radon-Nikodym theorem. Hilbert spaces, Banach spaces, and product spaces and Fubini's theorem. Prerequisite: MATH 670.

MATH 676 Complex Analysis
3 hrs.
Topics include: Cauchy Theory, series expansion, power series, types of singularities, calculus of residues. Prerequisite: MATH 571.

MATH 678 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 671.

MATH 679 Studies in Analysis
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.

MATH 680 SAS Programming
3 hrs.
Students will use SAS to manipulate data, create effective tables and plots, and write programs for nonstandard problems. Prerequisite: MATH 662 or consent of instructor.

MATH 681 Survival Data Analysis
3 hrs.
This course consists primarily of biostatistical methods used in pharmaceutical and medical research with particular application to cancer studies and toxological animal studies. Some attention is given to related failure-time methods used in industry to test product reliability. Theoretical development of some of these methods is discussed. Extensive data analyses are done using SAS (or comparable statistical packages). Topics include: censoring, Kaplan-Meier survival curves, life tables, two-sample non-parametric procedures for comparison of survival curves ( Gehan, Cox-Mantel, log rank and generalized Wilcoxon), relative risk, odds ratio, the Mantel-Haenszel procedure, parametric failure-time models (exponential, gamma, Weibull, and lognormal), logistic regression, and Cox's proportional hazards model. Prerequisites: MATH 660 and MATH 662.

MATH 682 Time Series Analysis Series
3 hrs.
The theoretical development and practical use of seasonal and non-seasonal ARIMA (Autoregressive Integrated Moving Average)
Box-Jenkins time series models is presented. Identification of correct time series models, estimation of model parameters, and diagnostic checks of identified models will be covered. The uses of these models for forecasting future trends and assessing interventions will be examined. Extensive data analysis using SAS, MINITAB, and BIOMED statistical packages are included. Topics include: autocorrelation function, partial autocorrelation functions, Yule-Walker equations, differencing, stationarity, autocorrelation models, moving average models, seasonality, invertibility, and Box-Pierce tests. Prerequisites: MATH 660 and MATH 662.

MATH 683 Robust Statistical Analysis 3 hrs.
Robust statistical procedures for inference in location, linear and multivariate models are presented. This will include broad classes of robust estimates, including R-, M- and L-estimates of both regular and bounded influence types. Concepts such as breakdown point, influence function, and asymptotic theory are used to obtain properties of these procedures. Computational aspects of these estimates are discussed along with small sample properties and applications of these procedures. Prerequisites: MATH 660 and MATH 662.

MATH 684 Design of Experiments II 3 hrs.
This course is a continuation of Design of Experiments I. The additional topics include: repeated measurement designs, analysis of covariance designs, response surface designs, partially balanced incomplete block designs, mixture models, analysis of models with missing data using Types I, II, III, and IV SAS sums of squares, analysis of large experiments with many crossed and nested factors, and some Taguchi methods. Prerequisite: MATH 664.

MATH 688 Research Tools in the Mathematical Sciences 1–3 hrs.
This course consists of various computer applications and computer network activities that are commonly used in the mathematical community, including mathematical word processing, computer algebra systems, literature searches, and the use of internet resources. Enrollment is limited to students in a graduate degree program in mathematics, statistics, or mathematics education. Students must satisfactorily complete an approved number of modules per credit hour selected. If the course is repeated, different modules must be completed. Certain departmental degree programs may require the completion of specific modules. Prerequisite: Permission of the department chairperson.

MATH 689 Studies in Number Theory 1–3 hrs.
Advanced work organized around topics related to the field of study indicated in the title. Students may take this course more than once. Prerequisite: MATH 662 (or concurrent enrollment) and at least one of MATH 563, 566, 567, or 568.

MATH 692 Seminar in Topology 1–3 hrs.
May be repeated for credit.

MATH 693 Seminar in Algebra 1–3 hrs.
May be repeated for credit.

MATH 694 Seminar in Graph Theory 1–3 hrs.
May be repeated for credit.

MATH 695 Seminar in Mathematics Education 1–4 hrs.
May be repeated for credit.

MATH 696 Seminar in Probability and Statistics 1–3 hrs.
May be repeated for credit.

MATH 697 Seminar in Analysis 1–3 hrs.
May be repeated for credit.

MATH 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: Consent of Advisor.

MATH 699 Reading and Research 1–6 hrs.
May be repeated for credit.

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

MATH 712 Professional Field Experience 2–12 hrs.

MATH 725 Doctoral Research Seminar 2–6 hrs.

MATH 730 Doctoral Dissertation 2–12 hrs.

MATH 735 Graduate Research 2–10 hrs.

Prerequisites: MATH 662 (or concurrent enrollment) and at least one of MATH 563, 566, 567, or 568.

MEDEIVAL INSTITUTE
Dr. Paul E. Szarmach, Director
Main Office: 103E, Walwood Hall
Telephone: 387–8745
FAX: 387–8750
Dr. Timothy Graham, Assistant Director
115E Walwood Hall
Rawlinson Center
Telephone: 387–8830
FAX: 387–8750
Thomas Amos
George Beech
Ernst Breisch
Audrey Davidson
Clifford Davidson
Deborah Deliyannis
David Ede
E. Rozanne Elder
Robert Felkel
Stephanie Gauper
C.J. Gianakaris
Timothy Graham
Otto Grundler
Rand Johnstone
Elise Jorgens
Peter Krawutschke
Joyce Kubiski
Molly Lynde-Rocchia
Jaclyn Maxwell
James Palmiressa
Eve Salisbury
Martine Sauret
Thomas Sailer
Larry Simon
Matthew Stael
Larry Syndergaard
Paul E. Szarmach

Master of Arts in Medieval Studies
Advisor:
Pauel E. Szarmach,
The Medieval Institute, Walwood Hall

The Medieval Institute of Western Michigan University offers an interdisciplinary program leading to the Master of Arts in Medieval Studies. Either as preparation for further doctoral work (Option I) or for a terminal degree (Option II), the program provides students with a broad background in medieval and Renaissance history, languages, literatures, paleography, philosophy, religion, the arts, and in research methodology.

Western Michigan University offers an academic environment appropriate for the study of the Middle Ages. The University library houses extensive holdings of books and periodicals in all areas of Medieval Studies, and the Institute of Cistercian Studies library contains unique collections of early manuscripts and rare books in the field of monastic and Renaissance history and thought. Western Michigan University is the host institution for the annual International Congress on Medieval Studies, and Medieval Institute Publications publishes various series of monographs and periodicals in the field of Medieval Studies. The Richard Rawlinson Center for Anglo-Saxon Studies and Manuscript Research offers further opportunities for research and study.

Admission Requirements

In addition to meeting the general admission requirements of The Graduate College, an applicant must submit scores from the Graduate Record Examination General Test, two letters of recommendation, and a statement of intent.

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Western Michigan University offers an academic environment appropriate for the study of the Middle Ages. The University library houses extensive holdings of books and periodicals in all areas of Medieval Studies, and the Institute of Cistercian Studies library contains unique collections of early manuscripts and rare books in the field of monastic and Renaissance history and thought. Western Michigan University is the host institution for the annual International Congress on Medieval Studies, and Medieval Institute Publications publishes various series of monographs and periodicals in the field of Medieval Studies. The Richard Rawlinson Center for Anglo-Saxon Studies and Manuscript Research offers further opportunities for research and study.

Admission Requirements

In addition to meeting the general admission requirements of The Graduate College, an applicant must submit scores from the Graduate Record Examination General Test, two letters of recommendation, and a statement of intent.
Program Requirements

OPTION I, THESIS, 37 hrs.
1. A total of at least 37 hours of course work, including 13 hours of required core courses [ENGL 530 Medieval Literature; HIST 635 Research Techniques in Medieval History; LAT 560 Medieval Latin (grade of B or better required); REL 500 Christian Theology to 1500] and 24 hours of electives, the latter to be chosen from the list of approved courses in the Departments of Art, Comparative Religion, English, Foreign Languages and Literatures, History, Music, and Philosophy.
2. Demonstrated reading proficiency in Latin, and in either French, German, Italian, or Spanish.
3. Preparation of an acceptable Master's Thesis (6 hours) under the direction of a thesis advisory committee.

OPTION II, NON-THESIS, 37 hrs.
1. A total of at least 37 hours of course work, including 13 hours of required core courses [ENGL 530 Medieval Literature; HIST 635 Research Techniques in Medieval History; LAT 560 Medieval Latin (grade of B or better required); REL 500 Christian Theology to 1500] and 24 hours of electives, the latter to be chosen from the list of approved courses in the Departments of Art, Comparative Religion, English, Foreign Languages and Literatures, History, Music, and Philosophy.
2. Demonstrated reading proficiency in Latin. (Note: Option II has no modern language requirement.)
3. Option II has no thesis requirement.

Medieval Studies Courses (MDVL)

Open to Upperclass and Graduate Students
MDVL 500 Interdisciplinary Studies in Medieval Culture
3 hrs.
An interdisciplinary course organized around selected topics in medieval and Renaissance studies. The focus may be in a specific period (The Twelfth Century), a religious movement (Monasticism), 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 and with the methodological tools of their respective disciplines, such as art, history, literature, music, philosophy, political science, and religion. The overall aim of the course is to demonstrate to students why one needs to acquire a variety of disciplines to understand a single complex problem, and how to put traditional building blocks together in new ways. The course may be repeated for credit with a different topic.
MDVL 597 Directed Study
1–3 hrs.
Research on a selected topic in the field of Medieval Studies directed and supervised by a faculty member. Registration requires at least junior standing and approval by the Director of the Medieval Institute.

Open to Graduate Students Only
MDVL 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 Course Offerings. May be repeated for credit with a different topic.

Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.
MDVL 700 Master's Thesis
6 hrs.
MDVL 710 Independent Research
2–6 hrs.
MDVL 712 Professional Field Experience
2–12 hrs.

PHILOLOGY

Dr. Kent Baldner, Chair
Main Office: 320 Moore Hall
Phone: 387-4389
Fax: 387-4390
Email: baldner@wmich.edu
URL: http://www.wmich.edu/philosophy
Kent Baldner
Sylvia Culp
John Dilworth
Joseph Ellis
Arthur Falk
John Hartline, Adjunct
Insoo Hyun
Stephen Jefferson, Adjunct
Timothy McGrew
David Newman
Janet Pisaneschi
Michael Pritchard
Quentin Smith
Richard Wright

Master of Arts in Philosophy

Advisors:
Sylvia Culp, Director of Graduate Assistant Program
Room 321, Moore Hall
Arthur Falk, Graduate Admissions Officer
Room 311, Moore Hall
Timothy McGrew, Advisor
Room 322, Moore Hall

The Master of Arts in Philosophy offers advanced study in the main subject areas and historical periods of philosophy.

Admission Requirements
In addition to satisfying the admission requirements of The Graduate College, applicants are expected
1. to have completed a minimum of twelve semester hours of undergraduate work in philosophy, including
2. a course in the history of modern philosophy, and
3. a course in symbolic logic, and
4. to have achieved a 3.0 or above overall grade point average in the applicant's undergraduate philosophy courses.

Applicants who do not meet the above requirements should contact the Graduate Admissions Officer, Dr. Arthur Falk, in the Department of Philosophy for additional information.

Program Requirements

NON-THESIS OPTION
To complete the Non-Thesis Option for a Master of Arts in Philosophy, students must complete
1. At least one course (no less than 3 credit hours) in each of the three Concentration areas (the "breadth requirement");
2. At least three courses (no less than 9 credit hours) in one of the Concentration areas (the "depth requirement");
3. A minimum of 24 credit hours of 500- or 600-level courses in the Department of Philosophy, and
4. A minimum of 32 graduate credit hours.
(With the authorization of the Department Graduate Advisor, students may count up to 8 credit hours of courses from other departments.)

THESIS OPTION
To complete the Thesis Option for a Master of Arts in Philosophy, students must complete
1. At least one course (no less than 3 credit hours) in each of the three Concentration areas (the "breadth requirement");
2. at least 3 courses (no less than 9 credit hours) in one of the Concentration areas (the "depth requirement").
3. a minimum of 24 credit hours of 500- or 600-level courses in the Department of Philosophy
4. a minimum of 32 graduate credit hours.
   (With the authorization of the Department Graduate Advisor, students may count up to 8 credit hours of courses from other departments), and
5. 6 credit hours of PHIL 700. Please see Graduate Advisor for details.

CONCENTRATION AREAS:
The department offers graduate courses in philosophy in three Concentration Areas—Metaphysics and Philosophy of Mind, Epistemology and Philosophy of Science, and Theoretical and Practical Ethics. Students must declare a concentration by the end of their first semester, but may, with departmental approval, change this at a later date. Students fulfilling their depth requirement in Metaphysics and Philosophy of Mind must take PHIL 633 Metaphysics. Students with a Concentration in the Epistemology and Philosophy of Science must take PHIL 632 Theory of Knowledge. Students with a Concentration in Theoretical and Practical Ethics must take PHIL 631 Ethical Theory.

Courses that may, given the proviso below, count for credit in Metaphysics and Philosophy of Mind are PHIL 507, 512, 520, 540, 560, 570, 600, 610, 620, 632, and 650.

Courses that may, given the proviso below, count for credit in Epistemology and Philosophy of Science are PHIL 507, 512, 520, 525, 555, 560, 570, 600, 610, 620, 632, and 650.

Courses that may, given the proviso below, count for credit in Theoretical and Practical Ethics are PHIL 507, 512, 533, 544, 560, 570, 600, 610, and 631.

Proviso: For courses listed under more than one Concentration, the faculty member and student will come to an agreement concerning which concentration a given course will fall under, determined by the course topic and content. Students may count a single, given offering of a course under only one Concentration. The following courses do not count for credit under any Concentration: PHIL 598, 700, and 710.

Philosophy Courses (PHIL)

Open to Upperclass and Graduate Students

Undergraduates with junior or senior status and at least 12 hours of course work in philosophy may enroll in 500-level courses. Specific prerequisites may be added to individual courses.

PHIL 507 The Continental Tradition in Philosophy
2-4 hrs.
An examination of the Continental tradition in Philosophy. Topics may vary from term to term. Examples include: phenomenology, existentialism, post-modernism, structuralism, deconstruction, critical theory, and hermeneutics. Prerequisites: 12 credit hours in Philosophy, including PHIL 301. May be repeated for credit, with advisor's approval, when topics vary.

PHIL 512 Aesthetics
3 hrs.
An investigation of the many philosophical issues which arise from the study of the arts and aesthetic experience. Topics include such issues as the ontology and identity of works of art, whether art can be defined so as to distinguish art from non-art, the status of aesthetic values, the relation of ethics to aesthetics, the status of feminist perspectives in the arts, and significance of the arts in human life. Prerequisite: 12 credit hours in philosophy.

PHIL 520 Philosophical Applications of Symbolic Logic
3 hrs.
This course is designed to expose graduate students to the range of philosophical applications of modern symbolic logic. Starting with the sentential and predicate calculi, the course explores various extensions which may include alethic modal logic, deontic logic, tense logic, relevance logic and counterfactuals. In addition, the course will address salient issues in the philosophy of logic and may include an investigation of the logical paradoxes and the controversy surrounding quantified modal logic. Prerequisites: 12 hours of philosophy, including either PHIL 225 or PHIL 320.

PHIL 525 Decision Theory
4 hrs.
Can there be a formal theory of what it is to be rational in one's beliefs and actions? This course is an introduction to decision theory, which claims to be just such a theory of rationality. Attention will be given to both its mathematical development and the issues it raises in the philosophy of science, the theory of knowledge, and action theory. A working knowledge of high school algebra is assumed. Prerequisites: PHIL 507 or PHIL 520 or 350, and two other courses in philosophy, mathematics (above the level of MATH 110), or computer science (above the level of CS 105).

PHIL 534 Moral and Philosophical Foundations of Health Care
3 hrs.
In this course philosophical reflection and biological science are combined in a critical examination of the nature and purpose of the health sciences. Topics to be considered include: the aims of the health sciences, the interplay of fact and value in health care, competing images of humankind embodied in health science, patient autonomy, dignity and medical paternalism. Prerequisite: 12 credit hours in philosophy and/or biological sciences or experience in a health professional field.

PHIL 540 Philosophy of Mind
2-4 hrs.
A study of the philosophical problems surrounding our understanding of the nature of mind, mental states, and consciousness, and their relation to matter, and states of the brain and/or central nervous system. Possible topics include cognitive science, artificial intelligence, the relation of mind to body and/or behavior, teleological and mechanistic explanations of human behavior, the philosophical foundations of psychology, behaviorism, functionalism, the nature of intentionality, the concept of a person, the privacy of mental states, knowledge of other minds, and questions regarding free will and determinism. May be repeated for credit, with advisor's approval, when topics vary. Prerequisite: 12 credit hours in Philosophy, including PHIL 301.

PHIL 544 Practical Ethics
3 hrs.
This course will examine the relationships between ethical theory and practice, especially in the area of professional life. We will consider questions concerning moral imagination, deliberation, and justification, as well as how principles and norms guide our complex activities. Case illustrations from various professions (e.g., medicine, laws, government, science, psychiatry, etc.) will be used to highlight some of these issues. May be repeated for credit, with advisor's approval, when topics vary. Prerequisite: 12 credit hours in philosophy.

PHIL 555 Advanced Philosophy of Science
2-4 hrs.
A detailed examination of some of the central problems in contemporary philosophy of science. Topics may vary from term to term. Typical topics include: nature of scientific explanation, theory structure and change, scientific realism vs. various anti-realisms, or issues in the special sciences, e.g., the physical, biological or social sciences. Prerequisite: 12 credit hours in Philosophy. May be repeated for credit, with advisor's approval, when topics vary.

PHIL 560 Philosophy at Pre-College Levels
2-4 hrs.
A content-oriented course that explores topics, reading materials, and ways of approaching them in the teaching of philosophy at the pre-college level. A special emphasis is put on critical and creative thinking.

PHIL 567 Philosophical Topics
1-4 hrs.
An examination of special philosophical topics. Topics to be listed in the Schedule of Course Offerings. Prerequisite: Specific course prerequisites may be stipulated for specific topics and substitutions for philosophy may be allowed. Usually at least one of PHIL 300 or Phil 301 will be required. May be repeated for credit, with advisor's approval, when topics vary. May be offered in an accelerated format.

PHIL 598 Readings in Philosophy
1-4 hrs.
Research on some selected period or topic under supervision of a member of the Philosophy faculty.

Open to Graduate Students Only

PHIL 600 Colloquium
2-4 hrs.
A seminar in which one or more faculty involve the students in their current research. Topics may vary from term to term.

PHIL 610 Seminar in the History of Philosophy
2-4 hrs.
A close reading and discussion of selected classics written by major philosophers from the ancient, medieval, or modern period. Selections may vary from term to term.

PHIL 620 Philosophy of Language and Logic
2-4 hrs.
An examination of the relation of language to the world, and/or the philosophical basis of standard and nonstandard logics. Possible topics include the nature of reference and predication, the distinctions between a priori and a posteriori, between analytic and synthetic, and between necessary and contingent propositions, the roles of proper names, general terms, and pronouns, and the truth conditions of sentences, as well as questions concerning the philosophy of modal logic, tense logic, deontic logic, epistemic logic, paracomplete logic, first and second order logics, and probability calculus. May be repeated, with advisor's approval, when topics vary.

PHIL 631 Ethical Theory
2-4 hrs.
A study of theories of Ethics and Morality. Topics may vary from semester to semester. May be repeated for credit, with advisor's approval, when topics vary.
PHIL 632 Theory of Knowledge
2-4 hrs.
An examination of the nature of truth, belief, and evidence. Topics may vary from term to term. Examples include: questions about the nature of perception, a priori and a posteriori knowledge, skepticism, epistemic foundations, epistemic justification, and other related topics.

PHIL 633 Metaphysics
2-4 hrs.
An examination of the underlying nature of reality. Topics may vary from term to term. Examples include: questions about the fundamental kinds of entities that comprise reality, the existence of God, universals and particulars, space and time, causation and free will, mind and matter, identity and change, and other related topics.

PHIL 650 Philosophy of Religion
2-4 hrs.
An examination of philosophical issues related to religion. Topics may vary from term to term. Examples include: the nature and existence of God, the problem of evil, theistic and scientific explanations, pantheism, the relation between faith and reason, the nature of religious experience, life after death, miracles, religious epistemology, and the theological foundations of ethics. May be repeated, with advisor's approval, when topics vary. Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

PHIL 700 Master's Thesis
1-6 hrs.

PHIL 710 Independent Research
2-6 hrs.

PHYSICS

Dr. John Tanis, Chair
Main Office: 1120 Everett Tower
Telephone: 387-4940
FAX: 387-4939
Nora Bernad
Clement Burns
Sung Chung
Thomas Gorczyca
Dean Halderson
Gerald Harris
Emanuel Kamber
Dean Kaul
Kirk Konits
Arthur McGurn
Paul Pancelle
Lisa Paulus
Alvin Rosenthal
Robert Sato
John Tanis

Master of Arts in Physics
Advisor: Dean Halderson,
Room 1135, Everett Tower

The Department of Physics offers a graduate program leading to the Master of Arts in Physics. The objective of the program is to enable students to acquire knowledge and technical skills needed in physics-related occupations and in graduate study at the doctoral level. Thirty semester hours of graduate credit are required. An additional requirement is either to pass the Doctoral Qualifying Examination at the master's degree level or to complete a Master's Thesis. Participation in research may occur in one of three areas:

1. Theoretical physics—astrophysics, atomic physics, nuclear physics, condensed-matter physics, or materials analysis with advanced ion sources. Campus facilities available for experimental research include a Van de Graaff accelerator and laboratory, and a low-temperature physics laboratory.
2. Computer and instrumentation physics—software and hardware development for computer data acquisition and analysis, or instrumentation development for physics research.
3. 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 experience and training (including training in mathematics at the appropriate level). Prospective students are required to take the GRE General Test and Physics Subject Test. The departmental graduate advisor 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. Fifteen hours of required courses in physics, namely: PHYS 810, Research Seminar; PHYS 622, Quantum Mechanics I; PHYS 624, Statistical Mechanics; PHYS 630, Classical Mechanics; and PHYS 662, Electricity and Magnetism. Substitutions for these courses may be made only with the approval of the graduate advisor.
2. Either successful completion of the Doctoral Qualifying Examination at the master's degree level or satisfactory completion of PHYS 700, Master's Thesis (6 hours).
3. Additional hours from Physics, Computer Science, Electrical Engineering, or other departments to be chosen with the consent of the graduate advisor.

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 Colloquium, which constitutes a program for graduate students and Physics faculty, presented by members of the WMU Physics faculty 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.

Doctor of Philosophy in Physics

Advisor: Dean Halderson,
Room 1135, Everett Tower

The Department of Physics offers a program leading to the Doctor of Philosophy in Physics. The main objective of this program is to prepare students for careers in teaching and/or research in colleges and universities, or for research in industry. Research is an integral part of the program and may be performed in either experimental physics or theoretical physics. The area of specialization may be astrophysics, atomic physics, condensed-matter physics, or nuclear physics. Special facilities available for research include a 6 MV model EN tandem Van De Graaff accelerator. The graduate advisor in the Department of Physics will counsel the student until a research advisor is selected. Afterwards the student will plan his/her doctoral program in consultation with the graduate advisor and his/her research advisor.

Admission Requirements

Students entering this program are expected to have acquired a bachelor's degree in physics or at least an equivalent amount of experience and training (including training in mathematics at the appropriate level). Prospective students are required to take the Graduate Record Examination General Test. Performance on this examination will be used as one measure in the determination of admission and financial support. It is also recommended that students take the Physics Subject Test part of the Graduate Record Examination. The departmental graduate advisor will provide assistance to students seeking admission to this program and will recommend ways of eliminating any deficiencies in course work.

Program Requirements

The Doctor of Philosophy in Physics includes a minimum of 60 hours of graduate credit. These credits are composed of course work, supervised reading, seminars, and research. The research will be performed under the guidance of the student's research advisor and must culminate in a dissertation suitable for publication. The required, minimum 60 hours of graduate credit shall consist of the following:

1. A core of basic courses listed below (28 credit hours).
2. Physics 730 Doctoral Dissertation (15 credit hours).

Program Requirements

The thirty semester hours of graduate credit are required. An additional requirement is either to pass the Doctoral Qualifying Examination at the master's degree level or to complete a Master's Thesis. Participation in research may occur in one of three areas:

1. Theoretical physics—astrophysics, atomic physics, nuclear physics, condensed-matter physics, or materials analysis with advanced ion sources. Campus facilities available for experimental research include a Van de Graaff accelerator and laboratory, and a low-temperature physics laboratory.
2. Computer and instrumentation physics—software and hardware development for computer data acquisition and analysis, or instrumentation development for physics research.
3. 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 experience and training (including training in mathematics at the appropriate level). Prospective students are required to take the Graduate Record Examination General Test. Performance on this examination will be used as one measure in the determination of admission and financial support. It is also recommended that students take the Physics Subject Test part of the Graduate Record Examination. The departmental graduate advisor will provide assistance to students seeking admission to this program and will recommend ways of eliminating any deficiencies in course work.
3. Additional courses chosen from:
   a. Research courses (PHYS 680, 681, or 682)
   b. Courses mutually agreed upon by the student and the graduate advisor or the graduate committee

4. An overall grade point average of 3.25 in all graduate work.

**Basic Core Courses:**

- PHYS 610 Research Seminar
- PHYS 615 Mathematical Physics
- PHYS 620 Quantum Mechanics I
- PHYS 623 Quantum Mechanics II
- PHYS 624 Statistical Mechanics
- PHYS 630 Classical Mechanics
- PHYS 662 Electricity and Magnetism I
- PHYS 663 Electricity and Magnetism II
- PHYS 670 Atomic Physics
- PHYS 671 Nuclear Physics
- PHYS 672 Condensed Matter Physics

The research tool requirements must be met by demonstrated competency in two of the following: (1) Programming at the level of MATH 507 (e.g., the acquisition, analysis, modeling, or simulation of data); (2) a non-native foreign language at the level of FREN 401, GER 401, etc.; (3) differential equations at the level of MATH 574; (4) or the use of physics research equipment at a level equivalent to PHYS 466. PHYS 466 is strongly recommended for those students who have not had an advanced laboratory course.

The courses PHYS 615, 622, 630, and 662 are normally taken during the student's first year. Upon completion of these courses, the student is required to take the Qualifying Examination. The Qualifying Examination consists of four testing sessions and will cover the contents of these four courses. The examination is written, however, if deemed necessary for a more precise judgment, the student may be required to take an additional oral examination. The examination must be passed before any hours of PHYS 730 Doctoral Dissertation or PHYS 735 Graduate Research are taken. A student is allowed to take the Qualifying Examination only twice. It is recommended that the Qualifying Examination be taken at the end of the first year. This examination must be taken for the first time no later than the beginning of the student's third year and must be passed before the beginning of the student's fourth year.

The grade awarded on the Qualifying Examination is based not only on the student's performance on the written examination, but also on his or her performance in courses. The grade represents the faculty's judgment, based on available evidence, on whether or not a student should become a doctoral candidate.

After successful completion of the Qualifying Examination, the student will, upon the graduate advisor and with the consent of the faculty member involved, select a research advisor. The advisor must be a member of the graduate faculty. With agreement from the research advisor, the student will select a dissertation committee. This committee will consist of the research advisor and three additional graduate faculty members, at least one of whom is from outside the Physics Department.

As soon as possible after completion of all the core courses, the student must take the Comprehensive Examination. The Doctoral Program of Study form must be approved before this examination is taken. This examination consists of questions on the doctoral dissertation proposal and, possibly, on the core courses. A student will be given a grade of pass or fail. If a student fails the Comprehensive Examination, it may be repeated only once. At the completion of the dissertation, the student will take a Final Oral Examination. During this examination, the dissertation committee will ask questions concerning the dissertation and concerning the student's research area. Members of the committee should be provided with copies of the dissertation at least one month in advance of the examination. The dissertation and the student's knowledge of the subject areas must be deemed acceptable by the committee.

The requirements and procedures for submission of a dissertation to The Graduate College can be obtained from that College.

**Physics Courses (PHYS)**

Open to Upperclass and Graduate Students

The department's 500-level courses are offered only to advanced physics majors who have successfully completed all prerequisite studies.

**PHYS 562 Atomic and Molecular Physics 3 hrs.**

This course consists of some applications of quantum mechanics. Topics include the helium atom, multielectron atoms, the Raman, Zeeman, and Stark effects, stimulated emission, transition rates, selection rules, the diatomic molecule, and molecular physics. Prerequisite: PHYS 460 or consent of instructor.

**PHYS 563 Solid State Physics 3 hrs.**

After an initial study of symmetry and crystal structure, quantum mechanics is used to describe the cohesion of solids, x-ray and neutron diffraction, the elasticity of solids, lattice vibrations, and the thermal and electrical properties of solids, with particular emphasis on metals. Prerequisite: PHYS 460 or consent of instructor.

**PHYS 564 Nuclear and Particle Physics 3 hrs.**

This course covers such topics as properties of nuclei, collision theory, nuclear reactions, nuclear models, fundamental interactions, and classification techniques used in particle physics. Discussions of experimental methods as well as theoretical treatments using quantum mechanics are included. Prerequisite: PHYS 460 or consent of instructor.

**PHYS 598 Selected Topics 1–4 hrs.**

This course affords an opportunity for the study of some subject of interest to them. Prerequisite: Consent of instructor.

**Open to Graduate Students Only**

**PHYS 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. This course will be graded on a Credit/No Credit basis.

**PHYS 615 Mathematical Physics 3 hrs.**

This course provides the background needed for the application of mathematics to physical problems encountered in graduate physics courses. Relevant topics include group theory, complex variables, and functional analysis are included.

**PHYS 622 Quantum Mechanics I 3 hrs.**

This course is designed to provide a foundation of fundamental techniques for more advanced work in the physics and chemistry of atoms, molecules, nuclei, and solids. The Schroedinger equation and operator theory are applied to simple systems such as the one-electron atom and potential scattering.

**PHYS 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 angular momentum. Prerequisite: PHYS 622.

**PHYS 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.

**PHYS 630 Classical Mechanics 4 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-Jacobi theory are introduced, and some of the analogies between classical and quantum mechanics are discussed.

**PHYS 650 Relativistic Quantum Mechanics 4 hrs.**

This course deals with the Dirac and Klein-Gordon equations, quantum electrodynamics, Feynman diagrams, and the properties of the strong and electro weak interaction of elementary particles. Prerequisite: PHYS 623.

**PHYS 662 Electricity and Magnetism I 4 hrs.**

This course deals with the static electromagnetic field, its interaction with matter, time-varying fields, Maxwell's equations, wave propagation, wave guides, and simple radiating systems.

**PHYS 663 Electricity and Magnetism II 4 hrs.**

This course deals with the scattering of electromagnetic waves, plasma physics, special relativity, relativistic dynamics, collisions between charged particles, bremsstrahlung, and multiple fields. Prerequisite: PHYS 662.

**PHYS 670 Atomic Physics 3 hrs.**

This course covers atomic structure, atomic spectra, second quantization, and the electromagnetic field, the interaction of radiation and matter, resonance phenomena, and the formal theory of scattering with applications to atomic collisions. Prerequisite: PHYS 623 or consent of instructor.

**PHYS 671 Nuclear Physics 3 hrs.**

This course covers nuclear models, nuclear matter, electromagnetic properties, reactions, and scattering. Prerequisite: PHYS 623 or consent of instructor.

**PHYS 672 Condensed Matter Physics 3 hrs.**

This course includes both static and dynamic properties of condensed matter with particular emphasis on transport properties, optical properties, magnetism, and superconductivity.
POLITICAL SCIENCE

Dr. David Houghton, Chair  
Main Office: 3302 Friedmann Hall  
Telephone: 387-5680  
FAX: 387-3999

Steven T. Benfell  
James M. Butterfield  
John A. Clark  
Paul Clements  
J. Kevin Corder  
Kenneth A. Dahlberg  
Suhasini Datta-Sandhu  
Anna Lesi Haas  
Emily Hauptmann  
Gunther M. Hega  
Susan Hoffman  
David G. Houghton  
Alan C. Isaak  
Peter Kobrak  
Ashlyn Kuesten  
Neil Finney  
Peter G. Renstrom  
William A. Ritchie  
Chester B. Rogers  
Murray Scott Tanner  
Lawrence Ziring

Master of Arts in Political Science

Director of Graduate Studies:  
John A. Clark  
Room 3356, Friedmann Hall

The Master of Arts in Political Science offers the student a variety of options to prepare him/her for various career goals: (1) positions in the public service and quasipublic agencies; (2) further professional training in political science and related professions, such as law; (3) teaching positions in 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 or other relevant fields and have achieved a 3.0 grade point average. Graduate Record Exam scores for the quantitative, verbal, and analytical parts are required for all students. Additional materials to be submitted include a brief essay about the student’s academic and professional objectives and three recommendations (on WMU Graduate Reference Forms). The department may require the student to make up deficiencies in undergraduate preparation.

Program Requirements

The program is 30 credit hours and allows students to choose between the thesis and non-thesis options. Requirements in the two options may not be interchanged. Students should meet with the Director of Graduate Studies before registering for classes their first semester.

THESIS OPTION

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

2. Either PSCI 601, Foundations of American Politics I: Institutions and Politics or PSCI 602, Foundations of American Politics II; either PSCI 641, Comparative Politics I: Theories of Comparative Politics or PSCI 642, Comparative Politics II: Institutional and Contextual Issues or PSCI 645, National Political Systems and International Politics; either PSCI 662, Political Philosophy I or PSCI 683, Political Philosophy II; PSCI 664, The Nature of Political Inquiry and Analysis; PSCI 694, Teaching Political Science; and PSCI 696, Research and Professional Skills.

3. PSCI 700, Master’s Thesis (6 hours).

4. Pass an oral examination on the thesis and on the student’s political science program.

NON-THESIS OPTION

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

2. Either PSCI 601, Foundations of American Politics I: Institutions and Politics or PSCI 602, Foundations of American Politics II; either PSCI 641, Comparative Politics I: Theories of Comparative Politics or PSCI 642, Comparative Politics II: Institutional and Contextual Issues or PSCI 645, National Political Systems and International Politics; either PSCI 662, Political Philosophy I or PSCI 683, Political Philosophy II; PSCI 664, The Nature of Political Inquiry and Analysis; PSCI 694, Teaching Political Science; and PSCI 696, Research and Professional Skills.

3. Pass written and oral field examinations on the student’s political science program.

Master of Development Administration

MDA Director:  
Lawrence Ziring,  
Room 3356, Friedmann Hall

The Master of Development Administration (MDA) program is designed to prepare candidates for careers in international development and to meet the specialized needs of public administrators from the developing countries. The course of instruction has as its focus the political dimensions of development and democratization and includes a strong multidisciplinary component that draws from public administration, economics, computer science, business and management, social work, human resources and health delivery systems, and educational leadership.

The program is designed for two types of students: Public administrators and officials from developing countries who require additional training to meet new or increased responsibilities; and recent graduates from both developing and industrial countries, including the United States, who are interested in development—careers in the public sector, i.e., in government, non-governmental organization, or international organization.

The MDA program includes both development administration theory and practice, exposure to development strategies, and the honing of skills. MDA students are guided in their work by established and experienced members of the academic community, all of whom are research scholars, and the majority of whom have lived and worked in the developing countries. Usually faculty have had experience with national and/or international organizations, or have worked with a variety of governments on development projects.

Admission Requirements

Applicants must satisfy the requirements for admission to The Graduate College in order to be considered for admission to this program. An applicant must possess an undergraduate degree, preferably in the social sciences with either a concentration in political science or
public administration, and should have some exposure to economics and/or statistics. Applicants with actual professional experience may, under some circumstances, substitute professional attainments for undergraduate preparation. A grade point average of 3.0 in all undergraduate work is normally a requirement for admission to the MDA program; however, where grading scales are computed differently, equivalents will be determined. International students must obtain from and submit their applications to the WMU Office of International Student Services. American students should apply through the WMU Graduate Admissions Office. The Department of Political Science also requires three recommendations (using WMU Graduate Reference Forms), a personal statement of the student's interest in the MDA program, and any other supporting data that can assist the Department's Admissions Committee, which screens and judges all applications. All students must demonstrate English proficiency (i.e., the ability to speak, read, and write in the English language) before entering the MDA program. A Career English Program is available for students whose English language capabilities are limited.

Admission Requirements

1. Prerequisites (non-credit), only for those candidates without the requested academic or practical background: PSCI 330, Introduction to Public Administration; and ECON 201 or 202, Principles of Economics. The following courses are recommended by the MDA Director:

   a. Leadership—the Standard Concentration: PSCI 644, Comparative Strategies of Development; PSCI 649, Sustainable Rural Development; PADM 603, Managing Economic Development; PADM 626, Administrative Law and Governmental Regulations; PADM 630, Administrative Analysis; PADM 632, Policy Leadership in Administration; PADM 636, Exercise of Power in Organizations; PADM 699, Reinvigorating Government; COM 673, Conflict Management; COM 683, Power and Leadership in Organizational Communication; or ELDL 602, Educational Leadership.


   c. Health and Human Services: PADM 651, Health Services Environment; PADM 653, Administration of Health Services; PADM 678, Program Evaluation; PADM 679, Seminar: Current Issues in Health Service Management; PADM 681, Health Law and Administration; PADM 682, Program Implementation; PADM 683, Project Management in Human Resource Development; or MSMT 600, Human Resource Management.

2. Required Core Courses. Six courses (18 credit hours): PSCI 532, Administration in Comparative Societies; PSCI 633, Political Environment of Public Administration; PSCI 636, Seminar: Development Administration; PSCI 638, Seminar: Implementing Development Policy; PADM 610, Human Resources Administration; and PADM 638, Organization Theory and Behavior.

3. Tools or Skills. Three courses (9 hours): PADM 623, Principles of Budgeting; and two other courses. PSCI 644, Seminar: Comparative Strategies of Development; PADM 622, Applied Research Methods; PADM 630, Financial Decision Making; and PADM 628, Statistical Applications in Administration.

4. International and Comparative Studies. One course (3 hours): PSCI 553, United Nations; PSCI 555, International Law; PSCI 645, National Political Systems and International Politics; PSCI 647, Contemporary Constitutionalism; or PSCI 650, Third World Problems.

5. Concentrations. Three courses within one of the five concentrations (9 hours). Most students are advised to choose from the Concentration. Under special circumstances a mix of courses appropriate to the needs of the student may be selected with the approval of the MDA Director.

   a. Leadership—the Standard Concentration: PSCI 644, Comparative Strategies of Development; PSCI 649, Sustainable Rural Development; PADM 603, Managing Economic Development; PADM 626, Administrative Law and Governmental Regulations; PADM 630, Administrative Analysis; PADM 632, Policy Leadership in Administration; PADM 636, Exercise of Power in Organizations; PADM 699, Reinvigorating Government; COM 673, Conflict Management; COM 683, Power and leadership in Organizational Communication; or ELDL 602, Educational Leadership.


   c. Health and Human Services: PADM 651, Health Services Environment; PADM 653, Administration of Health Services; PADM 678, Program Evaluation; PADM 679, Seminar: Current Issues in Health Service Management; PADM 681, Health Law and Administration; PADM 682, Program Implementation; PADM 683, Project Management in Human Resource Development; or MSMT 600, Human Resource Management.

6. Approved Elective (3 hours): With the approval of the MDA Director choose one course from the above.

Doctor of Philosophy in Political Science

Director of Graduate Studies: John A. Clark, Room 3356, Friedmann Hall

The Doctor of Philosophy in Political Science is designed to prepare students for careers in teaching, policy analysis, and applied as well as academic or professional research. The Ph.D. program provides basic training in American political science, comparative politics, political theory and philosophy, and research methods. Students are expected to specialize in one of three research areas: citizen politics; political development, democratization and sustainability; or public policy and policy processes. Students may enter with either a B.A. degree or an M.A. degree.

Admission Requirements

Students must satisfy the general admission requirements of The Graduate College. Students applying to the program with a bachelor's degree must have completed at least twenty-four hours of work in the social sciences or related fields and have achieved a 3.25 grade point average in their last two years of undergraduate work. Course work supporting a master's degree must have achieved a grade point average of at least 3.25 in their graduate work. Graduate Record Exam scores for the quantitative, verbal and analytical parts are required for all students. Each applicant should have three recommendations (using WMU Graduate Reference Forms) and submit a brief essay concerning their academic and professional objectives.

Program Requirements

Students should meet with the Director of Graduate Studies before registering for classes their first semester. The doctorate requires a minimum of 90 credit hours of work beyond the baccalaureate. After successfully completing 30 hours in the program and passing the preliminary exam, students will be eligible for a Master of Arts degree. The requirements for the dissertation for the doctorate are as follows:

1. Prerequisites (non-credit). Students must have completed the following course or its equivalent with a grade of "B" or better: PSCI 395, Quantitative Methods for Political Scientists.

2. Required core courses. Each student is required to take the following thirteen core courses (33 hours) or their equivalent:


3. Annual Reviews. In order to continue in the program, students must receive a positive annual review. In addition, first year students must take and pass a preliminary examination based upon one of three, two-course sequences: Political Theory and Philosophy (PSCI 662 and PSCI 663) or American Politics (PSCI 610 and PSCI 620) or Comparative Politics (PSCI 641 and PSCI 642) in order to continue in the program.

4. Research area. After passing the preliminary examination and completing the basic requirements, students will select their research area (either citizen politics, political development, democratization and sustainability; or public policy and policy processes). With the approval of the Graduate Director, they will: a.) Take nine hours of courses designated for their research area (Research Methodology, Research Design, and b.) select 27 additional credit hours that relate to their research area and dissertation topic from approved cognates (9 hours required), research tools/methods, and electives.

5. Research tools/methods. All Ph.D. students must demonstrate proficiency in at least
two research skills and/or methodology appropriate to their field of specialization, as determined in consultation with their advisor, subfield faculty, and the graduate advisor. As such, all students must successfully complete PSCI 684, 681, and 682 or their equivalents, and are urged to do so as early in their careers as possible. In addition, all students must attain competence in a second elective research skill/methodological tool sufficient to meaningfully assist their research activities. Elective research tools may include advanced statistical methodology, foreign language skills (other than English), survey research, econometrics, Geographic Information Systems (GIS), or other alternative skills as approved by the Graduate Advisor and/or Graduate Committee. Students should check the specific research tools/methodology policy with the Graduate Advisor.

6. Comprehensive examination. In order to continue in the program after the completion of their required core course work, students must take and pass written and oral examinations covering two of the following three fields: American politics; comparative politics; political theory and philosophy.

7. Dissertation. As the capstone to the Ph.D. program, the dissertation is awarded 21 credit hours. The dissertation is an original and substantive research requirement and will be developed and completed under the supervision of a dissertation advisor.

Political Science Courses (PSCI)

Open to Upperclass and Graduate Students

Undergraduates who have attained at least junior status and who have completed PSCI 100 or 200 and three additional courses in political science, or who have obtained prior approval of the department chair, may enroll in 500-level courses.

A critical examination of major problems facing national, state, or local government with emphasis on contemporary efforts and studies designed to understand or solve such problems. May be repeated for credit when topics vary.

PSCI 526 Administrative Law and Public Regulation 3 hrs.
A study of the requirements for, and the limits on, the exercise of administrative powers by public officials charged with 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. Prerequisite: PSCI 200 or a course in Economics.

PSCI 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.

PSCI 531 Administration in Local and Regional Governments 3 hrs.
The administrative organization, structure, procedures, and forms of local units of government are analyzed.

PSCI 532 Administration in Developing Countries 3 hrs.
This course compares public administration systems in a development context. It analyzes the role of the administrator in developing countries, notably the administrator's varied responsibilities as a career public official, and as an agent of change. The character of the development administrator as both a generalist and specialist is explored.

PSCI 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.

PSCI 535 The Politics of Governmental Budgeting and Finance 3 hrs.
A survey of the political process of governmental budgeting and finance. Budget systems including program planning and budgeting systems are studied. The politics of taxation and other governmental revenues including intergovernmental transfers are studied for their impact on public policy choices.

PSCI 544 Political Change in Russia 3 hrs.
An examination of processes of political change in Russia in areas of policy and structure. Past reform efforts in the former Soviet Union and Russia are studied, followed by an extensive inquiry into system change. The course relates the Soviet and Russian experience to the literature on political change and theories of comparative politics.

PSCI 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 for credit when topics vary.

PSCI 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. May be repeated for credit when topics vary.

PSCI 553 United Nations 3 hrs.
A study of the United Nations in action. Attention is focused on significant political problems confronting world organization, i.e., functional and dysfunctional aspects of the UN; 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.

PSCI 555 International Law 3 hrs.
The theory, sources, development, and general principles of international law, and the relationship of law to the dynamics of international politics. Decisions of international and municipal tribunals and the practices of states will be used to demonstrate the basic rights and obligations of states in time of peace and war. Such topics as recognition of states, diplomatic practice, treaties, and neutrality will also be discussed.

PSCI 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.

PSCI 563 Theories of Revolution 4 hrs.
Examines significant classical and contemporary theories of revolution with reference to both their analytical and normative implications.

PSCI 598 Studies in Political Science 1–4 hrs.
An opportunity for advanced students with good scholastic records to pursue independently the study of some subject of interest to them. Subjects are chosen and arranges made to suit the needs of individual students. Prior approval of department chairperson and instructor.

Open to Graduate Students Only

PSCI 600 Seminar in American Politics 3 hrs.
Research and study in selected topics in American politics. May be repeated for credit when topics vary.

A systematic examination of the constitutional foundations of American government, the primary institutions of government at the national level—Congress, the presidency, the courts, and the bureaucracy—and the policy-making processes from an institutional perspective.

PSCI 602 Foundations of American Politics II: Representation and Participation 3 hrs.
The course reviews analyses of the representation of citizen interests in the policy-making process through political participation including elections, voting behavior, political parties and activism, interest groups, and public opinion.

PSCI 603 Seminar in American Political Behavior 3 hrs.
This course will review current literature in the area of political behavior and psychology. Special attention will be paid to controversies in voting behavior and the meaning and significance of vital concepts such as partisanship, ideology, issue voting, belief systems, political sophistication, affective reactions to politics, and the dynamics of citizen participation.

This course provides a graduate-level introduction to American public policy. The focus of this course is on the stages or elements of the policy process as a means of analysis. While this approach has traditionally included policy formation, implementation and evaluation, it is expanded to include policy studies and other important theoretical aspects of public policy. Consequently, the course will attempt to provide a synthesis between classical and behavioral political science.
PSCI 605 Comparative Public Policy
This course focuses on the development of policy over time and across state and national boundaries. It deals with how and why policies emerge in particular forms in different countries. Selected substantive issues will be examined comparatively in greater detail.

PSCI 606 Political Economy
An examination of two models, the free market mechanism and national industrial policy, that explains how the political-economic system functions in the U.S. and in the American states. The relationship between private enterprise and democracy will be reassessed in response to global economic challenges. The American political economy is compared with alternative approaches in the world.

PSCI 607 Resources, Environment and Technology
This seminar examines how resource, environmental, and technological processes are generating increasingly important political and economic conflicts as well as how policy made in these areas can either exacerbate or ameliorate such conflict. Examples (e.g., fossil fuel dependency, climate change, new biotechnology weapons) will be used to illustrate the dilemmas they create for policy makers at all levels.

PSCI 630 Seminar: Public Administration
Study of selected topics in public administration. May be repeated for credit when topics vary.

PSCI 631 The Foundations of Public Administration
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.

PSCI 632 Public Budgeting in Developing Countries
Consideration of the theoretical and practical aspects of governmental budgeting and financial management in developing countries. Emphasis is placed on developing planning, management of international aid for development projects, budgeting for state-owned enterprises, and basic tools for budget analysis.

PSCI 633 The Political Environment of Public Administration
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. Explores the impact of the political system on administrative decision-making and agency responsiveness.

PSCI 636 Seminar: Development Administration
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.

PSCI 637 Organization Development
Organization Development (OD) is a planned, organization-wide attempt directed from the top to increase organizational effectiveness by encouraging certain behavior. Building on behavioral and humanistic theories of organizations, OD is concerned with human relations in the work group. The strategy is to make the organization work more effectively through having individuals become aware of what motivates others and through reduced tensions in the workplace.

PSCI 638 Seminar: Implementing Development Policy
As a capstone to the MDA program, this research seminar calls upon the student to examine the problems encountered in the implementation of a particular development policy. Attention will be given to socio-economic, political and cultural impediments, and the strategies that are judged appropriate in circumstances where resistance to change is significant. Permission of the MDA Director required to enroll.

PSCI 640 Seminar in Comparative Politics
3 hrs.
Research and study in selected topics in comparative politics. Topics will usually be thematic but may also encompass a regional or country study. In all cases significant issues in the study of the field will be stressed. May be repeated for credit when topics vary. Prerequisite: PSCI 641.

PSCI 641 Comparative Politics I: Theories of Comparative Politics
An overview course for master's and Ph.D. students on the major theoretical and methodological approaches to the study of comparative politics and political development. Major topics may include major regime types, state-society relations, political economy, political development and change (including revolutions and reform), the state of the field, and other key topics in the literature.

PSCI 642 Comparative Politics II: Institutional and Contextual Issues
A study of the state and its institutions and the various issues at the subnational and international level that impinge on the power of the state. Issues may include nationalism, regionalism, and social movements, international political economy, international regimes and organizations, resource availability and usage, and international security.

PSCI 643 Relations Between Subnational, National, and International Systems
The course explores interdependencies between subnational, national, and international systems. Special consideration is given to the influences and demands of the international system on national and subnational affairs in both the materially developed and less developed areas of the world.

PSCI 644 Seminar: Comparative Strategies of Development
The course focuses on the developing areas and uses an interdisciplinary approach. The strategies of development are examined in selected countries or typically on a cross-national basis.

PSCI 645 National Political Systems and International Politics
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.

PSCI 647 Comparative Constitutionalism
Constitutions are fundamental charters of government which define the extent and manner in which sovereign power is exercised. This course examines the constitutional foundations of representative political systems and evaluates the impact of basic constitutional provisions on contemporary governance practices.

PSCI 649 Sustainable Rural Development
A seminar concerning changing perceptions of rural development among the developing countries, with special reference to the relationship between administrative needs and democratic objectives. May be repeated for credit when topics vary.

PSCI 650 Third World Seminar
Variable topics examining the course of political development among the developing countries, with special reference to the relationship between administrative needs and democratic objectives. May be repeated for credit when topics vary.

PSCI 661 Principles of Politics
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.

PSCI 662 Political Philosophy I
A synthesis of the history of political philosophy and the formal analysis of those positive and normative concepts and processes necessary to the understanding of political systems. The course covers the period from classical Greece through the Renaissance. Superimposed on the overall chronological format are critical inquiries into basic concepts and processes.

PSCI 663 Political Philosophy II
A synthesis of the history of political philosophy from the seventeenth century to contemporary times. The course also includes a formal analysis of applicable positive and normative concepts necessary to the understanding of political systems. Superimposed on the overall chronological format are critical inquiries into basic concepts and processes.

PSCI 664 The Nature of Political Inquiry and Analysis
An examination of the principles underlying the systematic study of politics. Included are discussions of such basic questions as: How do we obtain knowledge of politics? How do
we explain political phenomena? and What is the relationship between the empirical analysis and normative evaluation of political phenomena? Attention will be given to leading approaches to the study of politics and the formulation and use of concepts, generalizations and theories.

PSCI 690 Seminar in Advanced Political Analysis
3 hrs.
Variable topics in advanced political analysis and research methods are addressed. Topics may include time-series analysis, experimental design, formal methods, game theory, and comparative methods. May be repeated for credit when topics vary. Prerequisite: Permission of the instructor.

PSCI 691 Political Analysis I
3 hrs.
Introduction to the research process in political science including research design, sampling and case selection, sources of data (e.g., surveys, interviews, archives, government agencies, etc.), and basic descriptive statistics.

PSCI 692 Political Analysis II
3 hrs.
The application of statistical and mathematical models to the analysis of political data with emphasis on methodological assumptions and problems: correlation; analysis of variance; and simple and multiple regression. Prerequisite: PSCI 691 or equivalent.

PSCI 694 Teaching Political Science
1 hr.
This course addresses the basics of teaching in higher education: class preparation, leading discussions, classroom policies, university policies, classroom management, dealing with problem situations, and basic teaching skills, among others.

PSCI 695 Teaching Excellence
2 hrs.
This course introduces advanced graduate students and teaching assistants to ideas, information and methods that are innovative and encourages them to approach teaching in a way that goes beyond the traditional lecture format. Critical thinking exercises, group projects, project-oriented learning, portfolio learning, computer-aided instruction and computer simulations are possible topics. Recent research on the nature of the learning process, both among late adolescents and adults, will also be included. Graded on a Credit/No Credit basis. Prerequisite: PSCI 694.

PSCI 696 Research and Professional Skills
2 hrs.
Goals in this course include acquaintance with the department's research agenda; familiarization with the state of the discipline; overcoming common writing problems faced by professionals; demystifying certain professional activities such as conference participation, article submission and grant writing; familiarization with on-campus facilities, including library and computer support; and introduction to computer programs and databases commonly used in political science.

PSCI 697 Proposal Workshop
1 hr.
During the course of this workshop, the student will develop a dissertation proposal (and attending grant proposals, where appropriate). While this will be done primarily in conjunction with the committee, the workshop will provide a weekly support structure in which students will discuss their research question, progress and any complications. Graded on a Credit/No Credit basis. Open only to doctoral students.

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

PSCI 700 Master's Thesis
6 hrs.

PSCI 710 Independent Research
2-6 hrs.

PSCI 712 Professional Field Experience
2-12 hrs.

PSCI 730 Dissertation
21 hrs.

PSYCHOLOGY

Dr. R. Wayne Fuqua, Chair
Main Office: 3700 Wood Hall
Telephone: 387-4500
FAX: 387-4550
Galen J. Alesi
John Austin
Lisa E. Baker
Dale M. Brethower
James E. Carr
Edward J. Daly
Alyce M. Dickinson
Kristal Enhrhardt
Ruth Ervin
R. Wayne Fuqua
Bradley E. Huitema
Linda A. LeBlanc
Richard W. Malott
Jack L. Michael
Amy E. Naugle
Alex Poling
C. Richard Spates
Lester W. Wright, Jr.

Graduate Training Committee Chairperson:
Lisa E. Baker,
3700 Wood Hall
Linda Rowen, Program Secretary
3700 Wood Hall

The Department of Psychology has a strong scientific and behavior analytic orientation, which influences all of the Department's graduate degree programs.

Graduate students receive a personal appointment to a faculty advisor and two faculty sponsors in an apprenticeship role. These arrangements facilitate the development of a personalized program to accommodate the academic and professional interests of the student and to utilize the full range of research and other facilities within the University. The student is encouraged to participate in the daily conduct of the Department's academic program and research activities.

Graduate students in all programs of the department are expected to abide by the following principles: "Ethical Principles of Psychologists" and the "Standards for Providers of Psychological Services," published by the American Psychological Association; "Guidelines for Human Subjects Research at WMU" and "Humane Care and Use of Laboratory Animals," published by Western Michigan University; and "Guide for the Care and Use of Laboratory Animals," published by the National Research Council. The Department expects students to be familiar with the content of these documents and to abide by the principles contained therein as they apply to academic endeavors, professional service, and research activities conducted in partial fulfillment of degree requirements as well as professional service and scholarly or research activities which are not directly awarded academic credit but are completed as part of program requirements of the Department of Psychology at Western Michigan University.

The members of the department faculty conduct an annual review of student progress and recommend to The Graduate College advancement from program applicant to candidacy for a degree within each program. This evaluation includes a review of academic performance, professional responsibility, and adherence to the accepted ethical and professional guidelines of the discipline and the profession as published by the American Psychological Association. Failure to meet these standards and the ethical principles of the American Psychological Association and the State or failure to abide by "A Student Guide to Academic Dishonesty" and "University Policy on Sexual Harassment and Sexism" published by Western Michigan
Master of Arts in Psychology

Admission Requirements
Applications are reviewed in terms of four sources of information, although performance related to any one source is not sufficient to assure or deny admission. Applicants are assumed to have substantial training in psychology at the undergraduate level with a minimum of 18 hours of credit in psychology, including introductory statistics. Applicants may be required to complete additional courses following matriculation in order to satisfy these basic requirements. The application procedure includes submission of:
1. A transcript showing the completion of an undergraduate major or minor in psychology
2. Graduate Record Examination (verbal and quantitative tests)
3. Four letters of recommendation
4. An autobiography describing academic interests and professional goals.
5. The Department of Psychology admission application.
Students are admitted only during the Fall Semester each year. The deadline for receipt of all application materials is February 1. It is the policy and commitment of the Department of Psychology not to discriminate on the basis of race, sex, age, color, national origin, height, weight, marital status, sexual orientation, religion, handicap, or Veteran status in its educational programs, student programs, admissions, or employment policies. The Department of Psychology complies with all requirements of Title VII of the Civil Rights Act of 1964, Title IX of the 1972 Amendments, Executive Order 11246 as amended, and Section 504 of the Rehabilitation Act of 1973, and all other pertinent state and federal regulations.

Program Requirements
BEHAVIORAL ANALYSIS
Advisor: Alyce Dickinson, industrial/Organizational Psychology Program Chair 3200 Wood Hall
The master's program in Industrial/Organizational Psychology prepares students for human resource management positions in business, government, and human service organizations or for entry into a Ph.D. program for advanced study. This program requires a minimum of thirty-six credit hours, including:
1. Industrial/Organizational Psychology Core (9 hrs.)
2. Behavior Principles (3 hrs.)
3. Behavior Systems Analysis (6 hrs.)
4. Methodology (6 hrs.)
5. Research Methods and Applications (6 hrs.)
6. Elective Cognates (6 hrs.)
7. A master's thesis is required of persons planning to pursue a Ph.D. degree, while those with a professional orientation select a research project (3 hrs.) and a practicum (6 hrs.) in an industrial setting. The selection of elective courses outside the core, including the thesis option, is approved by the advisor for the industrial/organizational psychology program.

CLINICAL PSYCHOLOGY
No terminal Master of Arts is offered in Clinical Psychology. A master's degree in this area is offered only as part of the Doctor of Philosophy. See the description of the doctoral program in clinical psychology for more information.

SCHOOL PSYCHOLOGY
No terminal Master of Arts is offered in School Psychology. Applicants are admitted to the Specialist in Education in School Psychology program and receive the Master of Arts only within that specialization. That master's program requires a minimum of thirty-five credit hours. Two practica and other school setting experiences are required within the apprenticeship training model of the program.

Certificate Program in Human Performance Technology
Advisor: Dale Brethower, 3714 Wood Hall
The Human Performance Technology certificate program is designed for people with at least five years of work experience who seek an education that helps them in their current work and prepares them for advancement. Persons whose current responsibilities involve developing or managing other people will find the program especially useful. The program emphasizes practical applications of principles of human performance technology. Human performance technology is firmly based in the theory and research of general systems theory and applied behavior analysis. Applications featured in the curriculum are well supported by validation studies conducted in both public and private sector organizations. Graduates learn how to improve the performance of individuals, work groups, cross-functional teams, and total organizations. Each application tailors principles of human performance technology to the special conditions present in a specific organization.

The core courses in the certificate program are structured to contribute also to the requirements of Western Michigan University's master's programs in Industrial/Organizational Psychology and in Applied Behavior Analysis for students who are admitted to one of those programs after completing the graduate certificate program.

Admission Requirements
1. A bachelor's degree from an accredited institution, indicated on an official transcript.
2. Transcripts of all courses taken beyond high school, showing at least 12 credit hours of undergraduate courses in fields related to human performance technology such as accountancy, administration, industrial engineering, management, manufacturing, or psychology.
3. A grade point average of at least 3.0 in the last two years of undergraduate work.
4. Graduate Record Examination (verbal, quantitative, and analytical tests)
5. Four letters of recommendation
6. An autobiography describing academic interests and professional goals.

Program Requirements
Four Core Courses and two Elective Courses of 3 semester hours each compose the Graduate Certificate Program in Human Performance Technology.

Core Courses, 12 hours
PSY 644 Personnel Training and Development 3 hrs.
PSY 645 Psychology of Work 3 hrs.
PSY 652 Advanced Systems Analysis 3 hrs.

Elective Courses, 6 hours
The two elective courses are selected in consultation with the program advisor from a list of approved courses maintained in the Psychology Department. Approved electives might be additional psychology course, as well as courses from several other departments with the University.

A student must complete of courses with a grade of B or better and within a six year period.
Specialist in Education in School Psychology

Advisor: Edward Daly, 3700 Wood Hall

The Specialist in Education in School Psychology is a competency-based program designed to prepare persons for careers in Professional School Psychology. Applicants are admitted to the specialist program and receive the master's degree in the process of completing the specialist sequence. The program incorporates an apprenticeship training model in which the applicant receives a personal appointment to one faculty advisor and two faculty sponsors. These faculty members function as the training committee for the student. Apprentices are encouraged to participate in the daily conduct of the Department's various training and research activities.

The focus at the master's level is on learning basic psycho-educational, behavior analysis and research skills, and the methods for applying these directly with clients within the school setting. At the specialist level, the student develops the consultation and system analysis skills needed to implement the educational and behavior change programs through other professionals and parents. The program 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. The student acquires and refines educational and behavioral techniques which focus on constructing educational environments to maximize each child's personal set of learning characteristics.

The Educational Specialist degree leads to certification as a school psychologist, a credential awarded by the Michigan Department of Education. Students may obtain preliminary certification upon completion of specified course work totaling 45 credit hours and a 600-clock hour internship. Full certification as a school psychologist is obtained upon completion of the Educational Specialist degree and is a second 600-clock hour internship.

The Educational Specialist degree is part of the collaboratively-governed School Psychology and Special Education Programs, which includes participation from the Departments of Psychology and Special Education. Applicants to the program must submit application materials to the Office of Admissions and Orientation, Graduate Admissions, which will then be forwarded to the Department of Psychology. Admission is offered for the Fall semester each year. Applicants must submit materials by February 1.

Admission Requirements
1. A completed major (or broad minor) in Psychology, related social sciences, or education.
2. Graduate Record Examination: Verbal, Quantitative, and Analytical Test scores.
3. Three letters of recommendation.
4. Vita
5. Autobiographical sketch and statement of professional goals.

Experiences 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 60-63 graduate credit hours, a Specialist in Education in School Psychology is awarded. The program is approved by the Michigan State Board of Education and is fully accredited by the National Association of School Psychologists and the National Council on Accreditation of Teacher Education. Applicants should contact the Department of Psychology for more information. The training sequence will include courses in the following areas:

1. Professional Core (3 hrs.)
2. School Psychology Core (24 hrs.)
3. Education of Children with Exceptionalities (6 hrs.)
4. Research Methodology (6 hrs.)
5. Human Growth and Development (6 hrs.)
6. Practica in School Psychology (6 hrs.)
7. Professional Field Experience (6 hrs.)
8. Specialist Project (6 hrs.) or scholarly paper (0 hrs.). Students intending to complete the doctorate in School Psychology will complete 720, Specialist Project; others will complete a scholarly paper.

In addition to preparation for full certification as a Michigan School Psychologist, the Specialist degree program is considered basic preparation for doctoral training in School Psychology.

Doctor of Philosophy in Psychology

The Doctor of Philosophy in Psychology is designed to provide intensive training in Applied Behavior Analysis, Clinical Psychology, Experimental Analysis of Behavior, or School Psychology. The Doctor of Philosophy is a research degree for persons intending to assume leadership roles in teaching, research, and service 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 of a doctoral committee chairperson and two faculty sponsors to facilitate the full development of the student's academic interests in 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 to prepare students for teaching and research. The content areas and credit hours of the individual doctoral programs are listed below and include:

APPLIED BEHAVIOR ANALYSIS (84 hrs.)

Advisor: Alan Poling, 3700 Wood Hall

1. Principles of Learning and Motivation (3 hrs.)
2. Research Methodology (6 hrs.)
3. Research in Behavior Analysis (6 hrs.)
4. Theoretical Issues in Behavior Analysis (6 hrs.)
5. Professional Issues (1 hr.)
6. Behavioral Approaches to Individual and Systems Management (6 hrs.)
7. Behavior Analysis: Theory and Application (12-26 hrs.)
8. Professional Experience (6-14 hrs.)

EXPERIMENTAL ANALYSIS (84 hrs.)

Advisor: Alan Poling, 3700 Wood Hall

1. Core Courses (28 hrs.)
2. Theoretical Issues in Behavior Analysis (6 hrs.)
4. Professional Experience (12 hrs.)
5. Cognates (0-6 hrs.)
6. Master's Thesis or Project (6 hrs.)
7. Doctoral Dissertation (15 hrs.)

Courses count toward the Ph.D. program in the Experimental Analysis of Behavior only after the student has completed all courses in an M.A. program, including the M.A. thesis or M.A. project requirement.

SCHOOL PSYCHOLOGY (91 hrs.)

Advisor: Edward Daly, 3700 Wood Hall

1. Professional Core (3 hrs.)
2. Foundations in Psychology (18 hrs.)
3. Methodology (6 hrs.)
4. School Psychology Core (24 hrs.)
5. Special Education (6 hrs.)
6. School Psychology Practicum and Field Experience (6 hrs.)
7. Predoctoral Internship (2 hrs.)
8. Specialist Project (6 hrs.)
9. Dissertation (15 hrs.)
10. CECP 607 (3 hrs.)

CLINICAL PSYCHOLOGY (96 hrs.)

Advisor: Richard Spates, 3500 Wood Hall

1. Professional Core (3 hrs.)
2. Clinical Foundations in Psychology (18 hrs.)
3. Methodology (12 hrs.)
4. Clinical Psychology Core (2-24 hrs.)
5. Clinical Practicum (18 hrs.)
6. Thesis (6 hrs.)
7. Dissertation (15 hrs.)
8. Practicum and Internship (21 hrs.)
9. Research Tools (12 hrs.)

The research activity of the doctoral student is continuous and is arranged through participation in the apprentice research program, completion of a six credit hour Master's Thesis, the completion of approved practicum, and completion of the dissertation. The student is required to demonstrate competence in two research tools selected from foreign languages, American sign language, computer usage, research methods, or advanced statistics. Such tools may be integral to the program requirements or may be, in some instances, additional requirements. Specific tool requirements differ by program; the adviser will be able to provide complete information. The doctoral candidate will also show evidence of an ability to interpret, integrate, and discuss research data by the satisfactory completion of a comprehensive examination.

The program is arranged to provide formal evaluations of the student as he/she progresses from baccalaureate apprentice to doctoral applicant with the completion of the Master's Thesis and to doctoral degree candidate with completion of the comprehensive examination. The award of the Ph.D. degree is made following the satisfactory completion of the required hours of approved coursework, demonstration of competence in two research tools, satisfactory completion of the comprehensive examination, and the oral defense of the dissertation before the student's doctoral committee at a public presentation.

The Department of Psychology offers financial assistance through Department...
**Psychology Courses (PSY)**

**Open to Upperclass and Graduate Students**

All 500-level courses in the Department of Psychology have a prerequisite of junior level status and of PSY 330 and PSY 360. Exceptions to this requirement must be approved by the course instructor.

**PSY 510 Advanced General Psychology** 3 hrs.
Readings, lecture, and discussion designed to introduce students 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.

**PSY 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 operant and respondent models.

**PSY 517 Psychology of Learning for Teachers** 3 hrs.
Designed to teach the principles of behavior and the application of these principles to teaching. Topics include the use of behavior principles in the development of objectives, selection and preparation of instructional material, classroom management and incentive motivation, behavior change, performance contracting and program evaluation. Practical application is stressed.

**PSY 518 Stimulus Control and Perceptual Processes** 3 hrs.
An examination of the literature surveying sensory and perceptual processes with an emphasis upon the research methodology and theoretical interpretation of data from studies of stimulus control and discrimination in nonhuman organisms. Prerequisite: Twelve hours of psychology or permission of instructor.

**PSY 519 Corrective and Remedial Teaching** 3 hrs.
An introduction to and survey of various content skills, curriculum approaches, and special teaching techniques used in elementary school reading and mathematics instruction. Designed primarily for prospective school psychologists, focus is on academic skill content, sequencing of skill hierarchies, devise short term educational plans to teach specific skills, and evaluating the effectiveness of such plans. Graduate standing in psychology education, or permission of instructor.

**PSY 524 Human Sexuality** 3 hrs.
Discussion of those human behaviors concerned with sex, sexuality, and reproduction. Consideration is given to the anatomical, physiological and psychological properties of sexual functioning in male and female. Emphasis is placed upon the sexual response cycle as described by Masters and Johnson. The course is not intended to provide therapy training.

**PSY 526 Human Drug Use and Abuse** 3 hrs.
This course provides a general overview of basic pharmacological principles, discusses the behavioral and physiological mechanisms of action of several classes of medicinal and recreational drugs, and surveys the factors thought to contribute to responsible and irresponsible drug intake. Although human drug use and abuse are the primary focus of the course, nonhuman research findings are emphasized where appropriate.

**PSY 535 Instrumentation and Computer Use in Psychology** 3 hrs.
A survey of problems in response measurement. Laboratory, lecture and practical training will be included. May be repeated for credit.

**PSY 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 related to working in a medical setting.

**PSY 570 A Behavior Analysis Approach to the Area of Mental Retardation** 3 hrs. Fall
Topics will include: historical background, assessment, treatment, and legal implications of treatment.

**PSY 578 Research Practicum**

**Developmentally Disabled Population**

Supervised experience at the Croyden Avenue School which offers an educational program for the developmentally disabled. This course involves a variety of problems in behavior change and learning which can be studied at the school. The research problems are carefully selected to be beneficial to the client and to provide appropriate experience for the student. Data collection and report writing are stressed. Prerequisite: PSY 570 or concurrent enrollment.

**PSY 585 History of Psychology** 3 hrs.
The historical and philosophical foundations of contemporary psychology are examined. Approximately equal emphasis is placed upon theoretical models of the evolution of the modern science. The origin and development of current behavioral approaches constitute a major focus.

**PSY 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. May be repeated for credit, although the total number of credits may be limited by the degree program. Students should consult the program advisor.

**PSY 598 Special Projects in Psychology** 1–5 hrs.
This course provides the graduate student with the opportunity for independent research and/or research under the direction of a faculty member. Graduate standing and permission of instructor. May be repeated for credit, although the total number of hours in a degree program may not exceed five hours.

**PSY 599 Practicum in Psychology** 1–4 hrs.
Training in the application of the principles of psychology to a specific and restricted problem area in the discipline. The practicum application is often made by the location of the research site or professional service agency published in the Schedule of Course Offerings. Each one hour of credit requires 100 clock hours. May be repeated for credit, although number of credits may be limited by program requirements. Written permission must be obtained from the department.

**Open to Graduate Students Only**

**PSY 601 An Introduction to Assessment** 1 hr.
This course is designed to introduce the student of professional psychology to the general area of psychological assessment. Through course readings and lectures the student will acquire a background in issues such as Principles of Measurement, Types of Measurement Tools, Use of Rapid Assessment Devices, and criteria for selecting measures for practice. Additional areas covered will compare and contrast traditional psychometric considerations with behavioral assessment concerns, examine the latest version of the diagnostic and statistical manual of the DSM and behavioral assessment, address behavioral interviewing, as well as direct observation of behavior. The course will prepare the student to comprehend with sufficient understanding of assessment issues in the various clinical and research roles anticipated during the early professional psychology training career at Western Michigan University.

**PSY 602 Introduction to Theoretical Issues** 1 hr.
This course is designed to introduce the student of professional psychology to selected systems of behavior change and their theoretical underpinnings. Problems characteristically addressed by these theoretical models will be outlined. Client populations most suitably treated by the various systems will also be identified. Considerable emphasis will be devoted to comparing and contrasting a radical behavioral model with alternative conceptual schemes. Freudian analytic, cognitive, and behavioral approaches will be considered in lecture and readings. The student will develop an appreciation for the position of technical eclecticism while maintaining a theoretical preference.

**PSY 603 Introduction to Professional Issues** 1 hr.
This course is designed to introduce the student of professional psychology to many of the professional and ethical standards as well as contemporary issues affecting practice. Covered will be topics considering the American Psychological Association's Ethical Standards for Psychologists, Standards for Providers of Psychological Services, Ethical Principles for Research with Human Subjects, The Licensing Rules for Psychologists in the State of Michigan, issues concerning Professional Training, and Ethnic and Gender in Research and Practice. Students will develop an appreciation for the contemporary complexity of the field as it pertains to professional practice and related activity. This content will be addressed through course reading and lectures, as well as special projects conducted by students.

**PSY 608 Research Methods in Applied Behavior Analysis** 3 hrs.
This advanced course on research methods in behavior analysis addresses research with human and nonhuman subjects, placing an emphasis on applied, human research. Research issues and specific research methods are discussed at philosophical, strategic, and practical levels. Research decisions are placed within the context of the philosophy of science underlying all scientific research endeavors. Core readings are selected to support the mission of science; behavioral assessment and measurement; experimental design, with emphasis on single-subject designs; analysis
This course examines drug effects from a component of the course is detailed consideration of articles published in the *Journal of the Experimental Analysis of Behavior*. A central consideration of articles published in the *Journal of the Experimental Analysis of Behavior*. 

**Prerequisite:** PSY 610 or equivalent.

**PSY 610 Introduction to Clinical and Community Psychology** 3 hrs.

A seminar devoted to current professional practices in School Psychology. Focus is on the new roles of clinical psychologists and community psychologists. Recommended for beginning graduate students.

**Prerequisite:** Permission of instructor.

**PSY 611 Current Research in Experimental Analysis** 3 hrs.

This course examines basic research areas of current interest to behavior analysts. A central component of the course is detailed consideration of articles published in the *Journal of the Experimental Analysis of Behavior*. 

**Prerequisite:** PSY 610 or equivalent.

**PSY 612 Advanced Physiological Psychology** 3 hrs.

A survey of the interrelationships of psychological and physiological processes. 

**Prerequisite:** Permission of the instructor.

**PSY 613 Behavioral Pharmacology** 3 hrs.

This course examines drug effects from a behavior-analytic perspective. Emphasis is placed on general mechanisms of drug action, variables that modulate drug effects, strategies for studying those effects, and the behavioral actions of commonly encountered drugs. 

**Prerequisite:** PSY 610.

**PSY 614 Motivation and Emotion** 3 hrs.

An introduction to the experimental analysis of psychological aspects of motives, incentives, and emotions. 

**Prerequisite:** Permission of instructor.

**PSY 620 Analysis of Abnormal Behavior** 3 hrs.

An advanced study of behavioral disorders as characterized by the standard classification systems, the DSM-III-R and ICD-9-M, with respect to their etiology, prognosis and treatment.

**PSY 621 Personality Theory** 3 hrs.

Consideration and evaluation of the major theories of personality with emphasis on those theories having implications for counseling and therapy. The course includes an examination of experimental evidence and illustrative case studies.

**PSY 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. 

**PSY 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.

**PSY 636 Advanced Design** 3 hrs.

A study of true and quasi experimental designs, comparisons of single organism and group designs, consideration of statistical and non-statistical designs. 

**Prerequisites:** PSY 634 and 635.

**PSY 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. 

**Prerequisites:** PSY 634 and 635.

**PSY 640 Industrial Psychology** 3 hrs.

This course covers recent applications of behavior analytic strategies in organizational settings. Specific OBM techniques are reviewed and analyzed in behavioral terms. The goal is to train students to solve problems in organizations using a variety of techniques. 

**Prerequisites:** PSY 560 and 510, or permission of instructor.

**PSY 643 Personnel Selection and Placement** 3 hrs.

This course is designed to teach students: (1) the legal and professional requirements for personnel selection and placement programs; (2) how to design and conduct job analyses, interviews, and tests that conform to the legal and professional requirements; and (3) how to evaluate the adequacy (the reliability and validity) of personnel selection and placement instruments. 

**Prerequisite:** An undergraduate course in statistics.

**PSY 644 Personnel Training and Development** 3 hrs.

The course emphasizes the principles of learning as well as techniques and administrative procedures used in the development of human resources at all levels.

**PSY 645 Psychology of Work** 3 hrs.

This course is an advanced course designed to examine human behavior in organizations from a behavioral psychology perspective. Topics covered include: the history of industrial/organizational psychology, motivation, performance improvement techniques, compensation, quality, job satisfaction and its relation to productivity, and the ethics of personnel management. Students entering the course are expected to have an understanding of the basic principles of operant and respondent conditioning because these concepts are used to interpret and analyze worker behavior. 

**Prerequisite:** PSY 510 or PSY 610 or permission of instructor.

**PSY 646 Advanced Organizational Behavior Management** 3 hrs.

This course is designed to familiarize the student with current issues in the field of Organizational Behavior Management (OBM) and to teach the skills necessary to translate basic research findings into a form that facilitates practical application. Laboratory and controlled field research will be reviewed and principles derived from this research will be applied to current practical problems in organizational settings. 

**Prerequisites:** PSY 610, PSY 645, and PSY 651.

**PSY 650 Professional Issues in Psychology** 3 hrs.

This course covers professional and ethical issues, including the American Psychology Association code of ethics; ethical issues in the conduct of research with human and nonhuman subjects; intrusive, restrictive, and aversive interventions; licensure; and career and professional development.


The application of systems analysis concepts to the design of systems which yield behavioral measures of complex social situations.

**PSY 652 Advanced Systems Analysis** 3 hrs.

An advanced course stressing integration of behavior analysis and systems analysis applied to the design, creation, and management of human performance systems. Students analyze complex systems, propose alternative systems, and develop objective measures to determine whether organizational systems are consistent with and effectively contributing to the organization's mission, goals and objectives. 

**Prerequisite:** PSY 651 or permission of instructor.

**PSY 655 Seminar in School Psychology** 3 hrs.

A seminar devoted to current professional practices in Psychology. Focus is on the new roles of clinical psychologists and community psychologists. Recommended for beginning graduate students.

**PSY 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.

**Prerequisite:** PSY 669.

**PSY 661 Psychotherapy: Theory and Methods** 3 hrs.

This is a treatment course which reviews several theoretical approaches to, and problem solving strategies for, a variety of client disorders. The course concentrates on the stages of treatment, the issues involved in treatment and various techniques of treatment. Permission of instructor.

**PSY 662 Group Therapy** 3 hrs.

Theory and application of problem solving interventions in a group setting. Various treatment techniques for a variety of problems are practiced through role playing and modelling in a small group setting. 

**Prerequisite:** Permission of instructor.

**PSY 663 Marital Therapy** 3 hrs.

Theory and application of problem solving interventions for a variety of ethical issues associated with couples. Social learning and strategic systems approach is emphasized. 

**Prerequisite:** Permission of instructor.

**PSY 664 Behavior Therapy** 3 hrs.

This is a treatment course designed to familiarize the student with the methods, applications, theory and clinical literature of behavior therapy. This course to be taken concurrently with PSY 669. 

**Prerequisite:** Permission of the instructor.
PSY 665 Behavioral Approaches to Treatment 3 hrs.

This is a treatment course designed to familiarize the students with pragmatic issues in the application of behavior management and behavioral analysis techniques and the underlying conceptual foundations. Among the topics to be covered are: functional analysis, token economies, behavioral contracting, contingency management, IMPE, and evaluative techniques. Students are exposed to didactic discussions of the elements of different cognitive models as well as the practice of problem-solving techniques through supervised role-playing situations. Prerequisite: Permission of instructor.

PSY 667 Cognitive Behavior Therapy 3 hrs.

A course designed to provide the clinical student with the theory and applications of a cognitive behavior approach. A variety of therapeutic interventions drawn from cognitive-based treatment models are examined both in terms of individual and group settings. Students are exposed to didactic discussions of the elements of different cognitive models as well as the practice of problem-solving techniques through supervised role-playing situations. Prerequisite: Permission of instructor.

PSY 668 Analysis and Treatment of Developmental Disabilities 3 hrs.

This is a treatment course designed to familiarize students with pragmatic issues in the application of behavior management and behavior analysis techniques to clients who are mentally retarded or traumatically brain injured. Prerequisite: Permission of instructor.

PSY 669 Child Behavior Therapy 3 hrs.

An introduction to behavioral clinical approaches to emotional, social, and behavioral problems of children. The course content emphasizes both the theoretical basis and practical implementation of a range of behavioral therapeutic techniques, including those based on classical and operant conditioning processes, social learning, and cognitive-behavioral models. Students will gain direct experience applying one or more behavior therapy techniques learned in class with a child in the Psychology Clinic. This course is to be taken concurrently with PSY 664. Prerequisite: Permission of instructor.

PSY 670 Basic Behavioral Processes and Their Applications 3 hrs.

This course is an advanced seminar dealing with the basic behavioral concepts, principles, and processes and their application to the interpretation and analysis of behavior as well as the amelioration of behavioral problems. The emphasis is on the behavior of nonhuman animals in research settings and nonverbal human beings. However, the course also continually stresses the relevance of these basic concepts and principles to the everyday life of normal, verbal human beings. The course emphasizes the empirical and logical basis of behavioral concepts and principles in areas such as behavioral contingencies, motivational processes, stimulus control, and respondent control. Prerequisite: Permission of the instructor. Prerequisite: Permission of instructor.

PSY 671 Higher-order Behavioral Processes and Their Applications 3 hrs.

This course is a continuation of PSY 670. The emphasis is on the conceptual complexity of human behavior. Areas of analysis include behavioral medicine, and rehabilitation, behavioral anthropology, family life, child rearing, community interventions, education, self-management, organizational behavior management, developmental disabilities, autistic behavior, neurotic behavior, and sexual behavior. PSY 670 and 671 are the behavior-analytic world view. Prerequisite: PSY 670.

PSY 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 B. F. Skinner. Prerequisite: Permission of instructor.

PSY 676 Skinner's Recent Writings 3 hrs.

A consideration of About Behaviorism, Beyond Freedom and Dignity, and Contingencies of Reinforcement, especially as they consider issues of broad scientific, philosophic, and social significance. Prerequisite: Nine hours of graduate credit in psychology or permission of instructor.

PSY 678 Behavior Analysis and Cognitive Psychology 3 hrs.

The first third of the course will consider behavioral approaches to the kinds of issues that are the major 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: development from the field of verbal learning; information theory, psycholinguistics, ethology, Piaget, and the cognitive behavioralists. Prerequisite: Nine hours of graduate credit in psychology or permission of instructor.

PSY 681 Personality Assessment 4 hrs.

Survey of the theory of personality assessment and the basic concepts of nonprojective 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. Prerequisites: PSY 601 or equivalent and graduate program status.

PSY 682 Norm Reference Testing: Interpretation and Administration 4 hrs.

A combined lecture and laboratory course covering theory and basic concepts relevant to criterion or domain referenced behavioral assessment. Supplied 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, Pygmalion Record of Educational Behavior, Bessie (basic educational skills inventory)Criterion Test of Basic Skills, Assessment of children's language, Basal comprehension, Oral Reading Inventory, Key Math, and Woodcock Reading Mastery Test. Prerequisites: Graduate standing in school psychology, education, or permission of instructor; PSY 519.

PSY 688 Advanced Behavioral Assessment 3 hrs.

The course is intended to develop knowledge in the functional analysis of behavior using self-report measures, behavioral interviewing, direct observation techniques, and psychological recording. Reliability and validity issues with respect to each assessment method are covered. Behavioral consultation, and efficient alternative to one-on-one counseling in which therapist contact is primarily with the mediator rather than the client, is introduced. Prerequisites: CECP 660, CECP 651, and PSY 601.

PSY 690 Behavioral Approaches to Training and Education 3 hrs.

This course addresses selection and use of test materials, the role of lecture and discussion, examination, and projective or role-playing practices, all considered from a behavioral perspective. Higher education is emphasized.
PUBLIC AFFAIRS AND ADMINISTRATION

Dr. Robert Peters, Director
Main Office: 220E Walwood Hall
Telephone: 387-8930
FAX: 387-8935
Ralph C. Chandler
Peter Kobak
Barbara Liggett
Matthew Mingus
Robert A. Peters
Kathleen M. Reiding
James A. Visser

Master of Public Administration

Advisors:
Barbara Liggett, Robert Peters
Room 220E, Walwood Hall

The Master of Public Administration (MPA) provides advanced practitioner-oriented education to in-career professionals and pre-career students who aspire to positions of administrative leadership in public and nonprofit organizations. The MPA seeks to enhance the practice of its graduates to be responsible public leaders who pursue democratic values, foster ethical behavior, and integrate theory and action into effective administrative practice. Program content emphasizes the administration of local, regional, and state government agencies; health care organizations; and other public and nonprofit agencies. The multi-disciplinary nature of the field, the MPA draws upon the diverse talents of academic departments throughout the University in addition to the faculty of the School of Public Affairs and Administration. The MPA is offered on the main campus in Kalamazoo, and at the University's regional campuses in Lansing, Grand Rapids, and Battle Creek.

Admission Requirements

Applicants to the MPA program must meet the Graduate College requirements of an undergraduate degree from an accredited college or university with an overall grade point average of at least 3.0 on a 4.0 scale. Applicants to the MPA program must meet the Graduate College requirements of an undergraduate degree from an accredited college or university with an overall grade point average of at least 3.0 on a 4.0 scale.

Program Requirements (42 hours)

The MPA curriculum provides a foundation in the principles of public administration, addresses the practical responsibilities of the public manager, and reflects on the task of administrative leadership. The 42 credit hour program includes three components: the Core Program, an Area of Concentration, and the Project Paper. Pre-career students also complete a three credit hour (300 contact hour) internship. The curriculum assumes that candidates already have basic computer literacy skills and a working knowledge of the American political process at local, state, and national levels.

Core Program (30 hours)

The Core Program includes course work in the theoretical foundations of public management, critical areas of administrative responsibility, research methods, and special topics. Students select one course from the listed options in each of the following core areas:


Political Environment (3 hours): PADM 633 The Political Environment of Public Administration.

Organizational Behavior and Change (3 hours): PADM 630 Administrative Analysis; PADM 636 Exercise of Power in Organizations; PADM 637 Organization Development; PADM 638 Organizational Theory and Behavior; PSCI 534 Administrative Theory; SOC 673 Formal Organization; MGMT 655 Organization Theory; MGMT 653 Managing Organizational Behavior.

Economics and Policy Analysis (3 hours): PADM 599 Topics in Public Administration; PSCI 606 Political Economy; ECON 601 Basic Economic Analysis; ECON 617 Economics of Health and Human Services.

Administrative Law and Regulation (3 hours): PADM 626 Administrative Law and Governmental Regulation; PSCI 526 Administrative Law and Public Policy; FCL 688 Health Law Administration; GEOL 514 Water Law.

Public Budgeting and Finance (3 hours): PADM 623 Principles of Governmental Budgeting and Finance; ECON 525 State and Local Government Finance.

Human Resources Administration (3 hours): PADM 610 Human Resources Administration; PADM 629 Supervisory Skills for Administrators; or appropriate courses in the Departments of Management, Psychology; or Teaching, Learning, and Leadership.

Advisors:
Barbara Liggett, Robert Peters
Room 220E, Walwood Hall

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

PSY 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.

PSY 696 Systematic Psychology
3 hrs.
An intensive study of current theories in psychology with emphasis on the philosophies of science and the logic of system building.

PSY 697 Advanced Topical Studies in Psychology
2-4 hrs.
An analatical examination, discussion, and survey of selected research 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 advisor.

PSY 698 Clinical Practicum in Psychology I
3 hrs.
This is the entry-level practicum for students in the Clinical Psychology program. Students enrolled in this course will gain a range of therapy and assessment experiences in the Psychology Clinic under the supervision of licensed Clinical Faculty. Written permission must be obtained from the Department Clinical Committee. Prerequisites: PSY 664 and PSY 688.

PSY 699 Clinical Practicum in Psychology II
3 hrs.
Experience in a broad range of professional functions included in the practice of psychology under the supervision of a licensed psychologist. The experience includes, but is not limited to, psychotherapy, diagnostic testing, and consultation. The experience involves not less than 500 clock hours (15 weeks) in an organized health care setting. Written permission must be obtained from the Department Clinical Committee. Prerequisites: PSY 651 and PSY 698.

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

PSY 700 Master's Thesis
6 hrs.

PSY 710 Independent Research
2-5 hrs.

PSY 712 Professional Field Experience
2–12 hrs.

PSY 720 Specialist Project
6 hrs.

PSY 725 Doctoral Research Seminar
2-6 hrs.

PSY 730 Doctoral Dissertation
15 hrs.

PSY 732 Doctoral Clinical Internship
1-4 hrs.

PSY 735 Graduate Research
2-10 hrs.
HEALTH CARE ADMINISTRATION CONCENTRATION

The 12-hour Health Care Administration (HCA) concentration in the Master of Public Administration is composed of four, three-hour courses taken from each of Areas I, II, and III, and one course selected from either Area IV or V. No more than three of these courses (or nine of the twelve hours required for the concentration) may be from any one college. MPA candidates completing the concentration in addition to all other degree requirements will have "Health Care Administration" noted on their official transcript, beginning with those who graduate in the fall of 1996 or later.

AREA I, Legal Dimensions of Health Care Administration

FCL 688 Health Law Administration
FCL 689 Legal Problems of Health Care Organizations

AREA II, Health Care Budgeting and Finance

PADM 652 Financial Management of Health Care Organizations*; FCL 612 Health Care Financial Management

AREA III, Health Care Environment and Policy Development

PADM 651 The Health Services Environment; PADM 656 The Administration of Health Services

AREA IV, Management Issues in the Delivery of Health Care Services

PADM 655 The Administration of Health Services
PADM 679 Seminar on Current Issues in Health Services Management

MKTG 661 Healthcare Marketing

AREA V, Health Planning and Evaluation

PADM 654 Planning Strategies in Health Care

MGMT 600 Health Care Strategy

PADM 678 Program Evaluation

AREA VI, Special Topics

HHS 663 Ethical Issues in Human Services Professions
PHIL 534 Moral and Political Foundations of Health Care

ADA 680 Clinical Supervision in Substance Abuse Services

GRN 681 Program Planning and Development in Gerontology

SOC 640 Social Organization of the Health System

Certificate Program in Nonprofit Leadership and Administration

Advisor: Barbara Liggett, Room 220E, Walwood Hall

The purpose of the Graduate Certificate Program in Nonprofit Leadership and Administration is to enhance the capacity of its graduates to function effectively as managers in the health care system. The program includes the legal, financial, and policy dimensions of contemporary health care administration, critical management issues, strategic planning and evaluation, and critical issues in the delivery of health care services.

Credit Requirements

For admission to the Health Care Administration Certificate program, applicants will meet one of the following criteria: (a) a master's or other graduate degree; (b) current admission to the MBA, MPA, or other participating master's degree program; or (c) a bachelor's degree with a 2.5 grade point average or substantial work experience in the management or delivery of health care services.

Program Requirements

Each student will satisfactorily complete a program consisting of six three-credit-hour courses (18 hours). Students select one course from each of Areas I, II, and III and three elective courses from at least two of Areas IV, V, and VI.

AREA I: Legal Dimensions of Health Care Administration

FCL 688 Health Law Administration
FCL 689 Legal Problems of Health Care Organizations

AREA II: Health Care Budgeting and Finance

PADM 652 Financial Management of Health Care Organizations*; FCL 612 Health Care Financial Management

AREA III: Health Care Environment and Policy Development

PADM 651 The Health Services Environment; PADM 656 The Administration of Health Services

AREA IV: Management Issues in the Delivery of Health Care Services

PADM 655 The Administration of Health Services
PADM 679 Seminar on Current Issues in Health Services Management

MKTG 661 Healthcare Marketing

AREA V: Health Planning and Evaluation

PADM 654 Planning Strategies in Health Care

MGMT 600 Health Care Strategy

PADM 678 Program Evaluation

AREA VI: Special Topics

HHS 663 Ethical Issues in Human Services Professions
PHIL 534 Moral and Political Foundations of Health Care

ADA 680 Clinical Supervision in Substance Abuse Services

GRN 681 Program Planning and Development in Gerontology

SOC 640 Social Organization of the Health System

Certificate Program in Nonprofit Leadership and Administration

Advisor: Barbara Liggett, Room 220E, Walwood Hall

The purpose of the Graduate Certificate Program in Nonprofit Leadership and Administration is to enhance the capacity of its graduates to function effectively as managers in the health care system. The program includes the legal, financial, and policy dimensions of contemporary health care administration, critical management issues, strategic planning and evaluation, and critical issues in the delivery of health care services.

Credit Requirements

For admission to this certificate program are (a) a master's or other graduate degree, or (b) current admission to a graduate degree program, or (c) a bachelor's degree with an undergraduate grade point average of 3.0 and work or voluntary experience or familiarity with nonprofit organizations. Students may be admitted under provisional status and later admitted to the program with evaluation of the first six credit hours, with no course below a 3.0. Students may transfer in a maximum of six (6) semester hours of graduate credit from another institution or from courses taken at Western Michigan University as a PTG student. Members of the Nonprofit Leadership and Administration Certificate Governance Committee will serve in an advisory capacity to the MPA Admissions Committee. Students will be admitted to this certificate program three times per year. The Admissions Committee will review applications in November to admit students for the winter semester; in March to admit students for the spring or summer session; and in July to admit students for the fall semester.

Program Requirements

The Graduate Certificate Program in Nonprofit Leadership and Administration is an eighteen (18) credit hour program of study. Four core courses (10 hours) are required. The remaining six hours may be taken as electives. The courses are organized into one of four modules of study: Core, External Relations, Finance, and Administrative Skills. Within the Core, the student is required to take four courses (10 hours); there is no requirement of all students, and the student will elect one of two capstone courses. The eight hours of electives are required to be distributed over each of the other three modules. A minimum of 2 credit hours and a maximum of 4 credit hours selected from each of the three modules.

Core (10 hrs.)

ACTY 632 Accounting and Financial Reporting by Nonprofit Organizations (3 hrs.)
FCL 681 Legal and Ethical Issues for Nonprofit Organizations (2 hrs.)
SOC 674 The Nonprofit Sector in Society (3 hrs.)
PADM 641 Administering Arts Organizations (2 hrs.)
or
PADM 642 Administering Human Services Organizations (2 hrs.)

External Relations (2--4 hrs.)

COM 685 Public Relations for Managers (3 hrs.)
PADM 648 Promoting Nonprofit Organizations (2 hrs.)
PADM 649 Grant Writing for Nonprofit Organizations (2 hrs.)

Finance (2--4 hrs.)

PADM 645 Endowment Development/Investments (2 hrs.)
PADM 646 Fund Raising for Nonprofit Organizations (2 hrs.)
PADM 647 Budget Development for Nonprofit Organizations (2 hrs.)

Administrative Skills (2--4 hrs.)

EDLD 601 Evaluation in Nonprofit Organizations (2 hrs.)
MGMT 652 Strategic Human Resource Management (3 hrs.)
PADM 634 Volunteer Recruitment and Retention (1 hr.)
PADM 634 Strategic Planning (1 hr.)
PADM 634 Nonprofit Board-Staff Relations (1 hr.)
PADM 644 Human Resources for Nonprofit Organizations (2 hrs.)
SWRK 623 Leadership in Nonprofit Organizations (2 hrs.)
The mission of the Doctor of Philosophy in Public Administration is to give students a deep and pervasive knowledge of the history, theory, practice, and future of the field. The program is designed to encourage broad intellectual inquiry with a scholarly perspective. The curriculum incorporates a diverse vocabulary, gathered from readings in the great books of the discipline, examination of the contributions of its seminal thinkers, analysis of the institutions and processes governing public decision making, and an investigation of the challenges of public management in a democracy. Integral to the academic program is the development and component of the skills to conduct both qualitative and quantitative research, practice in statistical analysis and quantitative methods, and experience with apply skills of leadership and ethical decision making.

The doctoral program is designed both for those who have experience in a supervisory or administrative position with the applicant's professional work.

Admission Requirements

1. Master's degree in public administration or related area.
2. At least four years of experience in a supervisory or administrative position.
3. Three letters: three letters of recommendation from persons acquainted with the applicant's professional work.
4. Completion of the Departmental Application which requires responding to several essay questions.
5. Graduate Record Examination (GRE)
   - scores for the quantitative, verbal, and analytic sections

Program Requirements

The forty-two hours of credit include nine required courses, one elective course, and a minimum of twelve semester hours of dissertation credit.

Open to Upperclass and Graduate Students

Undergraduates with junior or senior status and 12 hours of course work in appropriate major fields may enroll in 500-level courses with prior approval of the student's advisor or consent of the program director.

PADM 572 Computer Applications in Administration 3 hrs.

Open to Graduate Students Only

PADM 603 Local Government Administration 3 hrs.

This course addresses the management challenges faced by local public administrators in managing American local government under conditions of substantial physical, economic, social, and political change. Students will review current societal trends affecting local communities and then examine how these trends, and the roles and relationships of major stakeholders in local government, impact local policy decision-making and governmental administration. Students will develop skills in applying public administration principles and methods to managing local organizational adaptation and change.

PADM 605 Managing Community Growth and Development 3 hrs.

The course is intended for public managers involved in guiding community growth and/or managing local economic development. The course will focus on the dynamics of developing the community's economic infrastructure and managing its physical growth and expansion in ways that enhance and sustain the quality of local and regional community life. Students will examine policies, programs, and techniques in the public management of economic development, business attraction and retention, land use, growth management, housing, public facilities and infrastructure, and environmental preservation. The course will also address the economic, demographic, spatial, and political forces driving urban change and impacting community sustainability.

PADM 610 Human Resources Administration 3 hrs.

A survey course that examines the concepts and practices of human resource management and reviews the functions performed by human resource administrators and other agency officials. Areas of consideration may include, but are not limited to, human resources planning and recruitment, training and development, compensation, and benefits plans.

PADM 621 Program Planning and Proposal Writing 3 hrs.

This course seeks to build skill in program planning, program management, and proposal writing. The first part of this course will be devoted to the grantmanship process, including how to formulate and promote a project concept; prepare the project proposal; submit the project proposal; and follow-up after acceptance or rejection of the proposal. Emphasis will be placed upon the project proposal as an integral component of agency planning, program management, and assessment activities, from both grantor and grantee perspectives. In the second part of this course each participant will prepare a project proposal.

PADM 622 Applied Research Methods 3 hrs.

This course will stress the formulation of applied research questions; the design and utilization of various survey research methods and techniques; the essential distinctions between qualitative and quantitative research methods; the collection, manipulation, interpretation, and presentation of data gathered; and the use of information thus obtained in the solution of policy problems confronting professional administrators.

PADM 623 Principles of Budgeting 3 hrs.

This Managerial/Technical Core course examines the budgeting process. Emphasis
will be given to the preparation phase of the budgeting cycle. Line item and alternative budgeting techniques—including zero base and program budgeting—will be considered. Sources of revenue will also be examined to determine their sufficiency, ease of collection, reliability, and public acceptability.

PADM 624 Financial Decision Making 3 hrs.
The course examines basic principles of public accounting; alternative sources of government revenue including intergovernmental transfers; risk management; insurance options; bonds and factors affecting bond ratings; cost benefit, cost revenue, and cost effectiveness analysis; privatization; service costs; and retrenchment.

PADM 626 Administrative Law and Governmental Regulation 3 hrs.
This course examines how administrative laws and public regulations control and regulate the activities of local, state and federal government officials and the agencies by which they are employed. It will consider the requirements for, and limits on, the exercise of powers by these law making officials. Special attention is devoted to the development, adoption, and enforcement of administrative laws and government regulations.

PADM 628 Statistical Applications in Administration 3 hrs.
This course is an introduction to statistical reasoning as employed by professional administrators in the collection, manipulation, interpretation, and presentation of data utilized to analyze policy problems. The purpose is to develop basic statistical competency with emphasis upon the use and interpretation of frequency distributions, sampling techniques, measures of central tendency, probability, variability, regression correlation, and various other applied quantitative measures.

PADM 629 Supervisory Skills for Administrators 3 hrs.
This elective course includes a consideration of the five most important functions of middle level managers and first line supervisors: decision making, planning, organizing, leading, and controlling. In order to assist participants develop their supervisory skills, this course utilizes case studies, small group discussions, role playing, simulations, and other practical skill building exercises.

PADM 630 Administrative Analysis 3 hrs.
Problems of management are analyzed in this course. It considers various communication and control mechanisms from the earliest days of scientific management, through network analysis and general systems theory, to modern techniques of performance management. It emphasizes practical applications of these theories, with particular reference to leadership. The goal of this course is to make the manager an effective leader of his or her organization.

PADM 631 Foundations of Public Administration 3 hrs.
This course is designed to introduce and review ideas and developments in the field of administration. Major emphasis is given to tracing the historical evolution of public administration in the United States through the thought and intellectual activity of the leaders whose writings have most dramatically shaped the theory and practice of public administration in this country.

PADM 632 Policy Leadership in Administrators 3 hrs.
The professional administrator, whether occupying a line or staff position, is increasingly called upon to play a leadership role in formulating policy options. Successful administrators therefore frequently serve as entrepreneurs. In this role they are responsible for designing new and innovative solutions to policy problems. This course is designed to review policy leadership and to analyze the role of entrepreneurship in bringing policy options to the arena of organizational and public debate.

PADM 633 The Political Environment of Public Administration 3 hrs.
This course examines the interaction between administrative agencies and the social, political, and economic forces which constitute their internal and/or external environment. It emphasizes the sources of bureaucratic power, the characteristics of administrative and political elites, and examines the strategies which administrators pursue in seeking both to ensure the survival of their agencies and to expand the programs which they direct. It also explores the influences of our political system on administrative decision making and attempts to evaluate agency responsiveness. This course should be taken as soon as circumstances permit.

PADM 634 Professional Issues Workshop 1 hr.
All MPA Professional Core degree components include three, one credit hour workshops on different topics. These workshops ordinarily meet all day Friday and Saturday. Each workshop is valued at one credit hour and is graded on a credit/no credit basis. The students must attend throughout the workshop and actively participate to obtain credit for the workshop. These workshops are perceived as an innovative, flexible way to deal with a variety of interesting topics which do not lend themselves to consideration within the traditional course format. Experienced practitioners and academic specialists are frequently an important component of such workshops, as are simulations, role playing, and small group discussions. These workshops have been devoted to a broad variety of topics including, but not limited to: effective interpersonal communications; women in administration; public relations and the administrator; effective time management; performance measurement and appraisal; pension system administration; administrators and the grievance process; the effects of DRGs on the health care delivery system; human relations skills managers; volunteer recruitment and retention; nonprofit board-staff relations, among others.

PADM 635 Project Paper Seminar 3 hrs.
It is in this seminar that MPA candidates write their project paper (thesis) proposing a solution to a major problem or issue facing the agency by which in-career candidates are employed, or to which pre-career candidates have been assigned as interns (field experience). Except with the express prior approval of the MPA Academic Advisor, only candidates who have completed at least 30 semester hours of the MPA degree may enroll in PADM 635.

PADM 636 The Exercise of Power in Organizations 3 hrs.
This course addresses the need of managers and supervisors to understand how power in organizations is generated and exercised by ideas, by individuals, and by groups. Utilizing specialized literature and case studies, this course will examine the anatomy of power and how it is exercised.

PADM 637 Organization Development 3 hrs.
This course is an introduction to the theories, models, and intervention modalities of Organization Development (OD). Topics to be explored and discussed include: the underlying organizational philosophy of OD; the OD view of persons in an organizational setting; the major subdivisions or schools of thought in this field; roles of OD practitioners; OD interventions; and specific applications of OD in organizational settings. The objective of this course is to develop competence in the application of OD practices in a variety of agency settings.

PADM 638 Organization Theory and Behavior 3 hrs.
This course has the following objectives: a) to familiarize participants with the basic concepts, models, and theories of organization; b) to develop a better understanding of individual, group, and organization behavior; c) to provide a conceptual foundation upon which theoretical knowledge can be applied to organizational and managerial problems. In pursuit of these objectives, the following subjects will be considered: theories of organization and management; individual beliefs and group dynamics; organization change; organizational performance, efficiency, and effectiveness.

PADM 641 Administering Arts Organizations 2 hrs.
This is a course in arts administration, including a brief review of the implementation of the major areas of administration, i.e., management, planning, and program development; marketing and public relations; funding development, etc. The focus of the course will include both performing and visual arts. The performing arts component will highlight applications of managerial skills to museums, music, dance, and theater, including audience development, union relations, front of house management, concert management techniques, and study of physical facilities. The visual arts component will feature application of management skills to museums, commercial and cooperative galleries, artists’ space, and corporate and individual collections. For students seeking a concentration or certificate in the Nonprofit Leadership and Administration program, this serves as the capstone course. Prerequisite: Completion of 12 hours of Nonprofit Leadership and Administration course work.

PADM 642 Administering Human Service Organizations 2 hrs.
This course deals with how to administer human service organizations (HSOs) and is intended to integrate theoretical and technical-skills content from other courses in the program. The course uses a seminar format, along with case studies and problem solving simulations, to focus on a wide range of issues and dilemmas in the administration of HSOs. For students seeking a concentration or certificate in the Nonprofit Leadership and Administration program, this serves as the capstone course. Prerequisite: Completion of 12 hours of Nonprofit Leadership and Administration course work.

PADM 644 Human Resources for Nonprofit Organizations 2 hrs.
This course provides an overview of the functions of human resources specialists as they relate to the broad objectives of the whole organization. Emphasis will be on fundamentals of job design, employment techniques, performance appraisals, pay
This course provides a comprehensive analysis of the environment in which health services are delivered, with an emphasis on writing a grant proposal and on the United States delivery system. The course is conducted in a workshop format with analysis focusing on the historical interplay of grant proposal writing processes. The course is strongly recommended.

PADM 649 Grant Writing for Nonprofit Organizations
2 hrs.
A practical course for those who wish to develop their fundraising skills. Emphasis is on understanding the various forms of fund raising, such as the annual fund; special events; deferred giving, major gifts; special project campaigns; corporate/foundation gifts; and direct mail. Students will learn to assess their own organizations' fund raising readiness and develop fund raising plans unique to their organizations.

PADM 647 Budget Development for Nonprofit Organizations
2 hrs.
This course will examine procedures for projecting revenues, the extent to which tax policies affect private contributions to nonprofits, and the process for developing operating budgets. Line item and alternative budget formats, including zero-based and performance budgeting, will also be considered. PADM 634, PC Budgeting, or familiarization with electronic spreadsheets is strongly recommended.

PADM 648 Promoting Nonprofit Organizations
2 hrs.
A practical course in the application of marketing strategies to nonprofit organizations. Emphasis will be placed on techniques for defining and identifying the organization's contributor, volunteer, and client markets based on an organization's mission. The organization's commitment to quality and measurement of market satisfaction will also be covered. Participants will develop marketing strategies to meet the needs of identified markets. These strategies will include the identification of market offers, communication messages and methods, location issues, and the development of market budgets.

PADM 649 Grant Writing for Nonprofit Organizations
2 hrs.
This course takes students through a proactive grant proposal writing process. The course is conducted in a workshop format with emphasis on writing a grant proposal and on logical relationships between sections of a proposal.

PADM 651 The Health Services Environment
3 hrs.
This course provides a comprehensive analysis of the environment in which health services are delivered, with an emphasis on the United States delivery system. The analysis will focus on the historical interplay of competing and collaborative activities within and between institutional and community health care systems and the consumers that they serve. Ethical concerns facing providers and consumers will be discussed. Case studies on salient health care issues will be utilized.

PADM 652 Financial Management of Health Care Resources
3 hrs.
This course examines financial management issues in the rapidly changing health care industry. Students analyze health care reform proposals, the impact of insurance, managed care, and government policies on the operation of health care organizations, how to budget and analyze budgets, the process of costing health care services, the use of financial statements to assess the financial viability of health care organizations, financing options for capital management, the sources and uses of cash, and the preparation of a cash budget. Students are strongly encouraged to take PADM 623, Principles of Budgeting, before enrolling in PADM 652.

PADM 653 Health Policy Analysis
3 hrs.
This course examines the public policy process as applicable to the physical and mental health care services, the impact of federal, state, and local policy on the delivery of health services within organizations is discussed and compared with international health delivery systems. Underlying ethical issues confronting today's health delivery system are explored.

PADM 654 Health Care Planning Strategies
3 hrs.
This course provides an introduction to the principles and methods of planning in the health services system. It includes an analysis of the significance of planning effective health care services, alternative planning frameworks, and technical methods of planning in the health care sector at both macro and micro levels. Preparation of business plans that are common in the health care settings are included in the course.

PADM 655 The Administration of Health Services
3 hrs.
This course addresses the managerial functions in health care agencies and institutions. The responsibilities of health care managers in controlling, organizing, staffing, budgeting, evaluating, and motivating employees are considered. Human resource issues as well as individual and organizational accountability unique to the health care field are explored. Techniques on how to manage rapid organizational change are an integral part of the course.

PADM 660 Intellectual History of Public Administration I
3 hrs.
This course is designed to introduce the student to the history of ideas and government practice that form the basis of practical public administration in the modern world. Its purview is wider than American public administration, and the level of comprehension expected involves political, philosophical, theological, and psychological thought, in addition to historical analysis and integration. The course implements research techniques in common use by intellectual historians.

PADM 661 Intellectual History of Public Administration II
3 hrs.
This course is a continuation of Intellectual History of Public Administration I, and traces the development of public administration theory from the founding of the American colonies to the present day, implementing research techniques in common use by intellectual historians. The course utilizes an historical approach to understand the contextual influence of thinkers and movements related to American public administration.

PADM 663 Leading the Public Organization
3 hrs.
This course uses a theoretical and methodological research literature, documentation in a variety of media, and practical work experiences to examine the roles of leadership, human behaviors, and human resources systems in public organizations. The course addresses leadership and human behaviors within systems and chaos models in the public arena of work. Attention is given to the management of functions of human resources as well as to the activities of the employees in an organization. External influences, competing organizational systems, and identified public outcomes are also examined to complete an understanding of leader and follower roles.
PADM 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.

PADM 673 Quantitative Public Policy Analysis 3 hrs.
This course examines the principal quantitative methods employed in public policy analysis. A majority of the analytic and statistical tools and techniques considered are data and problem-oriented.

PADM 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, taxonomies, non-bureaucratic organizations, organization as a social issue, and tomorrow’s organizations.

PADM 676 Cases in Public Policy Implementation 3 hrs.
This course will utilize a case study approach 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 constraints.

PADM 677 The Public Executive 3 hrs.
This course examines the following factors: expectation versus reality in the administrative world; the nature of managerial work; asserting authority; building commitment and motivation; building lateral relationships; gaining power; working the hierarchy; designing valid controls; initiating change; the skills of the project manager; and the psychological matrix of leadership.

PADM 678 Program Evaluation 3 hrs.
Pressure to reduce the nature, size and scope of government has heightened interest in evaluating the impact of governmental activities. This course will focus on how to measure the effectiveness of agency programs.

PADM 679 Seminar: Current Issues in Health Service Management and Delivery 3 hrs.
An advanced seminar that will consider current issues in the organization, finance, and delivery of health services. May be repeated for credit with a different topic.

PADM 681 Designing Policy and Policy Systems 3 hrs.
The focus of this course is three-fold. First, it provides the executive with a conceptual understanding of the policy analysis process and illustrates how quantitative models fit into 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 considers how public executives manage research and analysis at various stages of the policy-making process.

PADM 682 Administrative Decision Making 3 hrs.
This course will examine the organization as a system of linked subsystems and analyze the elements of decision making as influenced by this environment. The impact of bureaupathologies on communication and control patterns will be related to managerial processes. Attention will be devoted to the effects of a systemic decision framework upon individual decisions and decision makers.

PADM 683 Seminar in Administrative Theory and Practice 3 hrs.
The historical evolution of management thought is reviewed with particular reference to classical, neoclassical, and contemporary approaches to organizational structure and managerial functions. This course also pays particular attention to management strategy as reflected in public and private sector case studies, and examines how managerial decisions are made within such constraints as economic costs and benefits, political stakes, organizational processes, interpersonal relations, legal requirements, ethical considerations, and technological limitations.

This course relies on theory, lab assignments, and practical experience to address constitutional, statutory, political, economic, cultural, and social factors affecting fiscal policy. Public finance and lab assignments familiarize students with the major facets (revenue projection, capital requests, and operating expenditure requests) of the budgeting process. The role of politics, alternative mechanisms for generating revenue, methods for assessing the fiscal health of organizations, and the implications of utilizing various budget formats are also examined. Students are expected to apply the methodologies from their research courses to a financial issue.

PADM 685 Bureaucracy and Society 3 hrs.
Bureaucracy has become the predominant organizational form within the public sector in all advanced industrial societies today. This course explores the growth of bureaucracy, the expansion of its political role, goals, and objectives, and several alternative bureaucratic models, including the Weberian and Marxist approaches. Attention is also paid to the relationships of bureaucracy presently to power, to constituency groups, and to the people.

PADM 686 State Agency Administration 3 hrs.
This course examines the organization and administration of state government agencies, with special emphasis on the functions performed by major departments and their principal subunits. Executive agencies in Michigan will serve as a basis for comparing and contrasting services provided by similar agencies in other states. Each course participant will be required to analyze the current status of services provided by a particular state agency and project service demand into the future. Course participants will develop comprehensive understanding of administration in agencies of state government.

PADM 687 Legislative Relations for Public Administrators 3 hrs.
This course prepares participants to interact with policy making bodies: city councils, county commissions, or the state legislature. Participants will learn to estimate the possible impact upon their agency and to evaluate the effectiveness of legislation under consideration, to assess the probable effect of proposed legislation upon their clientele, and to project the amount of revenue to be generated by a proposed tax, fine, or fee.

PADM 689 Seminar in Quantitative Policy Analysis 3 hrs.
This research seminar is designed to enable a group of candidates to tackle a current, unsolved policy problem in state or local government. Such a problem will be identified prior to the course, and the collective task will be to complete a working paper utilizing quantitative analysis.

PADM 691 Statistics for Public Administrators 3 hrs.
This course is designed to assist public executives to better understand the various statistical procedures which are used to comprehend and interpret data sets employed in public policy analysis. It will employ examples from the policy analysis and program evaluation literature to illustrate the utility of those statistical procedures presented. Both descriptive and inferential statistics will be studied.

PADM 692 Quantitative Data Analysis 3 hrs.
This course will focus on statistical techniques utilized by social science researchers to answer research questions. It will develop students’ skills to the degree that they can gather social science and econometric data, enter them into computer-based software packages, manage the information, make calculations on the data, and analyze statistical relationships in them.

PADM 693 Action Research Project 3 hrs.
A team research project in this course utilizes the skills acquired in the program evaluation and statistics courses. Teams are required to develop a research problem, review the relevant literature, collect and analyze data, and write a complete and scholarly report. Publication of the research results is encouraged where appropriate.

PADM 694 Qualitative Research Methods 3 hrs.
Students will be instructed in the philosophical and theoretical schools of thought that are relevant to qualitative researchers. Participants will be instructed in, and will conduct field research using such qualitative designs as participant-observation, intensive interviewing, comparative, historical, case study, focus group, and historical analysis of diaries and letters.

PADM 695 Research Design 3 hrs.
This course will include conceptual and model analysis, hypothesis testing, literature review, theory construction, and individual research papers. These papers may become the research design chapters for the students’ dissertations.

PADM 697 Dissertation Seminar 1–4 hrs.
Dissertation Seminar is intended to assist students in the preparation of a dissertation proposal and to facilitate the transition from course work to dissertation. PADM 697 will be offered in two blocks over two semesters. The first block (2 hrs.) includes a review of proposal components, with particular emphasis on research design and literature review. The second block (1 hr.) is devoted to a review of the dissertation format and manuscript requirements, the psychological and time management demands of the dissertation, and a continuation of proposal development.

PADM 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 a literature review chapter in his or her doctoral dissertation.

PADM 699 Readings in Public Administration
1–3 hrs.
A program of independent study to provide the well qualified MPA candidate with an opportunity to explore in depth a topic of interest under the guidance of a faculty member. The end product of this effort may be an annotated bibliography, a bibliographic essay or a major paper. Planning a topic for investigation is a joint responsibility of the candidate and supervising faculty. Approval is contingent upon the merits of the proposal. Prerequisite: Consent of both instructor and School Director.

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

PADM 710 Independent Research
3 hrs.
Designed for highly qualified graduate students in groups who wish to pursue independent studies or group projects under the direction of a Graduate Faculty member. An application form, signed by the Graduate Advisor and faculty supervisor, must be submitted to registration at the time of enrollment. Graded on a credit/no credit basis.

PADM 712 Professional Field Experience
3–6 hrs.
This practicum is designed for MPA degree candidates who are to participate in a supervised professional field experience/internship in an agency setting. An application form, signed by the candidate's academic advisor and internship supervisor, can be submitted to the Registrar's Office at the time of enrollment. Graded on a credit/no credit basis.

PADM 730 Doctoral Dissertation
12 hrs.

SCIENCE STUDIES

Dr. Larry Oppliger, Chair
Main Office: 3245 Wood Hall
Telephone: 387–5407
Fax: 387–4998
Larry Oppliger, Chair
Robert S. Hafner
Robert H. Poel
David W. Rudge
Kamlesh Sharma
Visho Sharma
Aletta Zietsman

Master of Arts in Science Education
Advisor:
Aletta Zietsman,
Room 3145, Wood Hall

The Department of Science Studies offers a graduate program leading to the Master of Arts in Science Education. The program is designed for students beginning their work toward a Doctor of Philosophy in Science Education, as well as for secondary school science teachers (well-prepared elementary teachers may qualify) who wish to expand their preparation in the sciences and to enhance their teaching skills.

Admission Requirements
The minimum admission requirements to this degree program are: (1) an undergraduate major in science or science education and (2) teacher certification. Students lacking the above may be admitted provisionally; however, satisfactory completion of necessary undergraduate science and/or education courses will be needed before enrollment in the required graduate courses. These requirements are in addition to the general admission requirements of The Graduate College.

Program Requirements
The program consists of a minimum of thirty semester hours of graduate work. Each student's program is planned in consultation with the advisor and consists of the following:

1. Fifteen semester hours of science to include a course in the history and philosophy of science.
2. Nine semester hours of science education, to include SCI 615, 616, and 690 (617 and 690 must be taken at the same time).
3. Six semester hours of research tools — SCI 700 Master's Thesis
4. Six semester hours of project, SCI 710 Independent Research

The thesis or project is completed under the direction of a major advisor and a thesis or project committee. The major advisor is selected by the student and the committee is selected by the student in consultation with the major advisor. It is anticipated that teachers working in the program will choose to do a project involving their classrooms. Students planning on further graduate study may pursue a thesis; the thesis might be preliminary work on a doctoral dissertation. The thesis or project topics must be approved by the committee. The committees and topics are subject to the approval of the deans of the College of Arts and Sciences and The Graduate College.

Doctor of Philosophy in Science Education

Advisor:
Aletta Zietsman,
Room 3145, Wood Hall

The Department of Science Studies of the College of Arts and Sciences offers a graduate program leading to a Doctor of Philosophy in Science Education. The program is designed for students who wish to obtain a strong background in science and to pursue research in science education. The program requires a minimum of seventy-two semester hours of graduate work in science and in science education. Appropriate course work at the master's level will count toward the seventy-two semester hours.

Admission Requirements
The minimum admission requirements to this degree program are:

1. A master's degree in a science or science education, and
2. Teacher certification.

Students lacking the above may be admitted provisionally; however, satisfactory completion of undergraduate science and/or education courses will be needed before enrollment in the required graduate courses. These requirements are in addition to the general admission requirements of The Graduate College.

Program Requirements
The program consists of seventy-two semester hours of graduate work. Each student's program is planned in consultation with the advisor and consists of the following:

1. Twenty-four semester hours of graduate science to include a course in the history and philosophy of science.
2. Fifteen semester hours of science education to include SCI 615, 616, 617, and 690 (617 and 690 must be taken at least twice).
3. Twelve semester hours of research tools and design to include two semesters of statistics and a generic research design course.
4. Six semester hours of electives.

All candidates for the Doctor of Philosophy in Science Education must have satisfactorily passed a comprehensive examination. The examination should be taken after the student has completed the required course work and will include material from the graduate science education "core" of courses (SCI 615, 616, 617, 690) and material from the appropriate science area chosen by the student and his/her dissertation advisor. The science area material will be prepared and evaluated by faculty in the science area after consultation with the science education faculty. The dissertation advisor may recommend either a written or an oral examination. The research and dissertation are completed under the direction of a major advisor and a Doctoral Advisory Committee. The major advisor is selected by the student and the Committee members are selected by the student in consultation with the major advisor. The research problem generally must be formulated by the student and must be approved by the Committee. Dissertation Committees and topics are subject to the approval of the deans of the College of Arts and Sciences and The Graduate College.

The residency requirement for this degree program is an academic year of two consecutive semesters of full-time study on the campus. To be admitted to candidacy for the doctoral degree the student must have
satisfactorily completed the course work, the research tools, the comprehensive examination, and a teaching experience in addition to the other candidacy requirements of doctoral programs in The Graduate College.

Science Studies Courses (SCI)

Open to Upperclass and Graduate Students

Undergraduates who have satisfactorily completed a minimum of four courses, or equivalent, applicable toward a major or minor and otherwise meet the specific course prerequisites may elect 500-level courses in Science Studies.

SCI 560 Science Workshop for Teachers 1-3 hrs.
This course will involve participants in several activities especially designed to help them achieve an understanding of some of the important concepts of science. The course is designed and taught to address the needs of K-12 teachers. It is a variable topics course and may be repeated for credit if different topics are involved. Intended for delivery in one- to two week workshop format.
Prerequisites: Teacher certification or baccalaureate plus work toward certification.

SCI 570 Life Science Workshop for Teachers 1-3 hrs.
This course will involve participants in several activities especially designed to help them achieve an understanding of some of the important concepts of biology. This course is designed and taught to address the needs of K-12 teachers. It is a variable topics course and may be repeated for credit if different topics are involved. It is intended for delivery in one to two week workshop format.
Prerequisites: Teacher certification or baccalaureate plus work toward certification.

SCI 580 Chemistry Workshop for Teachers 1-3 hrs.
This course will involve participants in several activities especially designed to help them achieve and understanding of some of the important concepts of chemistry. This course is designed and taught to address the needs of K-12 teachers. It is a variable topics course and may be repeated for credit if different topics are involved. It is intended for delivery in one to two week workshop format.
Prerequisites: Teacher certification or baccalaureate plus work toward certification.

SCI 585 Physics Workshop for Teachers 1-3 hrs.
This course will involve participants in several activities especially designed to help them achieve an understanding of some of the important concepts of physics. This course is designed and taught to address the needs of K-12 teachers. It is a variable topics course and may be repeated for credit if different topics are involved. It is intended for delivery in one to two week workshop format.
Prerequisites: Teacher certification or baccalaureate plus work toward certification.

SCI 590 Earth Science Workshop for Teachers 1-3 hrs.
This course will involve participants in several activities especially designed to help them achieve an understanding of some of the important concepts of earth science. This course is designed and taught to address the needs of K-12 teachers. It is a variable topics course and may be repeated for credit if different topics are involved. It is intended for delivery in one to two week workshop format.
Prerequisites: Teacher certification or baccalaureate plus work toward certification.

SCI 598 Readings in Science 1-4 hrs.
To be used by students seeking work in topics not otherwise available. The student is limited to not more than four hours in all reading courses and work must be completed under a member of the graduate faculty.

Open to Graduate Students Only

SCI 601 Problems in Science Education 1-4 hrs.
This independent study course allows students to study various problems in Science Education under the direction of a supervising faculty member. Individual or small groups of qualified students may be involved in these problem areas reflecting the current concerns of Science Education. The course is designed to meet the needs of students for first-hand experience in field or laboratory research, pilot projects testing new ideas or concepts, or developing learning materials or resources. The course may be repeated for up to 4 hours of credit.

SCI 610 Science for Elementary Teachers 2-3 hrs.
This course is designed specifically for elementary and middle (junior high) school teachers who have little or no science background. The course has no prerequisites and prospective teachers as well as experienced teachers are welcome. The objectives of the course are to acquaint teachers with the major concepts of science important at the K-6 level and the appropriate methods of teaching those concepts to children. Science activities and learning by doing will be stressed, and resources for teaching science will be examined.

SCI 614 Science: Historical and Philosophical Perspectives 3 hrs.
This course utilizes work in the history and philosophy of science to provide a critical perspective for dealing with the question: "What about science is most important for a student to know?" The course will address: the nature of scientific disciplines (the theories and problems which characterize them); the relations between theory and the empirical work; and the nature of theory change in the sciences. SCI 614 is meant to provide a broad foundation for subsequent curriculum development, instructional design, and research into the teaching and learning of the sciences.

SCI 615 Science Education: Historical and Philosophical Foundations 3 hrs.
This course will familiarize students with the history of science education in the United States, leading up to current national reform efforts. This historical approach will provide a foundation to address curriculum and literacy issues as well as the relevance of the history and philosophy of those concerns. The course will address two themes or "commonplaces" of education in a science education context—the social milieu and the curriculum.

SCI 616 Science Education: Models of Learning and Teaching 3 hrs.
This course will complement SCI 615 in addressing the remaining themes or "commonplaces" of education in a science education context, namely learning and teaching. The major models of learning and approaches to teaching which are compatible with those models will be examined, including their relevance to classroom practice.

SCI 617 Science Education: Research Traditions 3 hrs.
This course is designed to familiarize students with the more productive research traditions in science education and with their historical, philosophical, and methodological foundations. Each offering of the course will focus upon a particular tradition, for example, problem solving research or conceptual change research. This course may be repeated for credit. Prerequisites: SCI 615 and SCI 616.

SCI 620 Topics in Science Education 2-6 hrs.
This course will present, analyze, and evaluate political, philosophical, and technical issues of teaching science. Topics may include new approaches for teaching science, new science curriculum, laboratory practices, science education research, motivational techniques, and other methodological problems confronting science teachers. Course content may vary, and the course may be repeated for credit provided different topics are involved.

SCI 621 Topics in Science 2-6 hrs.
This course is designed to examine various science concepts and new developments of science of interest to science teachers. Each course will be subtitled, and the content will vary to reflect the various sciences, new developments and emphases, and the needs of the science teaching community. The course may be repeated for credit provided different topics are involved.

SCI 625 Environmental Science Seminar 2-4 hrs.
Analysis of case studies of environmental problems. Covers the scientific, social, and political problems involving environmental action and will include experiences with management of energy and material resources. May be repeated for credit up to a maximum of six hours.

SCI 690 Science Education Seminar 2-4 hrs.
Designed to provide an integrating experience for students in the Science Education doctoral program. The topics covered in the seminar will vary from one semester to the next. May be repeated for credit.

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

SCI 700 Master's Thesis 2-6 hrs.

SCI 710 Independent Research 2-6 hrs.

SCI 730 Doctoral Dissertation 15 hrs.

SCI 735 Graduate Research 2-10 hrs.
SOCILOGY

Dr. Thomas Van Valen, Chair
Main Office: 2420 Sangren Hall
Telephone: 387-5270
FAX: 387-2862
Paula Brush
Susan Caringella-MacDonald
Susan M. Carlson
Susan L. Caufield
Paul S. Ciccantell
Charles E. Crawford
Douglas V. Davidson
Timothy Diamond
Thomas E. Ford
David J. Hartmann
Gregory Howard
Vyacheslav Karpov
Ronald C. Kramer
Richard R. MacDonald
Herbert L. Smith
Gerald Markle
Victoria C. Ross
Herbert L. Smith
Zoann Snyder
Sociology
Subhash R. Sonnad
Thomas L. Van Valley
Morton O. Wagenfeld
Robert Wait
Paul Wienir

Master of Arts in Sociology
Advisor: Zoann K. Snyder, Room 2415, Sangren Hall

OPTION I, DISCIPLINARY MASTER'S
This option of the Master of Arts in Sociology is designed to give students an advanced understanding of the significant factors and processes of human society; to further the preparation of those planning to teach 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 advisor.

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 coursework as a condition of admission.
4. Applicants must supply a biographical statement and three letters of recommendation from academic and/or professional sources to the Graduate Admissions Committee, Department of Sociology.

Program Requirements
1. Complete at least thirty-six graduate credit hours, selected in consultation with the student's master's committee. At least twenty hours, including SOC 700 Master's Thesis, must be in sociology; up to nine hours may be in an approved cognate area.
2. Pass oral and written examinations in two areas of sociology that are acceptable to the student's doctoral committee. Prerequisites to the doctoral program are SOC 600, 606, 607, and 621. The following courses are required for all doctoral students: SOC 602, 603, 604, 620, and one additional research course selected from SOC 680, 681, 682, 683, 687, or 688.
3. Maintain a grade point average of 3.0 or better in all course work.

OPTION II, APPLIED MASTER'S
This applied option of the Master of Arts in Sociology is a 40-42 hour professional degree program designed to prepare students for non-academic careers in governmental agencies, businesses, non-profit organizations, or (in special circumstances) for a doctoral program. Graduates will be well trained for such positions as data analysts, social systems analysts, policy analysts, survey researchers, field directors, market researchers, and directors of research. This program will prepare graduates for the changing job market, relying on increased use of survey techniques and quantitative analysis to evaluate programs and shape decision making in organizations.

Admission Requirements
The admission requirements for this program are the same as for Option I above.

Program Requirements
1. Complete 40-42 graduate credit hours: Twelve hours in disciplinary core courses, twelve hours of research methods and statistics, and an additional nine hours of elective disciplinary and research courses.
2. Maintain a grade point average of 3.0 or better in all course work.
3. Complete an internship and internship report (internship essay) at the conclusion of the program. A thesis option is possible, with the approval of two credits, under special circumstances. Consult the departmental master's advisor for the exercise of this option.

Financial Assistance
A number of departmental, University, and governmental assistantships, fellowships, and associateships are available to qualified students. Educational opportunities and part-time employment may be available through the facilities of the Leonard C. Kercher Center for Social Research. Research through the Center includes 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.

Doctor of Philosophy in Sociology
Advisor: Zoann K. Snyder, Room 2415, Sangren Hall

The Doctor of Philosophy in Sociology prepares students for careers in sociological research and teaching. Broad training in sociology is provided through a wide variety of courses and research experiences. Guided individually by a doctoral committee, students are provided with core training in general sociology theory, and research methods. Beyond this, students concentrate in two areas of sociology that are selected from important and active areas, such as applied sociology, criminology, comparative sociology, gender and feminism, medical sociology, social psychology, and race and ethnic relations theory.

Course work in the cognate area complements knowledge gained in selected specialties and the discipline as a whole.

Admission Requirements
1. Master's degree in sociology.
2. Grade point average of 3.25 in all graduate work, and the completion of the Graduate Record Examination.
3. Applicants who hold a master's degree in a related field may be admitted to the program, but may be required to make up deficiencies as a condition of admission.
4. Applicants must supply a biographical statement, a writing sample, and three letters of recommendation from academic and/or professional sources to: Graduate Admissions Committee, Department of Sociology.

Program Requirements
1. Complete, beyond the master's degree, at least sixty hours of course and dissertation credits, selected in consultation with the student's doctoral committee. Prerequisites for the doctoral program are SOC 600, 606, 607, and 621. The following courses are required for all doctoral students: SOC 602, 603, 604, 620, and one additional research course selected from SOC 680, 681, 682, 683, 687, or 688.
2. Complete a minimum of six hours of cognate courses from outside the Department of Sociology. The courses selected should be in a field of knowledge related to the student's major interest.
3. Demonstrate competence in two research tools selected from a foreign language other than English, research methods, and statistics.
4. Pass oral and written examinations in two departmental areas of concentration selected from applied sociology, comparative sociology, criminology, gender and feminism, medical sociology, race and ethnic relations theory, and social psychology.
5. Complete 15 credit hours of SOC 730 Doctoral Dissertation and submit a dissertation that is acceptable to the Department of Sociology. The courses selected should be in a field of knowledge related to the student's major interest.
6. Criteria and procedures for meeting these requirements are described in detail in the department's Graduate Manual.

Financial Assistance
A number of departmental, University, and governmental assistantships, fellowships, and associateships are available to qualified students. Educational opportunities and part-time employment may be available through the facilities of the Leonard C. Kercher Center for Social Research. Research through the Center includes 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.

Sociology Courses (SOC)

Open to Upperclass and Graduate Students

500-level courses in the Department of Sociology are designed for graduate students. Advanced undergraduate students with at least 12 hours of prerequisites and junior class status will be allowed to enroll. Prerequisites must include SOC 200 or its equivalent in another related social science discipline and two 300- or 400-level courses (i.e. one of each; or two of one). Exemptions for these may be granted in rare cases with the written approval of the director of the Undergraduate Studies Program.
SOC 500 Computer Applications in Social Research
3 hrs.
An introduction to computer applications for graduate students in the social sciences. Since they all have utility in the research process, the full range of applications will be covered, including word processing, spreadsheets, graphics, data base management, communications, and statistical processing. A hands-on course, it includes individual assignments relating to each of the application areas. Special attention will be paid to the use of SPSS (The Statistical Package for the Social Sciences) in the analysis of quantitative data. Several assignments will relate to the use of this software package. Primarily for graduate students in the social and behavioral sciences with no special mathematical or computer experience. Undergraduates admitted only with the permission of instructor.

SOC 515 Sociology of Mental Illness
3 hrs.
This course will be concerned with examining the contemporary meaning of concepts of mental health and mental illness. The course will also consider the amount and kind of mental illnesses, especially the differences by social class, social status, gender, race, marital status, urban vs. rural living, and migration, the structure of the mental health delivery system, the nature of help-seeking for mental illness, and community care and public policy for mental illness. Prerequisite: SOC 200.

SOC 520 Studies in Social Psychology: Variable Topics
3 hrs.
Further analysis of selected topics in social psychology, not intensively covered in other courses. Specific topic will be designated in the course title when scheduled. May be repeated for credit with a different topic. Prerequisite: SOC 320.

SOC 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 and control of health; the social structure of the medical profession and health care professionals, the sociology of health care delivery. Prerequisites: SOC 370 or graduate standing.

SOC 552 Sociology of Aging
3 hrs.
An examination of the process of aging in American society, with particular emphasis on the periods of late maturity and old age. Consideration will be given to theories of aging and the social implications of age grading, the meaning of work and retirement, and the status and roles of the aged. Prerequisite: Six hours of sociology, including SOC 200 or consent of instructor.

SOC 560 Corporate and Governmental Crime
3 hrs.
An examination of the crimes committed by business corporations and government agencies. The course describes the nature, extent, and costs of these organizational crimes, explains the structural and organizational forces which give rise to such crimes and analyzes the problem of controlling organizational offenders. The course also examines the political process whereby corporations and governments come to be defined as deviant or criminal. Prerequisites: SOC 200 or SOC 210, SOC 260, and SOC 362 and one other 300- or 400-level course.

SOC 562 Victimology
3 hrs.
The study of crime victims, the probabilities of victimization, victim-offender relationships, the treatment of victims by the criminal justice system and the economic, social, and psychological impact of victimization. Prerequisites: SOC 200 or SOC 210, SOC 260, and SOC 362 and one other 300- or 400-level course.

SOC 563 Gender and Justice
3 hrs.
This course provided an overview of the relatively recent field of women, crime and justice, with particular direction guided by an issues approach. A wide variety of current research and theory in this realm are critically examined. The specific subtopics covered in this course exist to provide a broad feminist theoretical and methodological approach. Perspectives are drawn upon to contour the examination of women as criminal offenders, as victims of crimes such as rape and intimate violence, and as professional workers within the criminal justice system. Prerequisites: Graduate standing or SOC 200, SOC 260, SOC 362, and one other 300- or 400-level course (SOC 314 is encouraged).

SOC 568 Race, Ethnicity, and Justice
3 hrs.
This course addresses the multicultural dynamics that effect the definitions (e.g., and distribution of justice in the United States. The primary focus is the differential treatment of African Americans, American Indians, Latinos, and Asian Americans throughout the current social structure will direct the inquiry. Prerequisites: Graduate standing or SOC 200 or 210, SOC 260, SOC 362, and one other 300- or 400-level course (SOC 314 is encouraged).

SOC 573 The Sociology of Political Behavior
3 hrs.
Systematic sociological theory and research applied to the study of political organization and behavior in the United States and in selected countries abroad. Such topics as political parties, voting, bureaucracy, and political ideology will be considered. Prerequisite: SOC 200 or consent of instructor.

SOC 578 Sociology of Law
3 hrs.
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.

SOC 590 Variable Topics in Sociology
3 hrs.
An examination of a selected topic in the field of sociology. The focus of the course may be theoretical, methodological, or substantive. Possible topics could include feminist theory, sampling and survey design, policy, and cultural studies. May be repeated for credit with a different topic.

SOC 598 Directed Individual Study
3 hrs.
A program of independent study (reading or research) to provide the unusually qualified sociology student with the opportunity to explore a topic or problem of interest under the guidance of one of the faculty of the department. The initiative for planning the topic for investigation must come from the student. Approval is contingent upon the merit of the proposal. 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

SOC 600 Proseminar in Sociology
3 hrs.
There are three major goals for this course. First, it will expose new graduate students to the full range of departmental faculty, their research, and their teaching interests. Second, it will assess the current state of the discipline, focusing on substantive, methodological, and/or theoretical issues. Third, it will begin the professional socialization of the student with respect to departmental policies, procedures, and requirements.

SOC 602 Classical Sociological Theory
3 hrs.
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.

SOC 603 Contemporary Theory: Culture, Social Action, and Society
3 hrs.
An intensive and critical study of contemporary sociological theories. The course will focus on the problem of how the social identity of human beings—articulated through their social action—is structured by historically created cultural systems. Both modernist and postmodernist critiques of culture will be examined.

SOC 604 Contemporary Theory: Agency, Interaction, and Structure
3 hrs.
An intensive study of contemporary sociological and social psychological theories that address and critique the classical dualism between individual and social structure. The course will focus on theories of human interaction, and will attempt to show connections between micro and macro theories and/or level of analysis. Both foundational theories of interaction and integrative theories of agency and structure will be examined.

SOC 605 Studies in Sociological Theory: Variable Topics
3 hrs.
Advanced study and exploration, following seminar format, of topics of interest to faculty and students, for example: various role theory formulations and their usefulness in understanding social behavior, ethnomethodology, philosophy of science, experimental design, Marx, Weber, or other selected theorists. May be repeated for credit with a different topic. Prerequisite: Consent of instructor.

SOC 606 Research Design and Data Collection I
3 hrs.
This course is designed to provide experience with the formulation of research problems and
exposure to a range of quantitative and qualitative data gathering techniques. Logistical and ethical issues associated with the various techniques will be discussed (e.g., sampling, informed consent). Students will have experience identifying and collecting archival and observational data, as well as constructing and executing a simple experiment.

SOC 607 Logic and Analysis of Social Research I 3 hrs.
This course is designed to provide a thorough grounding in basic univariate and bivariate descriptive and inferential statistics. Students will learn the techniques and the statistical foundations for social scientists. Manipulation and processing of data using SPSS will also be covered. Prerequisite: SOC 606.

SOC 617 Etologies of Substance Abuse 3 hrs.
A study of various social and behavioral theories regarding the causation of alcohol and drug addiction. The findings of research will be evaluated as they tend to support or disaffirm these social and behavioral theories.

SOC 620 Research Design and Data Collection II 3 hrs.
This course focuses on some of the methodological problems and issues related to the design of sociological research and the collection of data (e.g., validity, reliability). Emphasis will be placed on the selection and design of appropriate qualitative and quantitative research methods and their consequences for the research process. Students will have experience with the analysis of textual and documentary information, the design and administration of focus groups, and the construction of a sample survey. Prerequisite: SOC 606.

SOC 621 Logic and Analysis of Social Research II 3 hrs.
This course offers an in-depth coverage of multiple regression, including diagnosis and correction of assumption violations, use of diagnostic plots in multiple regression analysis, and an introduction to path analysis. Prerequisite: SOC 607.

SOC 622 Advanced General Sociology 3 hrs.
A comprehensive survey of trends in the major fields of sociology. Prerequisite: Open only to graduate students in sociology.

SOC 623 Professional Writing for Sociologists 3 hrs.
This course will examine three forms of professional writing: Proposals for funded research, technical research reports, and scholarly journal articles. Students will receive extensive experience in writing, critiquing, and rewriting proposals, reports, and journal articles.

SOC 624 College Teaching Practicum in Sociology 3 hrs.
A practicum in the teaching of sociology in colleges. 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: Eight hours of graduate sociology courses and consent of instructor. Graded on a Credit/No Credit basis.

A detailed study of a social problem area through student reports and seminar discussion. Instructor will select specific topic. Course is intended to provide intensive joint exploration of significant sociological issues. May be repeated for credit with a different topic. Prerequisite: Consent of instructor.

SOC 631 Deviance and Social Problems Theory 3 hrs.
An intensive and critical examination of the historical development and current status of the major theoretical orientations in the study of deviance and social problems theory.

SOC 633 Proseminar on Social Problems 3 hrs.
A critical overview of the current state of knowledge in the major subfields of social problems. Emphasis will be placed on conceptual and methodological problems in the areas and the relationship of each of these areas to one another.

SOC 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: SOC 540, or SOC 540 may be taken concurrently.

SOC 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. Application to the planning of health services and the development of service systems are presented.

SOC 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: Consent of instructor.

SOC 644 Epidemiology and Health Statistics 3 hrs.
The course will cover the basic principles of epidemiology and biostatistics. Topics to be considered include: the nature of the epidemiologic perspective, epidemic investigation, rates, screening, risk estimation, the design of epidemiologic investigations, measures of central tendency, basic inferential statistics, sampling, and hypothesis testing. Open only to Health Care Administration students, except by permission of instructor.

SOC 650 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 651.

SOC 651 Social Psychological Theory 3 hrs.
A study of major theoretical approaches in social psychology and their methodological and substantive implications. Prerequisite: SOC 320 or equivalent.

SOC 652 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 651.

SOC 653 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: SOC 540, or SOC 540 may be taken concurrently.

SOC 656 Seminar in Social Stratification 3 hrs.
This seminar will deal with the sociological explanations of stratification. The functional, conflict and evolutionary paradigms will be used to analyze and explain the nature, causes and consequences of class and status within social systems. The usefulness of such concepts as power, prestige, social class and status within systems. The usefulness of such concepts as power, prestige, social mobility and status inconsistency will be stressed. Prerequisite: SOC 200 or consent of instructor.

SOC 660 Theoretical Issues in Criminology 3 hrs.
This course provides a basic overview of criminological theories from a theoretical perspective. With this as a foundation, theories will be critically analyzed and applied to criminal and delinquent behavior. In addition, issues of theory building and integration will be addressed.

SOC 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.

SOC 662 Seminar in Corrections 3 hrs.
Review and analysis of the philosophies, objectives, dilemmas, and problems in corrections. Innovative and alternative strategies in Social Control will be reviewed. The role of institutional and non-institutional corrections will be reviewed relative to institutional policy goals and objectives.

SOC 663 Comparative Criminology 3 hrs.
An analysis in depth of crime as this phenomenon is viewed in Sweden, Germany, Poland, and other eastern and 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 466.

SOC 664 Studies in Criminology: Variable Topics 3 hrs.
This seminar is designed to provide in-depth analysis and assessment of various substantive topics within criminology, including race and crime, gender and crime, capital punishment, and specific types of criminal behaviors. May be repeated for credit with a different topic.

SOC 665 Research Issues in Criminology 3 hrs.
An advanced course emphasizing: (1) The examination of current issues in the
measurement and analysis of crime, and (2) Development of research skills relevant to criminological research. Students will demonstrate their mastery of research skills by conducting their own analysis of crime data.

**SOC 666 Seminar in Advanced Criminology**
3 hrs.
A detailed study of the theoretical basis of crime. This seminar takes into account the socio-historical and philosophical belief systems of classical and modern theories of crime. Property crime, violent personal crime, and corporate crime are a few of the specific patterns that will be discussed and interpreted within various theoretical paradigms.

**SOC 671 Seminar in Ethnic Relations**
3 hrs.
Advanced study of race and ethnic relations, problems, and trends. Prerequisite: SOC 314 or consent of instructor.

**SOC 672 Patterns of Intercultural Adjustment**
3 hrs.
A study of processes of intercultural adjustment involving different racial, national and religious groups. The factors giving rise to present-day conflict situations are examined and special emphasis is given to techniques of adjustment through individual and community action. Prerequisite: SOC 200 or equivalent.

**SOC 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 consent of instructor.

**SOC 674 The Nonprofit Sector in Society**
3 hrs.
This course will provide an overview of the nonprofit or third sector of society and will explore its interrelations with other sectors in society. While the focus will be on nonprofits in American society, cross-cultural comparisons will also be provided. The socio-economic, organizational, and political roles of nonprofits will be examined for a wide range of different organizations. Special attention will be devoted to the changing role of nonprofit and voluntary organizations in society.

**SOC 675 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: Consent of instructor.

**SOC 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.

**SOC 681 Advanced Multivariate Analysis**
3 hrs.
This course covers multivariate statistical techniques, including such topics as time-series analysis, structural equation modeling; confirmatory factor analysis; hierarchical modeling techniques; linear probability, logit, tobit and probit estimation of models with discrete dependent variables, and logistic regression. Prerequisite: SOC 621.

**SOC 682 Qualitative Methods**
3 hrs.
This course covers important techniques in qualitative sociological research, including participant observation and in-depth interviewing. Students will study and practice these methods, incorporating issues of recording and coding data and the ethical norms governing such research. They will also address theoretical and epistemological issues related to the place of qualitative methods in the sociological toolkit.

**SOC 683 Research Design and Analysis In Social Psychology**
3 hrs.
This course is designed to provide students with the necessary knowledge to evaluate research, make transitions between theory and operations that test theory, and to design and carry out original research relevant to social psychology. Topics will include survey, observational, experimental and quasi-experimental methods as applied in both field and laboratory settings. Statistical analyses relevant to each method will also be covered. Students will be expected to design measures and complete their own studies and analyze their data. Students will also be expected to critique completed research.

**SOC 684 Applied Sociology**
3 hrs.
Provides an overview of the development of applied sociology and an introduction to essential skills. Among the topics covered are proposal writing, budget preparation, systems analysis, presentation of data to clients, and the writing of research reports. Case study material will be used to introduce students to applied sociology in public, private, and non-profit settings.

**SOC 685 Evaluation Research**
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 621.

**SOC 685 Methods of Survey Research**
3 hrs.
This course is a research seminar structured to provide practical experience in the use of social surveys. Both applied and disciplinary utilizations will be studied as will the conceptualization and measurement phases of survey design, the implications of the cognitive processes at work in survey research, the analysis of survey data, and the administration of large scale survey projects.

**SOC 686 Computer Applications for Sociologists**
3 hrs.
This class is designed to provide doctoral students in sociology with essential skills in the use of mainframe computers and microcomputers to perform such professional tasks as project design, interviewing, budgeting, and data analysis. Competence in using operating systems, word processing and
Women's Studies Courses (WMS)

Open to Upperclass and Graduate Students

The prerequisites for admission of undergraduates to 500-level Women's Studies courses are 12 hours of course work from the Women's Studies approved list, including WMS 200, and at least junior level status, or departmental approval.

WMS 500 Seminar in Women's Studies
3 hrs.
A seminar offering variable topics that focus on special problems or issues in Women's Studies. Emphasis will be placed on developing skills in research approaches and on writing a research paper integrating the student's disciplinary training with investigation of an interdisciplinary problem in Women's Studies. May be repeated for credit when topics vary.

WMS 510 Internship Seminar
3 hrs.
Course offers an opportunity for the advanced student to apply theory and knowledge in Women's Studies to a professional or community project. Student will work under the supervision of a faculty advisor or a community sponsor. Opportunities available in areas such as television production and K-12 classroom presentations.

WMS 550 Contemporary Feminist Theory
3 hrs.
An advanced course focusing on the analysis of American and European texts in feminist theory. The course will also consider the relation of these texts to other contemporary theoretical approaches. Prerequisite: For undergraduates, WMS 400.

WMS 598 Readings in Women's Studies
1–4 hrs.
Individual study project available to the advanced student by permission of faculty advisor with departmental approval of project application.
HAWORTH COLLEGE OF BUSINESS

The Haworth College of Business is committed to partnerships among students, employers, faculty, alumni, and the business community that advance the achievement of high-quality education. Such active partnerships challenge the foundation of our knowledge and skills and enhance our ability to change. Meeting these challenges requires an evolving combination of teaching, research, and service activities among partners.

College Graduate Degree Programs

The degree programs leading to the Master of Business Administration and the Master of Science in Accountancy are offered within the framework of the graduate education goal of the Haworth College of Business which is, To provide excellent targeted graduate education and business seminars for constituent groups (primarily working professionals and international students) by the year 2004. The undergraduate and master's business programs offered by the Haworth College of Business, Western Michigan University, are accredited by AASCB: The International Association for Management Education.

Enrollment in any graduate business course requires active admission to the MBA or MSA program. Students admitted to the University on Permission to Take Graduate Classes (PTG) status are not eligible for enrollment in graduate business courses. Requests for exception to these enrollment policies must be submitted in writing to the Director of M.B.A. Programs, Haworth College of Business, 2110 Schneider Hall.

Application Procedures

Individuals may obtain an application for graduate business degree programs in the Haworth College of Business through one of the following procedures:

1. Personal visit to the Haworth College of Business Office of Student Development, Room 2130 Schneider Hall on the University campus in Kalamazoo, Michigan.

2. Contacting the Admissions Office of Western Michigan University by (a) visiting the Office of Admissions and Orientation in Room 2240 Seibert Administration Building; (b) requesting an application for admission by writing to the Office of Admissions and Orientation, Graduate Admissions, 1201 Oliver Street, Western Michigan University, Kalamazoo, Michigan 49008-5120; or (c) telephoning the Admissions’ Voice Enhanced Request Line, 1-800-400-4988.

3. Personal visit to the Grand Rapids Regional Office at 5333 East Beltline, S.E. in Grand Rapids or telephone the Regional Office, 1-616-771-9475, or a personal visit or telephone call to another Western Michigan University Regional Office in Battle Creek, Holland, Muskegon, Lansing, or St. Joseph, Michigan.

4. Electronic access via the Internet, with access to Western Michigan University’s homepage at http://www.wmich.edu, selecting the “Graduate Programs” link and following the steps for an on-line application.

5. Applicants who are not U.S. citizens must contact, in writing, the Office of International Student Services, Room A411 Eellsworth Hall, 1201 Oliver Street, Western Michigan University, Kalamazoo, Michigan 49008-5899. International applicants may also E-Mail the Office of International Student Services at oiss.info@wmich.edu, or may telephone the Office at 616-387-5865, or may reach the Office through the Internet at http://www.wmich.edu/oiss and follow the application procedures presented.

Appeals Process

An applicant who has been denied admission to a graduate program in the Haworth College of Business and is choosing to appeal that decision (or whose admission contains conditions that are being appealed) shall contact the Office of Student Development by telephone (616-387-5075) or by mail (Office of Student Development, Haworth College of Business, Western Michigan University, Kalamazoo, Michigan 49008-3899) and request a copy of the College's "Admission Appeal Policy" which provides guidance on the appeal process.

Continuation Requirements

To continue enrollment in graduate programs in the Haworth College of Business students must meet published University standards for graduate education. These standards require active admission status and an overall grade point average of at least 3.00 in all graduate business course work with alternative enrollment conditions possible as defined in the "Academic Standards" section of this Graduate Catalog.
Master of Business Administration
Office of Student Development, Room 2130, Schneider Hall

This professional degree program leading to the Master of Business Administration is designed to prepare graduate students to function effectively in administrative positions. This preparatory work emphasizes the development of the student's ability to make and execute decisions. The program of study is designed to provide the student with skills and knowledge in the areas of critical analysis, business operations, changing environments, professional development, and specialized professional interests. Students are challenged to develop the judgment, discriminating capacity, knowledge, and understanding which will permit them to work effectively in administrative and other leadership roles. Under the guidance of the graduate faculty advisors of the Haworth College of Business, personal programming for the participant is provided.

Admission Requirements
1. To be eligible for admission to the MBA degree, a process managed by the Office of Student Development in the College, an applicant must initially meet one of the following criteria.
   a. A GMAT score of 550 or higher with a grade point average for the last two years in an accredited, undergraduate university program of 2.50 or higher.
   b. A GMAT score of 450 or higher with a grade point average for the last two years in an accredited, undergraduate university program of 3.00 or higher.
   c. Satisfactory completion and receipt of a graduate professional degree from a U.S.A. accredited university, for example, a graduate degree in law, education, medicine, or engineering.
   d. A grade point average of 3.0 or higher for the last two years in an accredited, undergraduate degree program and at least seven (7) years of substantial, full-time professional, business work experience (which has occurred within the ten years prior to the date of program application) as reflected in a professional work portfolio, which must be reviewed and accepted by a majority vote of the Haworth College of Business Academic Review Board.
   e. For Western Michigan University international program locations only: A review of academic accomplishment, professional business experience, and educational certification—accompanied (if necessary) by personal interviews—will provide the basis for judging a candidate's ability. All international applicants must have a bachelor's degree from an acceptable grade point average from an educational institution approved by Western Michigan University.
2. Applicants who are not U.S.A. residents (international students) may be required to demonstrate English language proficiency with a TOEFL score of not less than 550.
3. Each applicant must provide evidence of proficiency in the required basic skills prior to formal graduate program admission. Basic skills are defined as computer literacy, quantitative analysis, statistics, and writing in English. The writing skill requirement is considered met if the applicant achieves a score of 3.50 or higher on the essay portion of the GMAT. The quantitative analysis skill requirement is considered met if the student (a) has an undergraduate business degree (BBA) from a university or college with an AACSB accredited business program or (b) has satisfactorily completed a college level undergraduate mathematics course in precalculus or calculus. If the basic skills requirements have not been completed at the time of admission, the student may receive admission with reservations with the provision that all unmet basic skill requirements will be satisfied by the end of the first twelve months of active graduate program enrollment.

Program Requirements
The MBA program includes five components:
1. Prerequisites/Basic Core (12 hours)
   a. ACTY 601 Accountancy (3 hrs.)
   b. ECON 601 Basic Economic Analysis (3 hrs.)
   c. FCL 602 Corporate Finance (3 hrs.)
   d. FCL 604 Legal, Regulatory, and Political Aspects of Business (3 hrs.)
2. Business Context (9 hours)
   a. BUS 615 Global Business and Intercultural Communication (3 hrs.)
   b. BUS 616 Business Policy and the Social and Ethical Environment (3 hrs.)
   c. BUS 618 Information Technology Management (3 hrs.)
3. Functional Core (15 hours)
   a. ACTY 611 Managerial Accounting (3 hrs.)
   b. FCL 612 Financial Management (3 hrs.)
   c. MKTG 613 Customer-Driven Marketing Management (3 hrs.)
   d. MKTG 614 Business Process Management (3 hrs.)
   e. OR 614 Business Process Management (3 hrs.)
   f. MGMT 617 Managing Human Resources and Behavior (3 hrs.)
4. Concentration Electives (9 hours)
   An area of concentration may be selected from Computer Information Systems, Economics, Finance, General Business, International Business, Management, Marketing, or Paper Science. Electives are required at the 600-level, with a maximum of three hours which may be approved at the 500-level.
5. Integrative Business Solutions (3 hours)
   BUS 699 Business Strategy (3 hrs.)

BUS 615 Global Business and Intercultural Communication 3 hrs.

This course enables the student to explore how business practices and policies are affected by international, cultural, political, legal, social, and economic environments. Viewed from the perspective of corporate managers and entrepreneurs, this course provides a global foundation for other business work; for example, in accounting, finance, information management, finance, management, and marketing. Additionally, intercultural communication skills required to conduct business successfully in a global environment will be examined. Written and oral reports will be incorporated to provide practical knowledge about intercultural business communication.

BUS 616 Business Policy and the Social and Ethical Environment 3 hrs.

This course introduces students to the concepts of social responsibility and ethics in strategic business settings. Coverage includes strategic business concepts and associated legal issues. An examination of a firm's mission, goals, and business strategy will be considered within an ethical and legal framework. Diverse viewpoints regarding the nature and limits of corporate social responsibility will be explored in the context of alternative strategic choices for the firm. The emphasis will be on understanding the conceptual tools to analyze behaviors in the context of business decision making.

BUS 618 Information Technology Management 3 hrs.

This course enables the student to understand the use of information technology as part of business strategy. Issues surrounding information technology such as information and communication systems and services and enterprise-wide systems—traditional, networked, extended, and virtual—in organizations will be explored. The growing convergence of technologies—computer, video, and telecommunications—within sophisticated information networks will also be examined. Students should gain knowledge about strategic issues involving information technology management rather than the development of specific computer skills.

BUS 699 Business Strategy 3 hrs.

An advanced examination of the tasks of formulating long-run strategy for the organization. Using strategic cases and/or simulations, the course includes methods of (1) developing opportunities from analyses of environmental and market trends, (2) understanding company strengths, weaknesses, and competencies, and (3) directing the integration of strategy with operating plans through formal and informal networks. This is an integrative capstone course designed to provide a total business perspective. Prerequisites: Completion of MBA Business Context and Functional Core courses.

Business Courses (BUS)

Open to Graduate Students Only. Enrollment in HCOB graduate business courses requires admission to the MBA or MSA program or the consent of the Director of M.B.A. Programs.
The Master of Science in Accountancy prepares the student for professional careers in industry, commerce, finance, government, and public accounting. A graduate from the Haworth College of Business with a Master of Science in Accountancy will be qualified to take many of the professional certification exams. Since the qualifying rules differ by state, and are subject to change, the student is responsible for determining if additional criteria need to be met for a specific exam or state. The program is designed to meet the AICPA's 150-hour requirement. A student without a degree in business must complete 24 credit hours of business courses to meet the 150-hour requirement.

The current requirements to sit for the CPA exam in Michigan are 24 hours of accounting, including auditing. The course work also must include a study in systems and governmental accounting. To receive a year's credit toward the experience requirement in Michigan, a 150-hour program must contain 39 semester hours of accounting and 36 hours of general business subjects.

Accountancy Courses (ACTY)

Open to Upperclass and Graduate Students

ACTY 511 Advanced Accounting

The study of entities and special transactions not covered in Financial Accounting I and II. Particular emphasis is given to partnership equity accounting, governmental accounting, business combinations, reporting by parent-subsidiary consolidated entities (including foreign subsidiaries), and accounting for foreign currency transactions. Prerequisite: ACTY 311.

ACTY 513 Advanced Accounting Systems

A comprehensive study of the recording of transactions by governmental units and the financial statements required by generally accepted accounting principles for governmental units. The basic unit of study; however, colleges and universities, healthcare entities, and other not-for-profit organizations are given broad coverage to illustrate accounting and financial reporting for all not-for-profit entities. Prerequisite: ACTY 211.

ACTY 516 Auditing

A study of auditing of business and non-business organizations. Topics include audit risk, audit procedures during the planning and performance phase of an audit, internal control concepts, ethics and the legal environment, statistical audit tools, types of audit reports, auditing standards, and the relationship of internal auditing with external statement auditing. Prerequisites: ACTY 311 and ACTY 313.

ACTY 518 Accounting Theory and Problems

A study of financial accounting theory and practice. The course is organized around pronouncements of the Financial Accounting Standards Board and other authoritative bodies.
ACTY 522 Cost Accounting—Theory and Practice
3 hrs.
A study of the accounting methodology and concepts that have been developed to account for both product and period costs of a business enterprise. The course includes product costing for job order and continuous process situations, activity-based costing, divisional performance evaluations, cost allocations among departments of an enterprise, joint and by-product costing, and standard costing as it relates to inventory pricing. **Prerequisite:** ACTY 322.

ACTY 524 Advanced Tax Accounting
3 hrs.
A study of the federal tax laws that govern the transactions during a corporation’s life cycle. The tax effects of organizing, operating, making distribution, reorganizing, and liquidating regular and S corporations are analyzed. The differences in the taxation of corporations, partnerships, and limited liability companies are also addressed. **Prerequisite:** ACTY 322.

ACTY 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. Enrollment in HCOB graduate business courses requires admission to the MBA or MSA program or the consent of the Director of Graduate Business Programs.

ACTY 601 Accountancy
3 hrs.
This course is designed for graduate students who have no academic background in accounting. It is a study of the fundamental concepts and applications of financial and managerial accounting. The course emphasizes the use of accounting information and the analysis of accounting statements rather than the recording of transactions and the preparation of accounting statements. Students cannot receive credit for both ACTY 601 and equivalent courses. **Prerequisite:** Admission to the MBA or MSA program or consent of the Chair of the Department.

ACTY 610 Seminar in Financial Accounting Theory
3 hrs.
This course is an intensive examination and study of the underlying postulates, concepts, and principles of accounting. Topics in financial accounting theory such as asset valuation, income concepts, and funds flow alternatives are discussed. **Prerequisite:** ACTY 311 or consent of the Chair of the Department.

ACTY 611 Managerial Accounting
3 hrs.
This course emphasizes the use of accounting information for planning, control, and decision making. The managerial accounting topics covered include job order costing, cost allocation, service costing, activity-based costing, standard costing, transfer pricing, and global accounting issues. The course is not available for credit to students who have completed ACTY 322 or its equivalent. **Prerequisite:** ACTY 601 or equivalent.

ACTY 617 Seminar in Auditing Theory and Practice
3 hrs.
A critical study and examination of the theory of auditing and auditing practices, including the demand and supply for auditing services and current issues facing auditors in the United States and elsewhere. **Prerequisite:** ACTY 311.

ACTY 621 International Accounting
3 hrs.
This course examines international dimensions of accounting and the uses of accounting information for decision making in a multinational environment. Major emphasis is placed upon accounting and managerial issues of multinational corporations such as currency translation, financial reporting and disclosure, international taxation, transfer pricing, and current issues and developments. **Prerequisite:** ACTY 611 or consent of the Chair of the Department.

ACTY 622 Seminar in Management Accounting Concepts
3 hrs.
This course examines a variety of advanced cost management concepts and techniques for manufacturing and service organizations. The topics may include advanced cost-volume-profit analyses, activity-based costing and activity-based management, strategic cost management, total quality management, re-engineering and process improvement, transfer pricing, and other cost management issues in a global environment. **Prerequisite:** ACTY 322 or ACTY 611.

ACTY 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. The course will be conducted in a seminar setting with group discussion accentuated. **Prerequisite:** ACTY 324.

ACTY 625 International Taxation
3 hrs.
This course is a study of the concepts and principles that apply to the United States taxation of foreign income earned by U.S. taxpayers and U.S. income earned by foreign taxpayers. Students will learn to analyze and apply fundamental international tax concepts to situations likely to be encountered by businesses and individuals. **Prerequisite:** ACTY 324.

ACTY 632 Accounting and Financial Reporting by Nonprofit Organizations
3 hrs.
A study of the accounting and financial reporting standards applicable to nonprofit organizations. Primary topics in the course include an overview of the fund structure used by different types of nonprofit organizations, basic fund accounting entries, and a review of financial reporting models for nonprofit organizations. Additional topics to be studied include budgeting and financial analysis techniques, applicable internal controls components, as well as the organization’s relationship with internal and external auditors. Course is not available for credit in a Master of Science in Accountancy or a Master of Business Administration program.

ACTY 642 Selected Topics in Accountancy
3 hrs.
The advanced study of selected topics in accounting. Course varies according to topic. **Prerequisite:** MSA admission or consent of the Chair of the Department.
BUSINESS INFORMATION SYSTEMS

Dr. Earl E. Halvas, Chair
Main Office: 3310 Schneider Hall
Telephone: 387-5410
FAX: 387-5710

Robert Allen
Kunakose Athappilly
Joel P. Bowman
Earl E. Halvas
Bernard Han
Elizabeth A. Hoger
Patricia S. Rooney
Alan I. Rea
Nancy M. Schullery
Hung-Lian Tang
Andrew S. Targowski
Mike Tarn

Business Information Systems Courses (BIS)

Open to Upperclass and Graduate Students

BIS 555 Topics in Computer Information Systems
3 hrs.
Special topics appropriate to business applications such as data base management systems, structured concepts, networking, programming documentation and efficiency, planning, organizing and directing management information systems. May be repeated for credit. Prerequisite: BIS 360.

BIS 560 Office Systems and Procedures
3 hrs.
A study of paperwork systems and procedures. Emphasis is placed on office systems and the techniques of systems development including fact gathering and recording, work analysis, and office work simplification and measurement. Prerequisite: BIS 102.

BIS 596 Independent Study
1-4 hrs.
A directed independent project in an area of administrative systems, business communication, or computer information systems. Prerequisite: Consent of department chair.

BIS 596 Readings
1-4 hrs.
A series of direct readings in the area of administrative systems, business communication, or computer information systems. Prerequisite: Consent of department chair.

Open to Graduate Students Only. Enrollment in HCOB graduate business courses requires admission to the MBA or MSA program or the consent of the Director of Graduate Business Programs.

BIS 600 Seminar in Business Information Systems
3-4 hrs.
Intensive problem solving in the area of administrative systems, business communication, or computer information systems. May be repeated for credit.

BIS 630 Data Administration
3 hrs.
Emphasizes the administrative aspects of managing data resources in organization. Orientation of the course is towards developing specific skills in MBA students that will empower them to administer challenges of using Data Base Management Systems effectively. Prerequisites: BIS 260, 261, and 360.

BIS 643 Report Writing for Management Decisions
3 hrs.
The focus of Report Writing for Management Decisions is on planning, researching, writing, revising, and presenting effective written and oral management-based reports. The course will emphasize management report writing in the context of organizational decision making.

BIS 662 Managing the System Development Project
3 hrs.
Course focuses on project management while reviewing and reinforcing student's understanding of system development methodology. Major emphasis of course will be managing those projects which involved SDLC methodology. Prerequisites: BIS 260, 261, and 360.

BIS 664 Expert Systems in Business
3 hrs.
Objectives of course are to familiarize students with ES/KBS and how this information technology can be applied to solve common business problems. Designed to show how such systems can assist managers in setting and achieving organizational objectives effectively and efficiently. Prerequisites: BIS 260 and 360.

BIS 666 Managing Data Communications
3 hrs.
This course provides students with a managerial perspective of data communication and computer networks. The intent of this course is to provide students with the necessary skills to accurately evaluate recommendations about data communication needs and manage the data communication activities of a business organization. Prerequisite: BIS 360.

BIS 674 Information Systems Planning
3 hrs.
Course applies principles of managerial planning to information systems. Covers strategic, tactical, and operational planning of IS, with special emphasis on linkage between strategic plans of organization as whole and those of IS. Prerequisites: BIS 260, 261, and 360.

BIS 685 Research in Business Education
3 hrs.
An examination and analysis of research in business education with emphasis on utilization of findings in the upgrading of instruction. Research tools and methodology are also examined. Prerequisite: ED 601.

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

BIS 700 Master's Thesis
6 hrs.

BIS 710 Independent Research
2-6 hrs.

BIS 712 Professional Field Experience
2-12 hrs.

FINANCE AND COMMERCIAL LAW

Dr. Ed Edwards, Chair
Main Office: 3290 Schneider Hall
Telephone: 387-5720
FAX: 387-5839

Finance Area

Robert Belik
Claudine Boerner
David Burnie
James D'Mello
A. Ed Edwards
Theodore Fuger
A. D. Issa
Robert Jones
Kenneth Kennedy
Christopher M. Korth
C. R. Krishna-Swamy
Inayat Mangla
Ali Metwalli
Craig Peterson
Ajay Samant
Tim F. Schue
Devrim Yaman

Finance Area Courses (FCL)

Open to Graduate Students Only. Enrollment in HCOB graduate business courses requires admission to the MBA or MSA program or the consent of the Director of Graduate Business Programs.

FCL 602 Corporate Finance
3 hrs.
This course will introduce students to financial principles and techniques which are essential for understanding the financial management function of a firm. Prerequisites: BIS 601 or an equivalent course(s). Students cannot receive credit for both FCL 602 and equivalent course(s).

FCL 612 Financial Management
3 hrs.
This course will focus on a contemporary study of issues and problems in financial management. Issues to be examined could include short-term financing, capital budgeting, asset pricing theory, sources of long-term capital, optimal capital structure, corporate restructuring and international dimensions of corporate financial management. Prerequisite: FCL 602 or equivalent.

FCL 619 Financial Markets and Institutions
3 hrs.
Study of money and capital markets, financial institutions, and intermediaries in a global context. Topics include interest rate and security price determination, term structure theory, hedging techniques with derivatives, commercial and investment banking practices, and monetary policy methodology and influences. Prerequisites: FCL 612.

FCL 622 Financial Restructuring
3 hrs.
An investigation and analysis of the financial aspects of corporate restructuring. The course emphasizes valuation of public and private companies. In addition, it examines the financial implications of leveraged buyouts, spin-offs, and other types of divestitures. Prerequisites: FCL 612.
FCL 625 Financial Strategy
3 hrs.
The main focus of this course is on value creation. It attempts to bridge the gap between theory and practice. Topics include financial analysis and forecasting, risk analysis, capital management, working capital management, capital structure theory and dividend policy. Students identify problems facing the financial executive and recommend the best course of action utilizing financial theory. Prerequisite: FCL 612.

FCL 642 International Finance
3 hrs.
A study of contemporary issues in the areas of corporate securities as management and international investments with emphasis on the management of currency risk. The areas to be examined include international treasury cash management, multinational capital budgeting and hedging of transactions, operations and translation exposure. Prerequisite: FCL 612.

FCL 645 Computer Applications in Finance
3 hrs.
Spreadsheets, web resources, and statistical analysis are used to analyze financial issues with current computer software. Web research includes searching security databases, downloading stock prices, and using stock screening programs. Statistical analysis use regression. The cases cover topics such as capital budgeting, cash budgeting, estimating beta, financial forecasting, and ratio analysis. Students work in teams to solve cases and give presentations. Prerequisite: FCL 612.

FCL 654 Investment Analysis and Management
3 hrs.
A detailed analysis of the investigation 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 FCL 351 or its equivalent. Prerequisite: FCL 612.

FCL 655 Portfolio Theory and Analysis
3 hrs.
A study of the theoretical structures (models and their applications). Theoretical concepts are used to study model development and evaluate competing models. Extensive use of market-based data for computer applications of models such as Markowitz analysis, single and multiple index models, simplified techniques, duration and convexity. Prerequisite: FCL 612.

FCL 662 Health Care Financial Management
3 hrs.
This course deals with advanced financial management concepts affecting health care institutions. Working-capital management, capital-budgeting, and Medicare reimbursement programs are examined. Prerequisite: FCL 320 or equivalent.

FCL 691 Seminar in Finance
3 hrs.
The analysis of specialized financial planning areas (e.g., financial futures markets, financial forecasting, commodities, and similar contemporary problems). Topics will vary from semester to semester. Prerequisite: FCL 612.

Law Area
Nicholas C. Batch
Thomas Grossman
Norman Hawkins
F. William McCarty
Leo Stevenson

Law Area Courses (FCL)
Open to Graduate Students Only. Enrollment in HCOB graduate business courses requires admission to the MBA or MSA program or the consent of the Director of Graduate Business Programs.

FCL 604 Legal, Regulatory, and Political Aspects of Business
3 hrs.
This course provides an introduction to the legal, regulatory, and political environments of business. The course will examine the role of law in society: the structure of the American legal system; and basic legal principles governing business conduct. The course reviews major legal problems encountered by business managers. The manager's role in dispute resolution and factors affecting the organization of business are also examined. Students cannot receive credit for both FCL 604 and an equivalent course.

FCL 681 Legal and Ethical Issues for Nonprofit Organizations
2 hrs.
This course will provide students with the basic understanding and practical applications of the legal framework pertaining to the establishment, operation, and funding of nonprofit organizations. It will also examine ethical behavior in the nonprofit world, provide examples of questionable conduct and unethical behavior, and offer solutions to ethical dilemmas. Not available for credit toward graduate business programs.

FCL 682 Managerial Aspects of Labor Law
3 hrs.
Provides an overview of the background and consequences for business of the laws governing collective relationships between employers and employees and their representatives. Special emphasis is given to the interpretation and evaluation of current legislation. Prerequisite: FCL 380 or 604.

FCL 684 International Business Law
3 hrs.
Private international law and selected regional and national laws affecting foreign investment, licensing, and trade are reviewed. International sales, financing, transportation, intellectual property, and taxation topics are discussed.

FCL 686 Legal and Regulatory Issues in Marketing
3 hrs.
This course examines the legal, regulatory, and political issues which affect marketing. The course covers legal and regulatory information that parallels and affects marketing decision making.

FCL 688 Health Law Administration
3 hrs.
The course provides a study of the law as it relates to the delivery of health care services. The cases, regulations and statutes in state and federal legal systems that affect the health care professional and institutions are examined. Legal concepts such as respondent superior, good Samaritan laws, informed consent, and confidentiality will be explored. Prerequisite: FCL 380 or 604.

FCL 689 Legal Problems of Health Care Organizations
3 hrs.
An analysis of the organization and structure of various health care entities. The Medicare reimbursement program, medical malpractice and risk avoidance concepts will be discussed. Laws affecting the maintenance and disclosure of medical records and organizational certificate of needs will be examined. Prerequisite: FCL 888 or consent of instructor.

General Area

General Area Courses (FCL)
Open to Upperclass and Graduate Students
FCL 594 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. Undergraduate or graduate credit of up to six hours, in one or more of the following departments upon consent of department head: Accountancy, Business Information Systems, Finance and Commercial Law, Management, or Marketing.

Open to Graduate Students Only. Enrollment in HCOB graduate business courses requires admission to the MBA or MSA program or the consent of the Director of Graduate Business Programs.

FCL 600 Seminar in Business
3 hrs.
Intensive problem-solving in the primary business fields. Consent of instructor required. May be repeated for credit.

FCL 698 Readings and Research in Finance and Commercial Law
2–6 hrs.
Directed individual study of bodies of knowledge not otherwise treated in departmental courses. Prerequisite: Written consent of instructor.

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

FCL 700 Master's Thesis
6 hrs.

FCL 710 Independent Research
2–6 hrs.

FCL 712 Professional Field Experience
2–12 hrs.
Management Courses (MGMT)

Open to Graduate Students Only. Enrollment in HCOB graduate business courses requires admission to the MBA or MSA program or the consent of the Director of Graduate Business Programs.

MGMT 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.

MGMT 610 International Management 3 hrs.
The purpose of this course is to develop the skills, knowledge, and sensitivities necessary to manage successfully in an international environment. Students will learn why and how companies internationalize their operations, and the implications of managing in diverse environments worldwide.

MGMT 614 Business Process Management 3 hrs.
Improving business processes is fundamental to competitive organizations and their significant supply chain partners. Students will be introduced to the increasingly integrated areas of purchasing, operations, and logistics and given an opportunity to examine the fundamental processes that shape business functions. Students will either develop and simulate new systems or improve existing systems within the supply chain of an organization. This course is cross-listed with MKTG 614, Business Process Management.

MGMT 617 Managing Human Resources and Behavior 3 hrs.
Work is a dominant theme in the lives of most people. The way people are managed and relate to one another affects the quality of their lives and the effectiveness of their organizations. Understanding individual differences, sources of behavior, choices people make, and how issues come together in groups and organizations is imperative for today's managers. A clear understanding of how diverse managerial approaches positively impact the performance of a diverse workforce is of growing importance. The course instructional technology ranges from lecture to self-directed work. There is, however, an emphasis on participative and experiential learning.

MGMT 632 Incentive Compensation 3 hrs.
Incentive compensation covers pay related incentives useful for implementing business strategies. Topics covered include executive compensation (e.g., stock options), special group incentives, gain sharing, and ESOPs. Students are expected to develop an incentive plan for an existing organization.

MGMT 641 Business Venturing 3 hrs.
Focuses on all aspects of starting a new business, with emphasis on the critical role of recognizing and creating opportunities. Topics include evaluation of opportunities, sources of financing, and challenges of rapid growth. Term project involves development and presentation of a professional business plan.

MGMT 650 Managing Change 3 hrs.
The process of change inside organizations with particular emphasis on managerial actions that influence effectiveness is investigated. Change is examined at the strategic, organizational and behavioral levels.

MGMT 652 Strategic Human Resource Management 3 hrs.
The role of HRM in generating sustained competitive advantage is examined. Theory, policies, and practices that guide effective management of diverse human resources are explored. Strategic choices regarding staffing, evaluation, rewards, dismissal, and employment relations in a changing work environment are discussed.

MGMT 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.

MGMT 656 International Human Resource Management 3 hrs.
The purpose of this course is to investigate issues in the management of human resources on a global basis. It includes topics such as globalization and business strategy, culture, employment law, expatriate staffing, performance appraisals, cross-cultural training, and international labor relations.

MGMT 661 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: MATH 216 or equivalent.

MGMT 680 Management of Innovation and Technology (MOIT) 3 hrs.
An understanding of the concepts involved in developing core technological competencies, managing existing technologies, and developing new technologies through innovation. Focus will be on the management dimension of technology and innovation. Topics covered will include: technology and strategy (including technological forecasting), management of technology (including development of core technical competencies and technology acquiring options), management of innovation (including internal entrepreneurship and organizational change, and managing R&D), the economics of innovation, and the relevance of Management of Innovation and Technology in helping a firm meet-surpass global competition.

MGMT 685 Quality Management Strategies 3 hrs.
The purpose of this course is to investigate strategic quality management issues as they apply to the management of business in today's competitive environment where the customer satisfaction and continuous improvement have become requirements. Topics covered will include product and process quality, leadership, benchmarking, employee participation and empowerment, quality function deployment, and process innovation. Students will be assigned materials from the latest textbooks and journals. Practice and application will result from participation in group projects conducted in local firms. Prerequisites: MGMT 300 and MKTG 250.

MGMT 695 Advanced Independent Study 3 hrs.
Independent study of current trends and advanced problems in the organization and management of complex organizations. Prerequisite: Consent of department chairman. May be repeated for credit.

MGMT 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 real-life 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. Prerequisite: Completion of MBA core courses.

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

MGMT 700 Master's Thesis 6 hrs.

MGMT 710 Independent Research 2-6 hrs.

MGMT 712 Professional Field Experience 2-12 hrs.
Marketing Courses (MKTG)  
Open to Graduate Students Only. Enrollment in HCOB graduate business courses requires admission to the MBA or MSA program or the consent of the Director of Graduate Business Programs.  

MKTG 613 Customer-Driven Marketing Management  
3 hrs.  
An examination of marketing theory, concepts, and processes used by organizations to create customer value, achieve and sustain competitive advantage and accomplish their strategic mission and objectives. Emphasis on planning, implementing, and evaluating customer-driven marketing strategies to respond effectively to complex global, cultural, technological, competitive, and other market or environmental factors.  

MKTG 614 Business Process Management  
3 hrs.  
Improving business processes is fundamental to competitive organizations and their significant supply chain partners. Students will be introduced to the increasingly integrated areas of purchasing, operations, and logistics and given an opportunity to examine the fundamental processes that shape business functions. Students will either develop and simulate new systems or improve existing systems within the supply chain of an organization. This course is cross-listed with MGMT 614, Business Process Management.  

MKTG 661 Healthcare Marketing  
3 hrs.  
This course presents the field of marketing and its application to the healthcare industry. Emphasis is on the design and use of marketing analyses in areas of patient and client satisfaction, critical path and performance models, continuous quality improvement, and the managerial application of market research findings. A range of health care provider services are researched using marketing techniques such as segmentation, fail point and boundary analyses for healthcare services.  

MKTG 663 Electronic Marketing  
3 hrs.  
Electronic marketing links customers directly with companies, suppliers, and other participants for development and delivery of products and services. This course examines electronic marketing in terms of specific industries and designated target markets. Students will gain knowledge about customer relationship management using electronic technology, for example the Internet, and related methods and tools used to attract, delight, and retain customers via electronic platforms. Prerequisite: BUS 618, MKTG 613.  

MKTG 671 Applied Marketing Research  
3 hrs.  
Applications of marketing research methods for marketing management using a variety of analytical techniques. Required for all MBA marketing concentrations; may be waived for those having MKTG 471, or its equivalent, with a grade of "B" or better.  

MKTG 672 Distribution Strategy  
3 hrs.  
The design and implementation of distribution channels emphasizing customer service, least-total-cost design, and time-based competition. The course will include particular attention to the application of information technology; the integration of important strategic issues; the coordination of activities impacting channel efficiency; and the management of channel relationships. Prerequisite: MKTG 613.  

MKTG 673 New Product Management  
3 hrs.  
A systematic examination of market-driven processes for developing and launching new products and managing them over their life cycles. Includes application of marketing research along with consideration of organizational, technological, competitive, and societal issues. Prerequisite: MKTG 613.  

MKTG 674 Integrated Marketing Communications Strategy  
3 hrs.  
The course focuses on the study of the theoretical and practical sides of integrated marketing communications strategy development from a managerial perspective. Included is exposure to the elements of the integrated marketing communications mix (advertising, sales promotion, public relations, interactive marketing, and selected personal selling actions). Media strategy, creative strategy, integrated marketing communication objectives, and budget determination are also explored. Course format may include case studies and/or group projects. Prerequisite: MKTG 613.  

MKTG 675 Services Marketing  
3 hrs.  
The study of services marketing with an emphasis on service quality and customer satisfaction. Topics will include the nature and environment of services, customer expectations and satisfaction, TQM, competitive benchmarking, service quality measurement and gap analysis, relationship marketing, and strategy planning for services.  

MKTG 676 Multinational Marketing Management  
3 hrs.  
Managerial analysis of the global marketing environment and evaluation of market entry strategies including exporting, licensing and direct investment; developing and assessing multinational product, pricing, promotional and distribution strategies; critical discussion of contemporary international marketing issues. [Not recommended for students who have completed a recent undergraduate course in international marketing.] Prerequisites: BUS 615 and MKTG 613.  

MKTG 677 Buyer Behavior  
3 hrs.  
This course presents the theoretical and practical foundations of consumer and organizational behavior from a managerial perspective. Student will develop an understanding of why consumers and organization decision makers think and act as they do in the marketplace. Emphasis is placed on decision making processes. Resource availability, cultural and intercultural contexts, psychological and sociological influences on decision making are explored. Prerequisite: MKTG 613.  

MKTG 678 Special Topics in Marketing  
3 hrs.  
Critical examination of advanced topics within the marketing discipline. The course topic will be indicated in the student record. Repeatable for different topics. Prerequisite: MKTG 613.  

MKTG 679 Market Planning and Strategy  
3 hrs.  
Emphasis on developing comprehensive customer-driven marketing strategies and plans within dynamic competitive environments. Experiential application of advanced marketing concepts and techniques to marketing problem-solving situations. Prerequisite: MKTG 613.  

MKTG 680 Global Sourcing and Logistics  
3 hrs.  
This course will examine concepts in international purchasing and logistics to provide an in-depth understanding of the international supply chain. This course will examine how sourcing and logistics activities change and become more complex in the global environment. These aspects will be discussed in terms of opportunities, challenges and changing customer requirements presented by trading blocs, emerging markets and developing countries. Prerequisite: BUS 615.  

MKTG 697 Special Problems in Marketing  
3 hrs.  
Special problems based on individual and/or group need or interest under the direction of a member of the graduate faculty. Student application must be submitted to the individual faculty member and approved by the department chair prior to election of the course. May not be repeated for credit.  
Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.  

MKTG 700 Master's Thesis  
6 hrs.  

MKTG 710 Independent Research  
2-6 hrs.  

MKTG 712 Professional Field Experience  
2-12 hrs.  

MILITARY SCIENCE  
Military Science is an undergraduate program only. Please refer to the 1999-2001 Undergraduate Catalog for more information.
COUNSELOR EDUCATION AND COUNSELING PSYCHOLOGY

Dr. Joseph R. Morris, Chair
Main Office: 3102 Sangren Hall
Telephone: 387-5100 FAX: 387-5090
Mary Z. Anderson
Nicholas A. Andreadis
Gary H. Bischof
Robert Brinkerhoff
Stephen E. Craig
James M. Croteau
Lonnie E. Duncan
Elson S. Floyd
John S. Geisler
Arlen R. Gullickson
Suzanne M. Hedstrom
Alan J. Hovestadt
Kelly A. McDonnell
Joseph R. Morris
Patrick Munley
Theresa O’Halloran
Donna M. Talbot
Edward L. Trembley
Jennifer L. Wiebold

Master’s Programs:

Two master’s programs are offered by the Department of Counselor Education and Counseling Psychology: The Master of Arts in Counseling Psychology prepares graduates to be eligible for a limited license as a psychologist in the state of Michigan, and the Master of Arts in Counselor Education, with four program options, prepares graduates to be eligible for a license as a professional counselor.

Master of Arts in Counseling Psychology

Advisors:

Department Office, Room 3102, Sangren Hall.

The Master of Arts in Counseling Psychology provides, beyond the departmental required core course work, a focus on psychopathology, psychological assessment, counseling and psychotherapy theories and practices, and advanced practicum experiences. This program is selected by students seeking limited licensure as a psychologist in the State of Michigan.

Admission Requirements

Admission to the Master of Arts in Counseling Psychology is based upon grade point average, educational background, counseling and/or related experiences, as well as other factors. Prior to consideration by the M.A. Admissions Committee, applicants are required to complete and return a questionnaire prepared by the department. Interviews, letters of recommendation, test scores, and other materials may also be required.

Application deadlines are January 15 for the ensuing Fall semester and August 1 for the Winter semester. Applications materials may be obtained from the Office of Admissions and Orientation. Upon admission, each student is assigned an advisor who will assist in preparing a Program of Study. It is recommended that the program of study, which also serves as the application for candidacy, be completed during the first semester or session of enrollment.

The department recognizes the importance of increasing the educational opportunities of racial minority students, as well as the importance of ensuring an increased diversity of role models in the fields represented by its training programs. Therefore, the department strives to create an atmosphere conducive to the concerns of racial minorities and diverse populations, to integrate these concerns into programs and course offerings, and to fulfill its commitment to recruit, admit, support, and graduate a diverse population of students prepared for their chosen careers.

Program Requirements

The counseling psychology program requires a minimum of forty-eight semester hours of course work, including six, three-semester-hour, core courses. A curriculum guide for the program is available from the Department office.

Students are expected to work with advisors in order to be informed of policies, course offerings, prerequisites, and applications required for designated courses. A student’s performance and progress will be evaluated throughout the program. This process includes “check points,” such as candidacy, assignment of a grade below “B” in any course, and final evaluation prior to graduation. The student is referred to the Department’s Policy on Retention.

Master of Arts in Counselor Education

Advisors:

Department Office, Room 3102, Sangren Hall.
The four program options leading to a Master of Arts in Counselor Education are designed to provide individuals with criteria for entry level positions in counseling, rehabilitation, and student affairs practice in a variety of educational and non-educational settings. The four options are:

1. Community Counseling* with specialties in gerontology, substance abuse, holistic health, and marriage and family therapy.
2. School Counseling: Elementary or Secondary for Career Development Specialist*
3. Student Affairs in Higher Education: Administration of College Student Affairs or Counseling/Teaching*
4. Rehabilitation Counseling* is offered as part of the Rehabilitation Counseling/Teaching program (RCT) which is jointly administered by the Department of Counselor Education and Counseling Psychology and the Department of Blind Rehabilitation.

*A student admitted to a specific doctoral program, is assigned a temporary doctoral advisor. Later, as outlined in The Doctoral Handbook, a student selects and requests the appointment of a permanent Doctoral Committee.

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Doctor of Philosophy in Counseling Psychology

The doctoral program in counseling psychology is based on a philosophy that theory, research, and practice are interdependent and complementary dimensions of professional education in a scientist-practitioner training model. The educational curriculum and practical experiences of the program are designed to ensure competency in all three dimensions and to facilitate their integration in the development of a professional identity. Consistent with these goals, the curriculum in counseling psychology consists of course work and related experiences in four broad areas: 1) the science of psychology, 2) specialization in counseling psychology, 3) counseling and psychotherapy, and 4) research. The program recognizes that counseling psychologists may be employed in a variety of professional settings such as academic departments, college and university counseling centers, mental health agencies, private practices, and business and industry. Consequently, the program provides broad-based training appropriate to accommodate the potentially diverse career interests of its graduates.

Training typically fulfills expectations for psychologist license certification eligibility. The program is fully accredited by the American Psychological Association and is designated as a doctoral program in psychology by the Council for the National Register of Health Service Providers in Psychology.

Program Requirements

The credit hour requirements and the course work for the Counseling Psychology Program include:

1. Basic scientific core (33 hrs.)
   a. Research design and statistics (15 hrs.)
   b. Communication/language in Research* (12 hrs.)
   c. Supervised Practica (12 hrs.)
2. Communication/behavioral science (39 hrs.)
   a. Counseling Psychology (39 hrs.)
   b. Clinical Practice (6 hrs.)
   c. Supervised Practica (3 hrs.)
   d. Cognitive-affective basis of behavior (3 hrs.)
   e. Social basis of behavior (6 hrs.)
   f. Individual behavior and human development (6 hrs.)
3. Specialization in Counseling Psychology (39 hrs.)
   a. Supervised Practica (36 hrs.)
   b. Supervised Practica (3 hrs.)
   c. Supervised Practica (3 hrs.)
4. Doctoral Dissertation (12 hrs.)
5. Pre-doctoral Internship (4 hrs.)

Doctoral Programs:

Two doctoral programs are offered by the Department Counselor Education and Counseling Psychology. The doctoral program in Counseling Psychology leads to a Doctor of Philosophy (Ph.D.) and holds full accreditation by the American Psychological Association (APA). The doctoral program in Counselor Education leads to a Doctor of Philosophy (Ph.D.) and is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP). Three options exist in this latter program: Counselor Education and Supervision, Counseling and Leadership, and Student Affairs in Higher Education.

Admission Requirements

Admission to a specific doctoral program or option is considered by the appropriate departmental training committee. Applicants should request an introduction of information from the Office of Admissions and Orientation and from the Department.

A student admitted to a specific doctoral program is expected to follow the policies, procedures, code of ethics, and course requirements for that program. A student may not change to another option without formal approval. Each student, upon admission to a doctoral program, is assigned a temporary doctoral advisor. Later, as outlined in The Doctoral Handbook, a student selects and requests the appointment of a permanent Doctoral Committee.

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   a. Supervised Practica (36 hrs.)
   b. Supervised Practica (3 hrs.)
   c. Supervised Practica (3 hrs.)
4. Doctoral Dissertation (12 hrs.)
5. Pre-doctoral Internship (4 hrs.)

Total Hours 97

Counseling Psychology students are expected to demonstrate competencies in psychological
theory, practice, and research by passing a series of doctoral comprehensive examinations in the following areas: 1) counseling psychology information and knowledge; 2) scholarly inquiry and communications; and 3) professional work sample.

Doctor of Philosophy in Counselor Education

Program Requirements

All students enrolled in one of the three options in the doctoral program must complete the following set of requirements in addition to coursework related to a particular specialty:

1. Professional Core (21 hrs.)
   a. Professional Seminar (3 hrs.)
   b. Supervision (3 hrs.)
   c. Advanced Theory (3 hrs.)
   d. Multicultural Counseling and Psychotherapy (3 hrs.)
   e. Vocational Development Theory (3 hrs.)
   f. Psychoeducational Consultation (3 hrs.)
   g. Systematic Case Studies (3 hrs.)
   h. Family to all Students (3 hrs.)

2. Scientific Inquiry Core (27 hrs.)
   a. Research Design and Data Analysis (6 hrs.)
   b. Elective Research (3 hrs.)
   c. Elective in Research Design, Data Analysis, or Data/Program Evaluation (3 hrs.)
   d. Qualitative Research (3 hrs.)
   e. Communication Skills Research Tool Competency (3 hrs.)
   f. Dissertation Seminar (3 hrs.)
   g. Doctoral Dissertation (12 hrs.)

Counseling and Leadership

The significant growth in the number of community counseling centers, mental health agencies, and opportunities for school counselors has created a need for professionals who possess excellent counseling skills and sound leadership qualifications. Upon completion of the Counseling and Leadership doctoral option, graduates are expected to develop leadership skills by actively participating in professional organizations which promote and enhance the school counseling and related personnel fields.

The Counseling and Leadership option is accredited by the Council for the Accreditation of Counseling and Related Educational Programs and also leads to a license as a Professional Counselor in the State of Michigan.

Counselor Education and Counseling Psychology Courses (CECP)

Open to Upperclass and Graduate Students

CECP 580 Principles of Counseling and Guidance

3 hrs.

The content of this introductory course focuses on the concepts underlying school guidance programs and related service delivery systems. Open to all students but is not intended for counseling majors.

CECP 583 Workshops in Counseling Education and Counseling Psychology

1–4 hrs.

Workshops designed to enhance skill development related to Counseling Education and Counseling Psychology practices. Open to all students, but is not intended for counseling majors. May be repeated for credit.

Open to Counselor Education and Counseling Psychology Graduate Students Only

CECP 601 Research Methods

3 hrs.

The study of research designs and techniques utilized in the field of Counselor Education and Counseling Psychology. Students are expected to formulate and submit a research project in their area of specialization.

CECP 602 Group Dynamics and 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.

CECP 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 the student's area of specialization. Issues related to testing will be reviewed, including legal matters, ethical concerns, and use of tests with persons of varying social, economic, cultural, and ethnic backgrounds.

CECP 604 Counseling Techniques

3 hrs.

An introductory laboratory study of the concepts and skills required in interviewing and counseling. In addition to developing basic techniques and skills, special attention will be given to the impact of interview settings, interview/counselor attire, sex, ages of clients, and their social, economic, cultural, and ethnic backgrounds. Graded on a Credit/No Credit basis.

Research Design and Data Analysis (6 hrs.)

a. Research Design and Data Analysis (6 hrs.)
    b. Qualitative Research (3 hrs.)
    c. Elective in Research Design, Data Analysis, or Data/Program Evaluation (3 hrs.)
    d. Qualitative Research (3 hrs.)
    e. Communication Skills Research Tool Competency (3 hrs.)
    f. Dissertation Seminar (3 hrs.)
    g. Doctoral Dissertation (12 hrs.)
CECP 605 Professional Issues and Ethics 3 hrs.
Identification and discussion of issues in counseling, psychological services, and related programs will be the focus of this course. The study of ethical standards of relevant professional organizations. A presentation of case studies applicable to an understanding of current issues, multicultural concerns, legal decisions, and ethics in the field.

CECP 607 Multicultural Counseling and Psychology 3 hrs.
This course is designed to help students develop knowledge, skills, and attitudes more effective work as helping professionals with culturally different groups and individuals. Substantial attention is given to interpersonal issues, concerns related to different cultures, and programming in a variety of settings. Prerequisites: CECP 604 and 611.

CECP 608 Counseling Across the Life Span: A Family Systems Perspective 3 hrs.
The course describes counseling implications for assessing and enhancing human development across the life span from a family systems perspective. The content includes: (a) theories of human development; (b) the stage of family development; (c) factors which influence family system patterns (e.g., race, socioeconomic status, sexual/affectional orientations, childcare status, marital status, and divorce or blending of families); and (d) implications for assessing and enhancing the development of family members and family systems within each stage.

CECP 610 Career Development: Theory and Practice 3 hrs.
Course content includes: (1) a study of the world of work as it impacts the psychological and sociological life of the individual; (2) an examination of career development theory, decision-making, and the application of counseling and psychotherapy; (3) the identification of informational resources related to career choice; and (4) an exploration of the needs and concerns of clients from a variety of cultural backgrounds.

CECP 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 behavioral the phenomenological, and the existential are studied and compared.

CECP 612 Counseling Practicum 4 hrs.
This course emphasizes practical work in the student's area of specialization. Counseling experiences are provided in a laboratory setting so that students can apply knowledge and skills acquired during previous studies. Each student, by participation and observation, will be expected to work with clients from differing social, economic, cultural, and ethnic backgrounds. Graded on a Credit/No Credit basis. Approved application required.

CECP 613 Field Practicum 2 hrs.
A supervised field placement in a setting appropriate to the student's M.A. option arranged in consultation with advisor and department coordinator. A minimum of 600 hours of work experience are required for all M.A. options. Graded on a Credit/No Credit basis. Prerequisite: Consent of advisor.

CECP 614 Student Personnel Administration Practicum 4 hrs.
This course emphasizes practical experience in the student's area of specialization. Student personnel administrative experiences are provided in selected supervised settings so that students can apply knowledge and skills acquired during previous studies. Graded on a Credit/No Credit basis.

CECP 615 Practicum in School Psychology 3 hrs.
This course emphasizes practical application of the principles of school psychology. Relevant experiences are provided under supervision in order for students to acquire and develop skills learned in previous studies. Students practice in a school setting and work with a variety of presenting problems, educational staff, and school-aged youth.

CECP 620 Foundations of Rehabilitation Counseling 3 hrs.
This course surveys the role of the rehabilitation counselor in establishing eligibility, planning services, the tracking system, counseling, case management, work evaluation, work adjustment, supported employment, transition, client assistance programs, job analysis, job development, postemployment, and advocacy. Major emphasis is given to the operation of the state vocational/federal system.

CECP 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.

CECP 622 Psychoeducational Consultation 3 hrs.
A study of the process of consultation with emphasis upon the consultation process, the consultation model, and the consultation process in the context of educational and psychological consultation.

CECP 623 College Student Development 3 hrs.
Explores the nature and development of college students pertaining to student affairs. Theories of college student development, administrative/management aspects of program services are included. Prerequisites: CECP 621 and 622.

CECP 624 College Students and the Educational Environment 3 hrs.
This course is designed to help participants understand the impact of campus environments on students, faculty, and staff. Theories and concepts to assist student affairs professionals with understanding the interaction between students (and others) and collegiate environments will be presented. Opportunities for theory-to-practice experiences will be provided. Prerequisites: CECP 623 and 633 or permission of the instructor.

CECP 625 Legal Issues in Higher Education 3 hrs.
The litigious nature of American (U.S.) society has made knowledge of legal issues related to liability, contracts, sexual harassment, and the rights of students with disabilities. Emphasis is placed on accuracy of presentation.

CECP 626 Applications of Student Affairs Management 3 hrs.
Emphasis will be upon administration/management aspects of student affairs in higher 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.

CECP 627 Community Agency Counseling and Administration 3 hrs.
This course is designed to acquaint participants with a broad range of policies and procedures of administration and to develop professional counseling skills in a variety of settings. The student will be able to develop an entry level position in a secondary education setting.

CECP 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 addicted individual. The emphasis in the principles of intervention and clinical practice will continue to be taught within the student's specialization. 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 ADA 631 and SWRP 663.

CECP 632 Seminar in Substance Abuse II 3 hrs.
Continuation of CECP 631. This course is cross-listed with ADA 632 and SWRP 665.

CECP 633 Student Affairs in Higher Education 4 hrs.
The introductory course in student affairs will include a section on the history and development of U.S. higher education. The second phase of the course will focus on the following areas in student affairs: (1) history; (2) philosophical foundations; (3) professional organizations; and (4) functional areas.

CECP 650 Intellectual Assessment 3 hrs.
This course provides instruction in clinical assessment with primary emphasis on individual student assessment techniques. Emphasis is placed on accuracy of administration, scoring, and interpretation of results.
psychological results via written and oral reports. Laboratory experience provides instruction in the administration of the Wechsler scales, Binet IV, and other individually administered measures of intellectual functioning. Additional topics include theories of intellectual development, neuropsychological assessment, test bias, and procedures for non-biased assessment.

Prerequisite: CECP 603.

CECP 661 Personality Assessment 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. Primary attention given to the MMPI. Additional emphasis includes study of the Mlton, 16-FF, CPI, and other measures.

Prerequisite: CECP 603.

CECP 654 Psychoeducational Assessment 3 hrs.
This course combines lecture and laboratory experience in psychoeducational assessment with primary emphasis on academic learning problems. Diagnostic assessment of reading, math written language, perceptual/motor, adaptive behavior, and social problems behavior is presented. Several academic screening and diagnostic instruments are examined. Particular emphasis is given to accuracy of administration, scoring and interpretation via oral or written reports.

Curriculum-based measurement procedures designed to link assessment to intervention more effectively are also examined.

Prerequisites: CECP 603 and 650.

CECP 656 Seminar in School Psychology 3 hrs.
This course examines current professional practices in school psychology. Specific issues include the history of the profession, role and function of school psychologist, research methodology applied in the field, and issues surrounding professional conduct, ethics, and the legal regulation of school psychology. More advanced issues address psychological assessment, legal regulation of school psychology, consultation and intervention, organizational development in schools, and multiculturalism.

CECP 661 Foundations of Systemic Family Therapy 3 hrs.
An in depth focus on the theoretical foundations of family therapy. Emphasis is placed on systems theory and recent theoretical developments. Nomenclature and concepts particular to family therapy are stressed. Course content also includes an overview of the historical development, major models, and diversity issues related to family therapy.

CECP 662 Couple Interaction and Therapy 3 hrs.
Application of a systemic perspective to the assessment and treatment of couples who are seeking therapy. Models of couple therapy are examined and applied to problems common to couples. Attention is given to gender, race, culture, and couple forms.

Prerequisite: CECP 661.

CECP 663 Family Interaction and Therapy 3 hrs.
Application of a systemic perspective to the assessment and treatment of families who are seeking therapy. Models of family therapy are examined and applied to a variety of families and common problems. Multicultural and gender issues are integrated in course content.

Prerequisite: CECP 661.

CECP 664 Advanced Family Therapy 3 hrs.
This is an advanced didactic and experiential course in marital and family therapy. Goals include the assimilation, integration, and application of theoretical approaches to the field. Further emphasis is placed on the development of the student's therapeutic expertise in MFT intervention techniques and strategies. Class activities include use of exemplary cases, video tapes, role playing, and possible instructor participation in counseling as a consulting therapist.

Prerequisites: CECP 661 and either CECP 662 or 663, or permission of instructor.

CECP 665 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. Prerequisites: CECP 661 and 662, or permission of instructor.

CECP 673 Advanced College Student Development Theory 3 hrs.
This course continues the examination of student development theories and their application to student affairs practice. The course will increase the complexity of understanding about the development of college students. Traditional theories and new theories will be critically reviewed for their inclusion of diverse populations and their applicability to the range and diversity of current and future students.

Prerequisite: CECP 623 or equivalent.

CECP 674 Psychological Development Theory 3 hrs.
The course examines psychological development from a number of perspectives including psychodynamic object-relations and social learning. The course is designed for counselors and counseling psychologists who wish to view their work in a developmental framework. Implications of developmental theory for counseling and psychotherapy are emphasized.

Prerequisite: CECP 675 Counseling Theories and Practices 3 hrs.

This is an advanced course 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 seeking clients on a paid or volunteer basis.

Prerequisites: CECP 611, 612, and 621 or equivalents.

CECP 680 Promising In Counseling Psychology 3 hrs.
This seminar will address historical and current issues affecting counseling psychology. Specific areas studied include professional identity, American Psychological Association, in particular Division 17 and other divisions related to the science and practice of counseling psychology, research and publishing, professional conduct and consumer issues, diverse populations, counseling psychology-related organizations, training issues, and the future of counseling psychology.

CECP 681 Professional Seminar in Counseling, Leadership, and Student Affairs 3 hrs.
This seminar explores current professional issues such as professional identity, career options, professional organizations, and professional practice literature for doctoral students in Counseling Leadership and Student Affairs options. Prerequisite: Admission to a CLAS doctoral option in the department.

CECP 686 Topical Seminars 1–4 hrs.
Seminars to study current topics relevant to counseling psychological services and related fields. For advanced graduate students with sufficient maturity and experience to engage in seminar-structured learning. Topics will be designated by professors offering the seminars. May be repeated for credit.

CECP 691 Supervision in Counseling and Psychotherapy 3 hrs.
This course is intended for practitioners and advanced graduate students who plan on assuming supervisory roles in counseling and psychotherapy. Attention will focus on models, techniques, roles and functions for supervision in a variety of organizational settings. Students will be expected to demonstrate supervisory style in the laboratory setting. Prerequisite: CECP 693 permission of the instructor.

CECP 692 Advanced Practicum in Counseling and Psychotherapy 4 hrs.
An advanced practicum designed to increase the competency of experienced counselors and therapists. Staffing conference approach to the analysis of continuing cases presented by the participants will be supplemented by taped and live demonstrations of advanced techniques. In addition to four hours of group supervision sessions, students are also required to engage in counseling psychotherapy and individual supervision for six clock hours per week. Graded on a Credit/No Credit basis.

Prerequisite: Permission of instructor.

CECP 693 Doctoral Practicum 1–4 hrs.
Supervised practicum for doctoral students with emphasis in (a) Individual Counseling and Psychotherapy, (b) Group Counseling, (c) Marital and Family Therapy, (d) Career Counseling, and (e) Clinical Supervision.

CECP 694 Vocational Development Theory 3 hrs.
An advanced course that involves the critical examination of existing theories of vocational development, the motivation to work and their application to the counseling therapeutic process. Research pertaining to vocational development and the world of work will be analyzed. Prerequisite: CECP 610.

CECP 698 Readings in Counselor Education and Counseling Psychology 1–4 hrs.
Advanced students with good academic records may elect to pursue independently the study of a special topic. The topic chosen must be approved by the instructor and arrangements made with instructor's consent. May be selected more than once; total may not exceed four hours.

CECP 699 Dissertation Seminar 3 hrs.
Designed to orient students to the dissertation process. Students interested in beginning the dissertation process may take this course with the concurrence of their doctoral committee.
chairperson. Graded on a Credit/No Credit basis.

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

CECP 700 Master’s Thesis
6 hrs.

CECP 710 Independent Research
2-6 hrs.

CECP 712 Professional Field Experience
2-12 hrs.

CECP 725 Doctoral Research Seminar
2-6 hrs.

CECP 730 Doctoral Dissertation
12 hrs.

CECP 732 Doctoral Clinical Internship
1-4 hrs.

CECP 735 Graduate Research
2-10 hrs.

EDUCATIONAL LEADERSHIP

For information on the Master of Arts in Educational Leadership, the Specialist in Education in Educational Leadership, and the Doctor of Education in Educational Leadership, see the Department of Teaching, Learning, and Leadership. Dr. Van E. Cooley, Chair
Main Office: 2112 Sangren Hall
Telephone: 387-3465
FAX: 387-2682

For information on the Master of Arts in Educational Leadership with a Concentration in Educational Evaluation, Measurement, and Research Design, as well as the Doctor of Philosophy in Educational Leadership with a Concentration in Educational Evaluation, Measurement, and Research Design, see the Department of Educational Studies: Dr. Elizabeth Whitten, Chair
Main Office: 3506 Sangren Hall
Telephone: 387-5935
FAX: 387-5703

Educational Leadership Courses (EDLD)

Open to Graduate Students Only

EDLD 600 Academy
1-4 hrs.
Topics of interest to professionals in the field of educational leadership are examined in academies offered by the department. May be repeated. May not be applied to degree programs. Graded on a Credit/No Credit basis.

EDLD 601 Workshop Seminar
1-4 hrs.
Specialized studies requiring integration of theory and practice with application of topics studied provided through site practices, (e.g., personnel evaluation, use of personnel assessment techniques, evaluation of curriculum and instruction). May be repeated. May not be applied to degree programs in educational leadership. Total credits not to exceed six hours.

EDLD 602 Educational Leadership
3 hrs.
This course is an introduction to educational leadership and leadership theory and practice. It provides the foundation for leadership in educational programs and institutions. Students will be required to demonstrate an understanding of transformational leadership and other leadership theories, effective communication and problem solving, motivation and decision making, organizational change and renewal, and consensus building and conflict resolution.

EDLD 604 Contemporary Educational Scene
3 hrs.
Study and critical analysis of issues and trends influencing design, funding, and delivery of educational programs. Special emphasis on changes in societal expectations and values. Discussion of multicultural and international issues and needs of special populations and groups. Prerequisite: EDLD 602.

EDLD 606 Systems Thinking
3 hrs.
This course will focus on steps that leaders take in developing and maintaining a learning organization. The emphasis will be on providing students the tools to develop productive long-term organizational relationships that contribute to worker satisfaction and increased worker commitment. Students will be required to provide a rational for systems thinking, establish a framework to develop team learning, and demonstrate an understanding of shared vision, laws of the fifth discipline, organizational learning disabilities, archetypal patterns, and the importance of systems thinking on mental moods. Prerequisites: EDLD 602 and EDLD 640 or ED 601.

EDLD 609 Theories of Leadership
3 hrs.
Critical examination of principles of leadership theory construction, practice with and development of skills in evaluating contending theoretical perspectives regarding leadership. Prerequisite: Admission to the doctoral program.

EDLD 640 Introduction to Research
3 hrs.
This course is designed to develop skills in the fundamentals of research design and the uses and interpretations of research findings. Each student is expected to prepare a review of literature and a design for a research study.

EDLD 641 Measurement Techniques in Education
3 hrs.
The criteria by which instruments are selected and developed serve as the critical focus of this course. Information regarding the theory and practice of measurement and testing are applied to educational settings. Students are expected critically to evaluate instrumentation as well as to develop a plan for the creation of an instrument. Prerequisite: EDLD 640.

EDLD 642 Program Evaluation
3 hrs.
Emphasis is on the theory of program evaluation, on techniques used in program evaluation, and on the standards of quality professional practice. Students are expected to apply the principles of evaluation to design problems. Prerequisite: EDLD 640.

EDLD 643 Personnel Evaluation
3 hrs.
Concepts and standards for design of personnel evaluation systems. Course requires design of a personnel evaluation system and an evaluation of the personnel evaluation system. Prerequisites: EDLD 640 and permission of advisor.

EDLD 645 Research Design and Data Analysis I
3 hrs.
The study of the principles of research design and data analysis is pursued at both the conceptual and applied levels. Emphasis is on the development of the conceptual skills of design analysis and interpretation. Techniques of statistical analysis include the use of computer programs for data analysis. Prerequisite: EDLD 640.

EDLD 646 Research Design and Data Analysis II
3 hrs.
A continuation of the study of the principles of research design and data analysis techniques. Advanced skills in design and analysis are developed in addition to an examination of design issues in educational settings. Skills in the use of computer programs for data analysis are required. Prerequisites: Admission to a doctoral program and EDLD 645.

EDLD 647 Survey Research Design and Analysis
3 hrs.
The principles and practices of survey research design and analysis are the focus of this course. Critical examination is made of the appropriate uses of survey research in response to educational issues. Students are expected to develop instrumentation used in survey research, to engage in the design of a survey research study in a field setting, and to critique survey studies and findings.

EDUCATIONAL LEADERSHIP 123
Prerequisite: EDLD 640 or permission of instructor.

EDLD 640 Techniques of Naturalistic Inquiry
3 hrs.
A study of the philosophical and methodological foundations of naturalistic research in education. Students will develop skills in planning and conducting naturalistic studies in education. Standards for judging naturalistic inquiry will be studied and applied to selected naturalistic study reports.
Prerequisite: EDLD 640.

EDLD 651 Advanced Applications of Measurement Methods
3 hrs.
Intensive study of applications of educational measurement theory and methodology to specific needs for instrumentation in development. Students will engage in development, validation, and application of new instruments for collecting educationally important data. Prerequisites: EDLD 641 and EDLD 646.

EDLD 652 Evaluation Practicum
1–6 hrs.
Planned field applications of principles of program evaluation as well as approved application and permission of instructor required. May be repeated for credit to a maximum of six hours. Graded on a Credit/No Credit basis.

EDLD 655 Research Methodology Seminar
3 hrs.
A seminar for students seeking advanced theoretical understanding and skill development in educational research methodologies. New methodologies and current research dilemmas are the central focus of the seminar. Prerequisites: EDLD 646 and permission of advisor.

EDLD 656 Theories of Measurement Seminar
3 hrs.
A seminar for students seeking advanced, theoretical understanding of the principles of measurement. Theories of instrument construction beyond classical test theory (e.g., item response theory and generalizability theory) are applied to instruments relevant to education. Prerequisite: EDLD 651.

EDLD 657 Evaluation Seminar
3 hrs.
An advanced seminar for the study of theoretical and practical problems in evaluation. Issues of ethics and quality in evaluation are addressed. Prerequisite: EDLD 642.

EDLD 660 Site Based Budgeting
3 hrs.
Development of knowledge and skills needed in decentralized (site-based) budgeting. Topics include budgeting theories and budgeting processes. The course examines the impact of process on the budgetary decisions of revenue, expenditure, balance, and implementation. Advantages and disadvantages of site based budgeting are examined as issues of accountability and equity. Prerequisites: Recommended EDLD 640 and EDLD 602 or equivalent.

EDLD 661 School Law
3 hrs.
Study of federal and state constitutions, legislation, regulatory guidelines, and court decisions as related to operation of educational institutions and organizations. Development of awareness and knowledge of legal parameters related to education. Students will be required to synthesize legal mandates and district responsibilities, apply knowledge of common law and contractual requirements, analyze constitutional provisions such as the separation of church and state, analyze special education litigation, and demonstrate an understanding of legal provisions for student participation, student and parent rights, torts, and liabilities. Completion of EDLD 602 before enrollment in EDLD 661 is recommended.

EDLD 662 School Business Management
3 hrs.
Development of knowledge and skill in management of business operations in schools: budget planning, budget management, standardization, accounting, inventory of equipment and supplies, use of standard budget forms, preparation of required reports. Students will be required to analyze fiscal and non-fiscal resources, plan for faculty and staff involvement in efficient budget planning, and demonstrate an understanding of managing fiscal and material assets, school accounting procedures, consensus building, and budget evaluation. Prerequisites: EDLD 602.

EDLD 663 Personnel Administration
3 hrs.
Systematic study of personnel administration tasks and functions as applied to education and training. Subtopics include recruitment, selection, orientation, supervision, appraisal, and development of personnel. Emphasis placed on understanding of standards for legal and valid personnel administration practices. Effect of style and behaviors on employee satisfaction and/or productivity are studied. Prerequisites: EDLD 620 and 640.

EDLD 664 Curriculum Development
3 hrs.
This course will provide an introduction to the principles of curriculum and instructional alignment, design, implementation, and evaluation. There will be a strong focus on the foundations and history of curriculum inquiry and school reform, hidden curriculum, ideology, and culture as they affect the organization and administration of the scope and sequence of curricular offerings in educational institutions. Students will be required to design a curriculum aligned with standards, benchmarks, and standardized tests. In addition, students will be required to demonstrate knowledge of ideological critique, effective instructional strategies, the use of technology, and curriculum evaluation. Prerequisites: EDLD 602 and EDLD 640 or ED 620.

EDLD 665 The Elementary Administrator
3 hrs.
This course provides a systematic study of the tasks and functions of elementary and middle school administration. Emphasis is given to planning within the context of the community, planning and evaluation for program development and school improvement, and planning for supervision of personnel and programs. Students will be required to develop a vision statement and strategic plan based upon the principles of transformative leadership, appraise the duties to various building staff members, and demonstrate an understanding of scheduling, parent and community involvement, instructional procedures that support a safe and positive school climate, motivational strategies for effective instructional leadership, and legal and contractual issues related to the principalship. Prerequisites: EDLD 602 and EDLD 640 or ED 601.

EDLD 672 School Finance
3 hrs.
Intensive instruction and discussion of political and economic value premises involved in the funding and financing of schools. Critical examination of alternative patterns for design of public funding formula and practices for funding public school operations. Patterns of fiscal resource development other than public funds as a means of financing public or private education. Completion of EDLD 662 before enrollment in EDLD 672 is recommended. Prerequisites: EDLD 602 and 640.

EDLD 673 Supervision
3 hrs.
This course is a study of the principles and practices for the effective supervision of personnel. It will focus on the practices of developmental supervision, mentoring, professional development and renewal, and effective instruction. Students will be required to demonstrate understanding of effective instruction and how to develop a learning organization that supports instructional improvement, models of effective staff development and school renewal, and mentoring and clinical supervision that enhance growth and development. Special attention is given to differing perspectives on the supervision function within organizational contexts. Prerequisites: EDLD 602 and EDLD 640 or ED 601.

EDLD 674 School Community Relations
3 hrs.
This course will provide a thorough examination of the school and its interaction with the community. Consideration will be given to internal and external "communities" and the relationships between and among the communities of the school as an organization. Role of communications in school-community relations and consideration of the balance of rights and responsibilities as these communities and communities will also be addressed. Students will be required to conduct a needs assessment, establish a conflict resolution program and a crisis intervention plan, and demonstrate an understanding of public relations, communication, evaluation of school-community relations. Prerequisite: EDLD 602.

EDLD 679 Capstone Experience
3 hrs.
The capstone is a combination of an eighty-seven hour supervised internship and thirty-three hours of class work. The purpose of the capstone is to merge theory with practice through discussion, case studies, simulations, completion of field-based assignments, and interaction with educational leaders in public and private schools. Prerequisites: Students must complete all courses required in the Master of Arts in Educational Leadership prior to registering for EDLD 679.

EDLD 680 The Superintendency
3 hrs.
Examination of the line and staff roles involved in the "superintendency" with emphasis on the role of the superintendent of schools as the chief executive officer in school and school-related organizations. Prerequisites:
Master of Arts in Educational Leadership or equivalent and permission of advisor.

EDLD 681 Policy Development
3 hrs.
The content of this course includes examination of policy issues, purposes, functions, methods, and approaches for policy development. Critical review of development of policies for educational institutions. Prerequisites: Master of Arts in Educational Leadership or equivalent and permission of advisor.

EDLD 682 Computer Applications in Administration
3 hrs.
Study, design, and application of computer technologies in performance of administrative functions and tasks in educational organizations. Prerequisite: Permission of advisor.

EDLD 685 School Facilities Planning
3 hrs.
This course will provide a study in evaluation, design, and planning of the present and future facilities and equipment requirements for the school organization. Attention will be given to the educational program and stated philosophy of schools and to the present and future needs of the student and the learning environment respective to facilities development. Integration of technology in the planning and design of facilities will be addressed as well as the human physiological and psychological needs. Current state and Federal regulations will be reviewed as they relate to new facilities and to remodeling of current facilities. Prerequisites: EDLD 602 and 640.

EDLD 690 Professional Development Seminar
3 hrs.
Field-based and performance-based application of knowledge to major function/task areas of leadership in organizations with emphasis on schools as organizations. Emphasis on career planning and placement for persons enrolled. May be repeated. Total credits not to exceed six hours. Prerequisite: EDLD 602 or permission of instructor.

EDLD 695 Dissertation Seminar
3 hrs.
This seminar is designed for the doctoral student who has identified the topic for his/her dissertation research and will focus on the production and evaluation of proposals for the doctoral dissertation. Graded on a Credit/No Credit basis. Prerequisites: Successful completion of departmental core, comprehensive examination, simultaneous registration in one hour of EDLD 730, and approval of advisor.

EDLD 698 Readings in Educational Leadership
1-4 hrs.
Directed individual study of topics or bodies of knowledge not otherwise treated in department courses. A maximum of four hours earned in EDLD 698 is applicable on degree programs. Prerequisite: Permission of advisor. Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

EDLD 700 Master's Thesis
6 hrs.

EDLD 710 Independent Research
2-6 hrs.

EDLD 712 Professional Field Experience
2-12 hr.

EDLD 720 Specialist Project
6 hrs.

EDLD 725 Doctoral Research Seminar
2-6 hrs.

EDLD 730 Doctoral Dissertation
15 hrs.

EDLD 735 Graduate Research
2-10 hrs.

EDUCATIONAL STUDIES
Dr. Elizabeth Whitten, Chair
Main Office: 3506 Sangren Hall
Telephone: 387-5935
FAX: 387-5703
Brooks Applegate
James Bosco
MaryAnne Bunda
Paul Farber
Alonzo Hannaford
Barbara Lois Harris
George Haus
Gunila Holm
Dona Gordon Icabone
Paula Kohler
Elena Lisovskaya
Gerald Pillsbury
Howard Poole
G. Thomas Rey
James Sanders
Annette Skellenger
Sarah Summy
Daniel Stufflebeam
Elizabeth Whitten

Master of Arts in Special Education
Advisors:
Barbara Harris, George Haus, Dona Icabone, Paula Kohler, Howard Poole, Annette Skellenger, Sarah Summy, Elizabeth Whitten
Room 3506, Sangren Hall

The Master of Arts in Special Education is based on an Information Literacy Model. Students gain skill in locating, organizing, critically evaluating, using and disseminating information; effectively using the ever-expanding information base to solve problems in the field of special education; and producing new information related to the field. Competencies in information literacy are acquired via completion of a nine semester hour core of courses (SPED 601, 603, and 637).

Admission Procedures, all options
Students seeking admission to the Master of Arts in Special Education program should request a Master's Degree Program Application packet from the Department of Educational Studies. They must follow all instructions on the Graduate Self-Managed Application form and send the following supplemental materials to the Department of Educational Studies: 1) Department of Educational Studies Master's Degree Program Application, 2) copy of teaching certificate/endorsement(s), 3) current resume, 4) written statement of experience and professional goals, and 5) two reference forms. Complete files are reviewed four times a year in October, February, May, and August. Applications are evaluated on the basis of: 1) undergraduate grade point average (a graduate grade point average may be used if at least 9 hours of recent and relevant course work have been completed), 2) Graduate Record Examination (GRE) scores - verbal, quantitative, and analytic, 3) special education experience, 4) congruence of goals and requested program option, 5) writing skills, and 6) references.

Program Requirements, all options
All students who receive a Master of Arts in Special Education, regardless of option, must complete the following requirements:
1. A minimum of thirty-seven semester hours of prescribed graduate level work with a point-hour ratio of at least 3.00. Advisors will designate specific course and hour requirements for each option described below.
2. A comprehensive written examination. This examination may be taken after the student has completed a minimum twenty semester hours. Responsibility for scheduling this examination is assumed by the graduate student after consulting with the program advisor.

MASTER TEACHER OPTION

This option is designed for persons who have special education certification and who plan to remain directly involved with students with disabilities in an instructional capacity or who plan to continue to pursue advanced graduate preparation beyond the master's degree. Additional special education teaching endorsements that can be earned through this option are Emotionally Impaired, Learning Disabled, Mentally Impaired, and Visually Impaired.

Prerequisites
1. Michigan Teaching Certificate or equivalent
2. Endorsement in at least one area of Special Education
3. Admission by Department of Educational Studies

CLINICAL TEACHER OPTION

This option is available to certified teachers seeking a master's degree and an initial endorsement in one of the following areas of special education: Emotionally Impaired, Learning Disabled, Mentally Impaired, or Visually Impaired.

Prerequisites
1. Michigan Teaching Certificate or equivalent
2. Admission by Department of Educational Studies

SPECIAL EDUCATION TECHNOLOGY OPTION

This option, designed for persons who have special education certification, provides comprehensive knowledge, skills, and experience in the development and use of various special education technologies.

Prerequisites
1. Michigan Teaching Certificate or equivalent
2. Endorsement in at least one area of Special Education
3. Admission by Department of Educational Studies

SPECIAL EDUCATION ADMINISTRATION OPTION

This option, designed for certified and experienced special education teachers, provides course work and field-based experiences necessary to gain State of Michigan Central Office Administrator Certification and approval as either a Director of Special Education or a Supervisor of Special Education.

Prerequisites
1. Michigan Teaching Certificate or equivalent
2. Endorsement in at least one area of Special Education
3. Admission by Department of Educational Studies

Master of Arts in Educational Leadership

EDUCATIONAL EVALUATION, MEASUREMENT, AND RESEARCH DESIGN, 33 hrs.
Advisors: Brooks Applegate, Mary Anne Bunda, James Sanders, Gunilla Holm, JianPing Shen
Room 3312, Sangren Hall

The Department of Educational Studies offers the Master of Arts in Educational Leadership with a concentration in Educational Evaluation, Measurement, and Research Design. Students completing this degree program will be qualified to serve in a staff position in educational evaluation, testing, or research units in school and non-school settings, or in local, state, or federal government agencies.

Admission Procedures

Students seeking admission to this degree program should request a Master's Degree Program Application packet from the Department of Educational Studies. Applicants must follow all instructions on the Graduate Self-Managed Application form and send all supplemental materials to the Department of Educational Studies.

Program Requirements

This master's program requires the satisfactory completion of EDLD 602, Educational Leadership; EDLD 640, Introduction to Research; EDLD 642, Measurement Techniques in Education; EDLD 642, Program Evaluation; EDLD 645, Research Design and Data Analysis I; EDLD 647, Survey Research Design and Analysis; EDLD 673, Supervision; and EDLD 712 Professional Field Experience, 3 credit hours. In addition, 9 credit hours are chosen, with advisor approval, from courses designed to complement and strengthen skills acquired by the student.

EDLD course descriptions will be found in this catalog under the section entitled Educational Leadership, pages 123-125.

Certificate Program in Educational Technology

Advisors: James Bisco, Howard Poole
Room 2112, Sangren Hall

This graduate certificate program provides a strong framework for the development of educational technology competencies for individuals that are employed or seek professional employment in the field of education as technology specialists. The audience for the program is anticipated to be inservice teachers interested in educational technology in the classroom, inservice teachers with more advanced technology knowledge interested in competencies and responsibilities required for building level technology specialists, inservice teachers or individuals who desire or assume the position of district technology coordinator, and district administrators and staff who desire advanced skills in the area of educational technology coordination.

Admission Requirements

In addition to meeting the requirements of The Graduate College, all applicants must possess a baccalaureate degree in education or a related field, provide a statement of purpose (1,000-1,500 words), and submit the application form required by the department. Admission decisions will be made by the department's Graduate Studies Committee, following a review of the applicant's admission materials and a recommendation by an ad hoc educational technology advisory committee.

Program Requirements

Students will complete a planned program of study consisting of 15-21 hours of course work with an overall grade point average of 3.0 or better, with no course grade below a "C." The courses include EDT 540, Introduction to Computing and Technology for Productivity; EDT 541, Telecommunications for Teaching and Learning; EDT 542, Teaching with Technology, Design and Development for Learning; EDT 644, Advanced Information Technologies for Instructional Technology; EDT 645, Technical/Operational Issues in Educational Technology; EDT 646, Designing Staff Development for Educational Technology; and EDT 649, Planning and Implementing District Level Educational Technology.

Students who demonstrate competence in each of the performance outcomes required for successful completion of EDT 540 will start the program with EDT 541 or EDT 542. Students who demonstrate prior mastery of the knowledge and skills in EDT 541 and EDT 542 will have other course choices available.

The courses within the certificate program are presented in levels related to their intended audience and the application of the knowledge and skills developed (e.g., Level I: Teaching [EDT 540, 541]; Level II: Building Level Technology Coordination [EDT 542, 644]; Level III: District Level Technology Coordination[EDT 645, 648, 649]). A minimum of 15 hours is necessary to complete the Certificate Program in Educational Technology, and competence in all courses in all three levels must be demonstrated by course credit or by evaluation of prior mastery of the performance outcomes of EDT 540, 541, and/or 542.

Descriptions of all courses required in the Certificate Program in Educational Technology may be found below under the heading Educational Technology Courses.

Doctor of Education in Special Education

Advisors: Barbara Harris, George Hause, Donna Iacbone, Paula Kohler, Howard Poole, Sarah Summy, Elizabeth Whitten
Room 3506, Sangren Hall

The Doctor of Education in Special Education is designed to prepare an individual to serve as a college teacher in a special education program and as an administrator of educational programs for learners with disabilities.

Applicants are expected to satisfy all requirements for admission to doctoral
programs specified by The Graduate College. Prospective students must also have acquired a minimum of two years of successful professional experience in serving persons with disabilities. Admission to the program is contingent upon a satisfactory score on the Graduate Record Examination and the successful completion of a personal interview with a committee comprised of graduate faculty of the Department of Educational Studies. Application materials are available from the Office of Admissions and Orientation and from the Department of Educational Studies.

Upon acceptance to the department, a Program Advisor will be designated to work with the student in developing the student’s overall graduate program. In addition to the prescribed course work, the student must complete an internship in college teaching and an internship in administration of programs in special education. During the last semester of course work, the student will be required to complete successfully a written dissertation as per Graduate College policy. All students in the program will be required to complete successfully a scholarly dissertation. Following the guidelines established by The Graduate College, the student will select a dissertation advisor 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 a comprehensive examination. Graded on a Credit/No Credit basis. This course provides a survey or in-depth coverage of current issues directly related to the education of learners with disabilities. The course may be repeated for credit. Prerequisite: Consent of department.

Educational Studies Courses (SPED)

Open to Upperclass and Graduate Students

SPED 500 Topical Issues in Educating Learners with Disabilities 1-4 hrs.

This course provides a survey or in-depth coverage of current issues directly related to the education of learners with disabilities. The course may be repeated for credit. Prerequisite: Consent of department and concurrent enrollment in SPED 504 and 534.

SPED 512 In-Service Professional Development 1-4 hrs.

This course is designed for prospective and practicing elementary and middle school teachers. Emphasis is placed on meeting the needs of learners with disabilities in elementary and middle school programs. Required adaptations and modifications, and available resources and services for these learners are stressed. Prerequisite: Consent of department and concurrent enrollment in SPED 504 and 534.

SPED 527 Learners with Disabilities in General Education and Middle School Programs 3 hrs.

This course is designed for prospective and practicing elementary and middle school teachers. Emphasis is placed on meeting the needs of learners with disabilities in elementary and middle school programs. Required adaptations and modifications, and available resources and services for these learners are stressed. Prerequisite: Consent of department and concurrent enrollment in SPED 504 and 534.

SPED 529 Learners with Disabilities in General Education and Secondary Programs 3 hrs.

This course is designed for prospective and practicing middle school and secondary teachers. Emphasis is placed on meeting the needs of learners with disabilities in middle school and secondary programs. Required adaptations and modifications, and available resources and services for these learners are stressed. Prerequisite: Consent of department and concurrent enrollment in SPED 504 and 534.

SPED 530 Introduction to Special Education 3 hrs.

This course introduces students to the characteristics and needs of learners with sensory, physical, mental, emotional, and learning disabilities. Students develop an understanding of the psychological, sociological, philosophical, legal, and educational aspects of each type of disability. Prerequisite: Consent of department.

SPED 531 Classroom Practicum in Special Education 1 hr.

This course provides students with an opportunity to work in an elementary, middle school, or secondary classroom with learners who have disabilities. It is intended to provide students with an awareness of the nature and needs of these pupils and the role of the teacher in working with such learners. Graded on a credit/no credit basis. Prerequisites: Consent of department and concurrent enrollment in SPED 530.

SPED 533 Assessment and Prescription in Special Education 3 hrs.

This course focuses on application of the Clinical Teaching Model to the education of learners with mild and moderate disabilities. Emphasis is placed on implementation and evaluation activities. Additional topics include service delivery systems, roles of teachers and ancillary personnel, legal requirements, and major issues confronting the field of special education. Prerequisite: Consent of department and concurrent enrollment in SPED 504 and 533.

SPED 534 Curriculum and Instruction in Special Education 3 hrs.

This course focuses on the major focus of this course is understanding the Clinical Teaching Model. Emphasis is placed on the relevance of assessment and prescription to the teaching of learners with disabilities. Prerequisites: Consent of department and concurrent enrollment in SPED 504 and 534.

SPED 536 Technology in Special Education 3 hrs.

This course is designed to provide specific information, exposure, and experience related to a variety of ways that current and emerging technologies may be used to improve the education and lives of learners with disabilities. Prerequisite: Consent of department.

SPED 538 Introduction to Classroom Management 3 hrs.

This course deals with methods of managing classroom behavior and dealing with specific behavior problems. Classroom management strategies will be discussed and related to the establishment of a positive classroom climate. Diagnostic and prescriptive techniques will be applied to problems of aggression, conduct, withdrawal, hyperactivity, distractibility, and impulsivity. Prerequisite: Consent of department.

SPED 539 Consultation and Communication in Special Education 3 hrs.

This course will provide an introduction to consultation and communication skills needed by special educators as they work with other professionals and parents. Prerequisite: Consent of department.

SPED 540 Introduction to Mental Retardation 3 hrs.

This course provides an introduction to the field of mental retardation. Historical perspectives, definitions, service delivery systems, evaluation procedures, and major issues are examined. Prerequisites: Consent of department and concurrent enrollment in SPED 545.
SPED 541 Program Practicum in Special Education: MR
1 hr.
This course provides the student with guided observations of school and community agencies serving individuals with mental retardation. It provides an awareness of a continuum of special education placements and the role of non-school agencies serving persons with mental retardation and their families. Graded on a credit/no credit basis. Prerequisite: Consent of department and concurrent enrollment in SPED 540.

SPED 542 Introduction to Severe impairments 3 hrs.
This course provides basic knowledge about individuals with severe mental, physical, emotional, and/or sensory disabilities. Biomedical, legal, sociological and educational perspectives are examined. Special emphasis is placed on organization and management of educational programs, as well as assessment and instruction of pupils. Prerequisite: Consent of department.

SPED 544 Educating Individuals with Severe Impairments 3 hrs.
This course develops specific skills in the assessment, prescription, implementation, and evaluation of educational programs for persons with severe impairments. Course content focuses on the areas of mobility, communication, sensorimotor development, self-help skills, cognition, and adaptive behavior. Prerequisite: Consent of department.

SPED 545 Education of Learners with Moderate and Severe Retardation 3 hrs.
This course focuses on understanding the ways in which teachers organize curriculum and implement assessment and instruction to insure maximum learning for students with moderate and severe mental retardation. Prerequisite: Consent of department and concurrent enrollment in SPED 540.

SPED 547 Program Practicum in Special Education: EI 1 hr.
This course provides the student with guided observations of school and community agencies serving individuals with emotional impairments. It provides an awareness of a continuum of special education placements and the role of non-school agencies serving persons with emotional impairments and their families. Graded on a credit/no credit basis. Prerequisite: Consent of department and concurrent enrollment in SPED 570.

SPED 557 Education of Learners with Emotional Impairments 3 hrs.
This course focuses on understanding the ways in which teachers organize curriculum and implement assessment and instruction to ensure maximum learning for students with emotional impairments. Prerequisite: Consent of department and concurrent enrollment in SPED 570.

SPED 580 Introduction to Learning Disabilities 3 hrs.
This course provides an introduction to the field of learning disabilities. Historical perspectives, definitions, service delivery systems, evaluation procedures, and major issues are examined. Prerequisite: Consent of department.

SPED 585 Advanced Theory and Practice in Learning Disabilities 3 hrs.
This course examines several theoretical perspectives which attempt to explain why students with learning disabilities fail to learn. Within each perspective, the application of selected theories to the Clinical Teaching Model is addressed. Emphasis is placed on the validity of interventions derived from each theory. Prerequisite: Consent of department.

SPED 591 Braille and Other Communication Methods 2 hrs.
This course provides students with a basic knowledge of the Braille literary code—reading and writing, and an overview of other communication methods available to students with visual impairments. Prerequisite: Consent of department.

SPED 593 Methods and Techniques of Teaching Braille and Other Areas of Communication 3 hrs.
This course explores various methods and techniques of teaching essential communication skills—Braille, typing, social communication, handwriting, abacus computation, the use of electronic devices and other media to students with visual impairments. Opportunities for supervised practical application of methods are afforded to the students. Prerequisite: Consent of department.

SPED 598 Readings in Special Education 1–4 hrs.
This course is designed for advanced students interested in independent study. Topics chosen must be approved by the instructor and the department chairperson. May be repeated for credit. Prerequisite: Consent of department.

Open to Graduate Students Only

SPED 601 Acquistion and Analysis of Special Education Information 3 hrs.
This course is designed to develop skills in information processing techniques in special education. The course will present an information processing model emphasizing methods and techniques for locating, accessing, and organizing text and media source material. The course will require students to develop skills to apply the processes of information synthesis, inductive and deductive reasoning, critical analysis, and hypothesis generation. Students will apply the course content to current issues and trends in the field of special education. Prerequisite: Consent of department.

SPED 603 Special Educator as Information Disseminator 3 hrs.
This course is designed to prepare the special educator to use information to form judgments, make decisions, substantiate positions, persuade others, and/or to demonstrate or explain. The processes will be directly related to a variety of special education problems and/or issues. Students will learn to apply the processes through demonstrations, guided instruction, small group activities, and individual assignments. Special Education content domains targeted by this course include: Parent Relations, Collaboration, Community Resources, Advocacy, Interdisciplinary Concerns, and Inservice Training. Prerequisite: Consent of department and SPED 601.

SPED 610 Teaching Nemeth Code to Children 3 hrs.
This course contains intensive study of the Nemeth Code (Braille Mathematics), the music code, adaptations of worksheets and tests, foreign languages (French, German, and Spanish), transcription of diacritical marks (dictionary notation), and an introduction to computer Braille notation.

SPED 620 Advanced Assessment of Learners with Disabilities 3 hrs.
The emphasis of this course is on basic psychometric concepts related to the theory and interpretation of test results and psychological assessment reports. Special attention is given to the diagnosis of students based upon psychometric data. The selection of remedial education programs related to these test results as well as recent issues in testing are discussed. The course emphasizes the selection of standardized test batteries and norm-referenced and criterion assessment techniques. Prerequisite: SPED 603 and consent of department.

SPED 621 Curriculum Development for Learners with Disabilities 3 hrs.
This course is designed to provide teachers with an in-depth understanding of normal and abnormal developmental patterns of preprimary children (birth to five years of age) as related to mental subnormality, neurologic dysfunction, communication disorders, physical and sensory impairments, and emotional disturbance. Emphasis will be placed upon developmental assessment and the selecting and reporting of diagnostic information. Prerequisite: Consent of department.

SPED 623 Curriculum and Methods for Preprimary Learners with Disabilities 3 hrs.
This course is designed to provide teachers with skills in translating diagnostic information into a meaningful educational plan for children from birth to five years of age. Emphasis will be placed upon situation-specific teaching roles as well as curricular and methodological strategies in preprimary special education. Prerequisite: Consent of department.

SPED 630 Clinical Practice in Special Education 3 hrs.
This course serves as a clinical/practical experience within the Master Teacher Program, the Clinical Teacher Program, and the Special Education Technology Program. Students will apply their knowledge and skills in a clinical setting with youngsters with varying handicapping conditions. This course is offered on a credit/no credit basis. Prerequisite: SPED 603 and consent of department.

SPED 632 Assessment, Teaching, and Curriculum Adaptation for Infants, Preschoolers, and Children Who Are Visually Impaired 3 hrs.
This course is designed to examine how to assess, teach, and modify existing curriculum for infants, preschoolers, and young...
school-aged children who are blind. This course combines these three elements and prepares teachers for the role of itinerant or classroom teacher, as well as for the role of consultant and parent helper.

**SPED 633 Education of Gifted and Talented Children and Youth**

This course is designed for regular classroom teachers, administrators and other personnel. The characteristics of gifted and talented learners will be discussed. Personal, social, and multi-cultural factors which directly or indirectly influence the growth and development of these individuals will be considered. Attention will be given to methods and criteria used in identifying and programming for gifted, talented, and creative individuals. **Prerequisite:** Consent of department.

**SPED 636 Topical Seminar in Special Education**

1–4 hrs.

This course provides a survey or in-depth coverage of topics directly related to the education of learners with disabilities. The course may be repeated for credit. **Prerequisite:** Consent of department.

**SPED 637 Research and Evaluation Techniques in Special Education**

3 hrs.

This course is designed to provide students with fundamental knowledge and skills in research and evaluation in special education. Topics include the use of the scientific approach, research and evaluation designs, observations and measurement instruments, statistical analysis, and report writing. Students will be expected to design and carry out a small research project. **Prerequisites:** SPED 603 and consent of department.

**SPED 638 The Application of Behavior Theory to Classroom Teaching**

3 hrs.

This course examines the principles of behavior theory as related to academic and non-academic behaviors of learners with disabilities. General and specific methods for generating, strengthening, and maintaining desirable behavior, and methods for weakening undesirable behavior are presented. **Prerequisite:** Consent of department.

**SPED 640 Organization and Administration of Services for Learners with Disabilities**

3 hrs.

This course examines the principles and practices of organization and administration of special education programs at the state, intermediate, and local levels. **Prerequisite:** SPED 603 and consent of department.

**SPED 641 Supervision of Special Education Programs and Services**

3 hrs.

This course is designed to provide the experienced special educator with specific knowledge and skills necessary for supervising personnel who are providing both direct and indirect services to learners with disabilities. Emphasis is placed on 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. **Prerequisite:** SPED 603 and consent of department.

**SPED 643 Legal and Financial Aspects of Special Education**

3 hrs.

The current legislative and financial basis for special education national, state, and local levels will be examined in relation to the development and modification of special education programs. The basic concept of budgeting of resources and expenditures will be discussed. **Prerequisite:** SPED 603 and consent of department.

**SPED 650 Seminar on Special Education in Higher Education**

3 hrs.

This course examines the structure of higher education and the roles a faculty member plays within a department, college, and at a university (e.g., teaching competence, professional recognition, and service). In addition, current issues in higher education and teacher education will be examined. **Prerequisites:** SPED 603 and consent of department.

**SPED 656 Seminar: Current Issues in Special Education**

3 hrs.

This course is designed to provide an in-depth exploration of current issues in the field of special education and in the various specific areas of exceptionality. Issues relating to the interface of general and special education will also be explored. Utilizing skills acquired in SPED 601, 602, and 603, students will be expected to review, evaluate and present information on the various topics considered. **Prerequisites:** SPED 603 and consent of department.

**SPED 659 Application of Learning Theories to Educational Programming for Learners with Disabilities**

3 hrs.

This course provides an overview of theories of learning as they apply to learners with disabilities. An in-depth analysis of selected theories is conducted in order to compare and contrast the relationship of each to the development of long-term goals for learners with disabilities. **Prerequisites:** SPED 603 and consent of department.

**SPED 661 Transdisciplinary Teaming**

3 hrs.

This course is designed to provide students with the information needed for effective collaboration and interactive teaming in school and agency settings. Emphasis is placed on transdisciplinary teaming which will include components of effective communication, problem-solving, and the various direct and indirect service delivery models that can be used by collaborative team members to facilitate the success of all students in the mainstream. **Prerequisite:** SPED 603 and consent of department.

**SPED 662 Service Delivery Models that Foster Collaboration**

3 hrs.

This course is designed to acquaint students with the service delivery models that foster collaboration presently in the schools as well as rural and urban communities. Students will demonstrate collaboration and teaming skills through rural and urban field experiences. **Prerequisites:** SPED 661 and consent of department.

**SPED 663 Professional Field Experience in Collaboration**

3 hrs.

This course will provide students with hands-on, field experience in the use of collaboration for interagency teams in urban and rural settings. Students will be placed in a school or agency serving students with special needs and participate in the facilitation of a transdisciplinary approach to problem-solving. **Prerequisite:** SPED 661 and consent of department.

**SPED 674 Intern Teaching in Special Education**

6 hrs.

This field experience is open only for special education graduate students who have completed all of their special education endorsement requirements. It will consist of full-time intern teaching in an appropriate educational setting serving students with disabilities. Students will participate in all phases of the school program to which they are assigned. This course is graded on a credit/no credit basis. **Prerequisite:** Consent of department.

**SPED 675 Internship in College Teaching**

3 hrs.

This course is designed specifically for students officially admitted to the doctoral program in special education. The student will be expected to demonstrate skills in planning and execute instructional tasks, develop and apply appropriate evaluative techniques, and interpret students' performances. **Prerequisite:** SPED 603 and consent of department.

**SPED 680 Instructional Software in Special Education**

3 hrs.

This course will examine strategies for evaluating, modifying, and designing computer-assisted instruction for students with learning problems. The course will also address the integration of CAI into the special education curriculum and explore how technology tools can assist teachers. **Prerequisites:** SPED 537 or equivalent and consent of department.

**SPED 681 Assistive Technology for Persons with Physical, Sensory, and Cognitive Impairments**

3 hrs.

This course will examine assistive technology, including both hardware and software, to remove barriers to independence and education for persons with physical, sensory, and cognitive impairments. **Prerequisites:** SPED 537 or equivalent and consent of department.

**SPED 682 Current Research in Special Education Technology**

3 hrs.

This course will examine current research topics in special education technology. As technology rapidly changes, this course will allow students to examine current issues and trends in technology integration, training, and development. **Prerequisite:** SPED 537 or equivalent and consent of department.

**SPED 683 Authoring and Multimedia Systems**

3 hrs.

In this course the student will learn how to use authoring systems for development of special education computer-assisted instruction (CAI) and multimedia. Students will create multimedia instructional materials incorporating text, graphics, sound, animation, and video using a variety of Macintosh and IBM-compatible hardware and software. **Prerequisites:** SPED 537 or equivalent and consent of department.

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

**SPED 700 Master's Thesis**

6 hrs.

**SPED 710 Independent Research**

2-6 hrs.

**SPED 712 Professional Field Experience**

2-12 hrs.

**SPED 730 Doctoral Dissertation**

15 hrs.
Educational Technology Courses (EDT)

Open to Upperclass and Graduate Students

EDT 540 Introduction to Computing and Technology for Productivity
3 hrs.
This course is a basic introduction to computing and technology for productivity software. Designed for the beginning computer user, this course covers necessary information for the student to operate successfully a computer and other technology devices (CD ROM, laserdisc player, etc.). Operation includes running programs, accessing information, data manipulation, and publication. A variety of computer software products will enhance personal productivity. Students will be provided with basic "hands-on" activities with many different software applications. Upon completing this course, the student will have a solid understanding of computer components and terminology. The student will be aware of the various types and purposes of software for learning and productivity and will be able to evaluate educational software for classroom application.

EDT 541 Telecommunications for Teaching and Learning
3 hrs.
The course focuses on the implementation of telecommunication methods for teaching and learning. Telecommunication technologies widely used in the field of education and emerging telecommunication technologies will be presented. Students enrolled in this course will learn to operate various telecommunication tools to support their own personal productivity, teaching, and instruction. Students will also be equipped with skills necessary to review studies pertaining to the application of technology in education. Many of the telecommunication methods presented in this course will be used to deliver the course material. Prerequisite: EDT 540 or equivalent.

EDT 542 Teaching with Technology: Design and Development for Learning
3 hrs.
This course focuses on the design, development, and integration of educational technology methods for teaching, learning, and personal productivity. This course provides an overview of learning theory and instructional design principles related to the development of educational technology programs. A review of the theory of individual learning styles and application of technology in education will be presented. Upon completion of this course, students will possess knowledge in the planning, delivery, and evaluation of instruction through the implementation of various technologies. Students will design and develop educational technology products (computer based, hypermedia/multimedia, WWW, etc.) based upon learning theory and instructional design principles. Prerequisite: EDT 540 or equivalent.

Open to Graduate Students Only

EDT 644 Advanced Information Technologies for Instructional Technology
3 hrs.
This course provides a detailed review of the latest technological advancements and their potential impact on educational institutions. Students will receive information on the wide array of media types and methods for transmitting them. Students will also be exposed to and experience a variety of data, video, and audio technologies. Introduction to management issues with educational technology at the building level will be presented. This course focuses on two primary areas: 1) equipment and costs necessary to implement these systems and 2) the impact these technologies have on an educational system. Students will acquire skills that will enable them to connect, configure, troubleshoot, and maintain a variety of advanced technology systems. Prerequisite: EDT 542 or equivalent.

EDT 645 Technical/Operational Issues of Educational Technology
3 hrs.
This course covers management issues related to the selection, purchase, installation, and maintenance of software programs for computers and computer network systems. Students will learn how to conduct a technology needs assessment for a school district. Using information gained from the needs assessment, students will also learn methods of planning for, implementing, and maintaining technology across an entire system. A detailed review of networking and networking issues will also be addressed. Prerequisite: EDT 542 or equivalent.

EDT 646 Designing Staff Development for Educational Technology
3 hrs.
This course will provide students with necessary skills to assume leadership roles in the integration of technology for instruction across educational systems. The course focuses on teaching strategies to promote learning to teach with technology as well as planning and implementing staff development activities. This course will address teaching strategies for adult learners enabling technology leaders to implement successful training activities. Students will gain skills in designing instruction for a wide variety of adult audiences. Prerequisite: EDT 542 or equivalent.

EDT 649 Planning and Implementing District Level Educational Technology
3 hrs.
This course focuses on the development of leadership skills for technology integration across an entire school district. Steps involved in planning, implementing, maintaining, and evaluating technology integration will be addressed. Specific management issues include creating technology plans and goals and managing technology finances for a school district. Policy and procedure issues such as staffing, scheduling, and technology security will also be presented. Students will be able to make informed decisions about technology selection, purchase, and implementation based upon school district technology goals and financial resources. Prerequisite: EDT 542 or equivalent.

Master of Arts in Career and Technical Education

Advisor: Linda Dannison, Room 3018, Kohrman Hall

This thirty-hour degree program includes course work that will strengthen students' abilities to teach in career and technical education and to assist in developing and implementing new programs or curricula. The program is flexible to provide advanced techniques for teachers and career preparation for administrators, supervisors, counselors, coordinators, and for any other specialized positions in the career and technical education areas of marketing education, business education, home economics, and technology education.

The Master of Arts in Career and Technical Education is designed for bachelor's graduates in marketing education, business education, home economics, industrial arts, industrial education, or career and technical education, plus professional preparation in teacher education, including directed or supervised student teaching.

Program Requirements
Complete at least thirty graduate credit hours, selected in consultation with a program advisor. The program of study will consist of 3-6 hrs. of professional education courses, 15-18 hrs. of core courses, and 3-12 hrs. of electives.

Master of Arts in Family and Consumer Sciences

Advisor: Linda Dannison, Room 3018, Kohrman Hall

The graduate program in Family and Consumer Sciences is designed to provide a comprehensive program of studies in Family and Consumer Sciences or an in-depth program of studies for the person desiring to
strengthens specialized interest areas in
dietetics and human nutrition, family life
education, or textile and apparel technology.
The Master of Arts in Family and Consumer
Sciences is designed for the person with a
Bachelor of Science or Arts in Home
Economics or a home economics-related
program of study.

Because of the diversity of the field and
unique needs of those desiring graduate
training, an individualized program plan is
designed for each student within the
parameters of the program requirements.
The degree may be used as a foundation
for continued graduate work leading to a
dueckal degree at another institution.

Admission Requirements
For admission to the master's program in
Family and Consumer Sciences, students
must satisfy all the requirements identified in
the Graduate Catalog as well as specific
departmental requirements. No one
requirement is sufficient to guarantee
admission or dictate denial of admission.

1. Possess a Bachelor of Science from an
approved accredited school and a major
closely related to Family Studies or Family
Life Education.

2. Have a minimum undergraduate grade
point average of 3.0 on a 4.0 scale in the
last two years of undergraduate work.
Non-degree, probationary status may be
granted to students with a gpa between
2.5 and 2.99 in the last two years of
undergraduate work. Students with that
gpa range may establish eligibility for
regular admission to WMU by completing
nine credit hours of approved
graduate-level courses toward their M.A.,
with a grade of "B" or better in each course.

3. Include a resume indicating previous
education experiences and listing
positions held over the past ten years.
Indicate the exact title of each position, the
agency, school, or firm where employed,
and the particular awards or accomplishments.

4. Submit a two page wordprocessed essay
that provides the following information:
described experience that influenced your
career choice and your
desire to return to graduate school.

b. Explain how having a Master of Arts in
Family and Consumer Sciences degree
will advance your career.

Program Requirements
1. All master's programs include a minimum
of 30 semester hours, fifteen of which must
be in courses at the 600-level or higher,
and at least two hours of FCS 710.

2. A total of twenty hours in Family and
Consumer Sciences must be completed in
graduate level courses in two or more
areas, planned in consultation with
departmental advisor.

3. A minimum of ten hours must be
completed at the graduate level in allied
areas, planned in consultation with
departmental graduate advisor.

Assistantships may be available to those
wishing to pursue full-time graduate study.

Career and Technical
Education Courses (CTE)

Open to Upperclass and Graduate Students

CTE 510 Special Populations in Career and
Technical Education 3 hrs.
Special populations enrolled in Career and
Technical Education programs and the
identification of appropriate teaching
strategies, materials, and support services for
effective teaching and learning.

CTE 512 Principles of Career and Technical
Education 3 hrs.
Explanation, identification, investigation of the
history, philosophy, principles, programs, and
services in career and technical education.

CTE 513 Technical Education Methods
3 hrs.
Analysis and methods of organizing instruction
in career and technical education. Advanced
teaching plans and methodologies.

CTE 514 Workshop in Career and Technical
Education 1–3 hrs.
Investigation, research, and development of a
particular topic or area of interest for career
and technical education. (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.

CTE 515 Grant Writing for Career and
Technical Educators 3 hrs.
Analysis of the grant writing process, including
the identification of a sponsor, development of
an idea and plan, and completion of a
proposal.

CTE 542 Advanced Curriculum Development
2 hrs.
Social, political, and economic factors which
influence curriculum change, curriculum
innovations, trends, implementation, and
evaluation.

CTE 543 Work-site Based Education Programs
3 hrs.
Study of work-site based education programs,
including the organization and establishment
of training programs, supervision of trainees
on the job, development of individual training
plans and programs. Emphasis on
establishing working relationships between
school, business, and the community,
including cooperative education, work
experience, apprenticeship, work-study, and
work exploration programs for Career and
Technical Education.

Open to Graduate Students Only

CTE 612 Studies in Technology 1–4 hrs.
Designed to permit students to take
advantage of opportunities offered through
technical workshops, seminars, short courses,
or field research offered on campus or in
approved off-campus settings under the
supervision of a member of the graduate
departmental advisor. Prerequisite: Consent of instructor and
department chair prior to registration.

CTE 614 Administration and Supervision of
Career and Technical Education 3 hrs.
Emphasizes functions of administration and
supervision, and problems involved in
organizing and operating career and technical
education programs. For teachers,
administrators, and supervisors of career and
ducation programs and those preparing for
such positions.

CTE 615 Trends and Developments in Career
and Technical Education 2 hrs.
A review and exploration of contemporary
trends and developments in career and
technical education.

CTE 616 Occupational Selection and Training
3 hrs.
Primarily designed for career and technical
teaching teachers and administrators.
Special emphasis on adapting instruction to
individual needs.

CTE 617 Seminar in Career and Technical
Education 2–6 hrs.
An intensive study of problems related to
career and technical education. Topics vary
from semester to semester, and a student may
take more than one topic up to a maximum of
six hours.

CTE 643 Measurement and Evaluation in
Career and Technical Education 3 hrs.
Preparing and using written performance and
alternative assessments for career and
technical education.

CTE 645 Lab Planning and Organization in
Career and Technical Education 2 hrs.
Planning a laboratory and selecting equipment
and supplies for the facility including selection,
development, and preparation of instructional
materials and instructional media for multiple
activities in instruction at the junior and senior
high school levels.

CTE 646 Teaching Issues in Career and
Technical Education 2 hrs.
Advanced individual or small group study of
teaching methods, techniques, and issues.
Emphasis placed on problem solving, teamwork and
instructional delivery.

CTE 648 Adult Education in Career and
Technical Education 2–3 hrs.
Influence of developmental needs of adults
and changes in society affecting families and
institutions in developing adult programs in
career and technical education.

CTE 650 Business/Industry/Education
Work-based Learning 3 hrs.
Current practices and future prospects of
national and international work-based
learning. Applies school-business
partnerships, federal and state regulations,
changing work place skill requirements, labor
market information, and assessment to work
programs. Prepares the student to develop
and evaluate transition models between
secondary and post secondary institutions,
business, industry and the community.

Family and Consumer
Sciences Courses (FCS)

Open To Upperclass and Graduate Students

FCS 520 Insurance Education Seminar
1–2 hrs.
Fundamental principles of consumer
insurance; overview of insurance availability;
family insurance issues involving automobile
and home (property and casualty insurance);
methods of teaching insurance education in
diverse curricula; review and analysis of
insurance policies; research in insurance
education; and careers in insurance and the
insurance industry.
FCS 522 Topics in Family and Consumer Sciences
1-3 hrs. A study of the current issues impacting the areas of study in Family and Consumer Sciences: Dietetics, human nutrition, family life education, home economics education, textile and apparel technology or career and technical education. Prerequisite: Senior and graduate students only.

FCS 524 The Socio-Psychological Aspects of Clothing
3 hrs. Winter—Even Years Study of dress and adornment as related to human behaviors. An interdisciplinary approach to clothing-related research and non-verbal communication, person perception, and group conformity.

FCS 565 Problems in Nutrition
3 hrs. A discussion of current problems in nutrition. Not open to dietetics majors. Prerequisite: FCS 260 or equivalent.

FCS 568 Gender, Culture, and Families
3 hrs. Study of the implications of gender and cultural orientation for family, work, social interactions and therapeutic interventions. Includes an examination of sexism and racism in the media, advertising, educational institutions, and social policies.

FCS 575 Administration of Child Development Centers
3 hrs. Examination of day care and preschool regulations and requirements and knowledge of administrative materials and duties in providing optimum growth for young children. Includes management, planning, and organizing child development centers. (Cross-listed with ED 575.)

FCS 590 Project/Problems in Family and Consumer Sciences
1-6 hrs. Fall, Winter, Spring, Summer Directed independent project in specialized curricula within Family and Consumer Sciences. Prerequisite: Department approval.

FCS 598 Independent Study in Family and Consumer Sciences
1-6 hrs. Fall, Winter, Spring, Summer Directed independent advanced study in subject matter area not otherwise treated in departmental courses. Department approval required prior to enrollment. Open to Graduate Students Only

FCS 600 Clothing Techniques
2 hrs. Meets the needs of the advanced student in clothing construction techniques.

FCS 601 Basic Research Methods and Design
3 hrs. This course introduces students to applied methods and basic research design. It is appropriate for producers of research and for students who plan to emphasize practice. Emphasis throughout is on concrete examples from applied settings appropriate to Family and Consumer Sciences and Career and Technical Education. Prerequisite: Acceptance in FCS or CTE Master of Arts program.

FCS 610 Nutrition in the Life Cycle
3 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. Student can enroll for any stage or for each stage in subsequent semesters. Prerequisite: FCS 460 or 565.

FCS 614 Nutrient Metabolism I
3 hrs. Study of the functions, requirements, and interrelationships in metabolism of energy, protein, carbohydrate, and lipids.

FCS 615 Nutrient Metabolism II
3 hrs. Study of the functions, requirements, and interrelationships in metabolism of vitamins and minerals.

FCS 616 Consumer Education
3 hrs. Course includes family resource management; goals and resources in family financial planning; the role of the consumer in the marketplace; decision-making for individuals and families; information processing; clarifying values and determinants of quality in the spending process; and specific consumer economic issues across the life-span and within different economic and family settings.

FCS 618 Teaching of Specific Subjects in Family and Consumer Sciences
2-4 hrs. Intensive study of teaching techniques unique to specialized subject matter offered in variety of curricula in Family and Consumer Sciences.

FCS 622 Practicum
2-3 hrs. A supervised experience program in a specific occupational area.

FCS 636 Teaching for Independent Living
4 hrs. Provides a practical background and a basic understanding of skills and problems of the homebound and visually impaired.

FCS 652 Family Life Education
3 hrs. Current issues, trends, and methods in teaching family life education. Program development and philosophy including: needs assessment, design, development, promotion, justification, evaluation and funding sources. Emphasis placed on proposal writing and partnerships with community agencies, court systems, schools, and health care facilities.

FCS 655 Adult-Child Relationships
3 hrs. Theories and strategies for promoting children’s developmental needs and building strong adult-child relationships in therapeutic, school, or home settings.

FCS 656 Family Law, Ethics, and Professional Issues
3 hrs. Areas of study include the therapist’s and family life educator’s legal responsibilities and liabilities, fundamentals of family and consumer law across the life cycle, professional ethics for marriage and family therapists and family life educators, professional socialization, current issues in professional practice, and the role of the professional organizations, licensure and certification, legislation, independent practice, and interprofessional cooperation.

FCS 660 Studies in Family Relationships
3 hrs. The course will focus on family dynamics (i.e., family processes, communication skills, conflict management, stress, and family crises) and interpersonal relationship skills with specific attention given to translating this knowledge and these skills into family life education programming.

FCS 666 Studies in Family and Consumer Sciences
2-4 hrs. Investigation of certain areas in family and consumer sciences selected to meet individual needs of the students. May be taken more than once if subject matter is different. Maximum credit is six hours.
HEALTH, PHYSICAL EDUCATION, AND RECREATION

Dr. Debra Berkey, Chair
Main Office: 4024 Student Recreation Center
Telephone: 387-2710
FAX: 387-2704
Debra Berkey, Chair
Robert Bensley
Jody Bryinsky
Lena Cool
Ray Cool
Mary Dawson
Lee deLisle
Marianne Frauenknech
William Gross
James Lewis
Yuanlong Liu
Allison McFarland
Timothy Michael
Linda Powell
Ronald Winter
Roger Zabik
Jiabei Zhang

Master of Arts in Physical Education

Advisors:
Debra S. Berkey,
Room 4021, Student Recreation Center
Jody Bryinsky,
Room 4024-7, Student Recreation Center
Ray Cool,
Room 4024-19, Student Recreation Center
Mary Dawson,
Room 4024-8, Student Recreation Center
Allison McFarland,
Room 4024-11, Student Recreation Center
Roger Zabik,
Room 4021, Student Recreation Center

The Department of Health, Physical Education, and Recreation offers a Master of Arts in Physical Education which prepares teachers, coaches, supervisors, and administrators to assume leadership roles in the following: Administration, Sports Studies, Exercise Science, Pedagogy, Athletic Training, and Special 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 appropriate 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 four professional areas: research, socio-cultural issues, curriculum or psychological foundations, and a professional area of emphasis. Such competence will normally be provided through eight to ten graduate semester hours of required course work: (1) PEGR 690 and PEGR 692; and (2) PEGR 650; (3) PEGR 645 or PEGR 691; and (4) course work prescribed in an emphasis area. This degree program also 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, Sports Studies, Athletic Training, Exercise Science, Pedagogy, or Special Physical Education. For information about additional specific course requirements for each concentration, see the graduate advisor.

Master's degree candidates are required to complete a comprehensive, integrated capstone experience which can be met through (1) PEGR 700, Thesis; (2) PEGR 710, Independent Research; or (3) PEGR 712, Professional Field Experience. Graduate students in the Athletic Training emphasis area seeking certification must meet the National Athletic Trainers' Association standards.

Health, Physical Education, and Recreation Courses (PEGR)

Open to Upperclass and Graduate Students
In depth study of selected topics in PEGR. 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: Aesthetics of Sport; Nutrition and Fitness; Outdoor Education; Physical Fitness; Relaxation; Special Physical Education Activities; Therapeutic Recreation; Supervision and Self Assessment in Physical Education.

PEGR 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.

PEGR 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.

PEGR 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: Aids; Alcohol and Drug Education; Biofeedback; Cardiovascular health; Consumer Health; Health Careers; Health Promotion; Improving Health Behavior; Safety and Health in the Industrial Setting; Sexually Transmitted Diseases; Stress Management; Wellness and Lifestyle.

PEGR 520 Physical Activities for Exceptional Children 3 hrs.
Physical and recreational activities and games used in corrective, adaptive, and general physical education programs for special education children.

PEGR 521 Therapeutic Trends for Exceptional Children 3 hrs.
A study of past, present, and future trends in habilitation and rehabilitation programs for handicapped people.

PEGR 530 Practicum in Teaching and Coaching 1-2 hrs.
Demonstrations, participation, and evaluation on teaching and coaching fundamentals in selected sports. A graduate student may apply a maximum of four credits from 530 courses toward the master's degree program. Sports include: Archery; Badminton; Basketball; Football; Golf; Gymnastics; Ice Hockey; Judo; Karate; Soccer; Swimming; Track and Field; Volleyball; Wrestling; Yoga.

PEGR 535 Principles and Problems of Coaching 2 hrs.
Various dimensions and forces affecting coaching are identified and explored, including educational 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.

PEGR 540 Movement Education 2 hrs.
A concept in physical education which deals with the way children learn the basic principles of how their bodies move.

PEGR 560 Administration of Physical Education 2 hrs.
For administrative officers, as well as for teachers and directors of physical education. Includes a study of representative programs of physical education and a discussion of standards for evaluating such programs. Case studies examined.

PEGR 562 Administration of Athletics 2 hrs.
Discusses administrative procedures and problems connected with athletic programs, including scheduling, facilities, personnel problems, school law and liability, eligibility, finance, safety, and the conduct of athletic events.

PEGR 580 Studies in Athletic Training 1-2 hrs.
Listed with various topics. A lecture/demonstration course concerned with the prevention, diagnosis, and treatment of sports type injuries. Prerequisites: BIOS 211, 240, PEGR 380.

PEGR 582 Athletic Training for Coaches 2 hrs.
Basic procedures in injury prevention, assessment, treatment, and rehabilitation will be covered. Principles and techniques are presented in a lecture and laboratory format. Prevention will be emphasized. Prerequisite: Permission of instructor.

PEGR 590 Exercise Physiology 2 hrs.
The mechanics of muscular contraction, nerve impulse conduction, oxygen exchange, and
curricular models, and program evaluation are highlighted.

PEGR 591 Evaluation in HPER 2 hrs.
Acquaints students with the theory, selection, construction, administration, interpretation of appropriate tests in the field. Class activity will include study and discussion of selected tests, application, scoring, interpretation, and construction of tests.

PEGR 595 Analysis of Movement in Sport 2 hrs.
The study of movement of muscles and the application of kinesiology to physical activity.

PEGR 598 Readings in HPER 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

PEGR 620 Developmental Programs in Special Physical Education 3 hrs.
A study of sensory motor systems and how neurology influences growth and motor development of children with disabilities. Students will also be exposed to physical education programs designed to promote inclusion. Prerequisites: PEGR 520, 521.

PEGR 630 Advanced Coaching 1–2 hrs.
Advanced 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 PEGR 530 and 630 combined toward the master's degree program.

PEGR 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 responsibility of the classroom teacher in this area; demonstrations and practice in teaching activities.

PEGR 642 Motor Development 2 hrs.
Scientific evidence studied to determine the nature of motor learning and its inter-relationships with physical growth, biological maturity, and social development.

PEGR 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.

PEGR 645 Curriculum Building in HPER 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.

PEGR 648 Advanced Studies in Motor Development 1–3 hrs.
A series of advanced seminars dealing with specific topics in motor development and special psychomotor skills. 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; Aquatic Programs in Special Physical Education; Methods and Materials in Physical Education; Teaching Skills and Strategies in Physical Education.

PEGR 650 Socio-Cultural Foundations in HPER 2 hrs.
The course is intended to investigate and identify the function of sport in contemporary society with special emphasis on the relationship of sport to social institutions. A cross-cultural approach.

PEGR 661 Problems and Trends in HPER 2 hrs.
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.

PEGR 662 Legal Liability in HPER 2 hrs.
This advanced studies in administration course is designed to help the HPER professional become more conscious of legal responsibilities in the physical activity setting, thus reducing the penalties of legal action. Students will discuss basic legal concepts and structures as they apply to the physical activity context. Application will be made in regard to improving risk management strategies and skills.

PEGR 663 Ethics in Sport 2 hrs.
This course is designed to provide physical activity professionals with an introductory experience in analyzing ethical and moral issues in the sport domain. The focus is on encouraging participants to develop a consistent, reflective value structure to utilize in addressing moral questions. In addition, the course structure is to allow participants to develop a personal model of integrity that will be successful in the physical activity environment. Content will include description of the "great game" and application of the guides to right actions in sport.

PEGR 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: Administration of Athletic Programs; Business Procedures; Ethics in Sport; Legal Liability; Planning Facilities; Public Relations and Promotion; Sport Management.

PEGR 672 Exercise Science Lab Techniques 2 hrs.
The purpose of this course is to provide exercise science graduate students knowledge and experience in use of contemporary laboratory procedures and equipment commonly used in quantitative research in three areas: exercise physiology, biomechanics, and motor learning. Students are provided information and hands-on experience concerning the following: theory of operation, calibration procedures, operational procedures, interpretation of results, and maintenance procedures. The course culminates with a practical examination in which each student must demonstrate competency in the use of equipment and procedures in all three areas. Prerequisite: Permission of instructor.

PEGR 674 Exercise Science Adult Fitness 2 hrs.
This course provides exercise science graduate students knowledge and experience concerning many aspects of exercise programs for adults. Topics include the following: screening procedures; adult fitness assessment; characteristics of older adults; special populations and exercise; exercise prescription; and body composition, nutrition, and weight management. Students will take both a written and practical examination. Prerequisite: Permission of instructor.

PEGR 676 Exercise Science Projects 2 hrs.
The purpose of this course is to provide exercise science graduate students with the opportunity to integrate the knowledge and skills gained in PEGR 590, 585, 672, 690, and 692 in problem-solving situations related to exercise. Students will conduct small, structured investigations in both the biomechanics and exercise physiology areas. The application of the scientific method, quantitative data collection, and scientific report writing are emphasized. Prerequisite: Permission of instructor.

This course will offer comprehensive material regarding anatomy and physiology and their implications in sports medicine. This course will concentrate on functional components of anatomy and physiology and utilize cadavers in lab.

PEGR 682 Sports Trauma Assessment and Management 2 hrs.
This course will offer comprehensive material regarding assessment and management of sports trauma. An applied, advanced approach utilizing the most up-to-date techniques will be provided.

PEGR 683 Sports Trauma Rehabilitation 2 hrs.
This course will offer comprehensive material regarding rehabilitation techniques for sports trauma. An historical perspective, including the most up-to-date techniques will be presented along with hands-on experience. The scientific basis for the techniques will provide the main focus of the course.

PEGR 685 Sports Trauma Modalities 3 hrs.
This course will offer comprehensive material regarding the use of modalities in sports trauma situations. A historical perspective including the most up-to-date techniques will be presented along with hands-on expertise. The scientific bases will be the main focus of the course.

PEGR 687 Administration of an Athletic Training Program 2 hrs.
This course will offer comprehensive material regarding administrative administration of athletic training programs in a high school, college, and clinic scenario. Independent and industrial settings will also be considered.

PEGR 689 Emergency Procedures and Orientation 2 hrs.
This course will offer comprehensive material covering life-threatening situations in sports medicine, including assessment, treatment, and transportation. Establishing (orienting) a
TEACHING, LEARNING, AND LEADERSHIP

Dr. Van E. Cooley, Chair
Main Office: 2112 Sangren Hall
Telephone: 387-3465
FAX: 387-2882
Ariel Anderson
DeWayne Anderson
Lynn Brice
James Burns
Joe R. Chapel
William W. Cobern
Van E. Cooley
David J. Crowden
Ronald A. Crowell
Katherine Cummings
Toby Daspit
Suzanne Davis
Susan Edgerton
Jennifer Fager
Elson S. Floyd
Lauren Freedman
Arthur Garmon
Lynn Nations Johnson
Joseph Kretovics
Beulah Lateef
James Muchmore
Regena Fails Nelson
Frank E. Rapley
Jianping Shen
Andrea Smith
Karen Thomas
Donald Thompson
Charles C. Warfield
Gary Wegenke
Paul Wilson
Allison Young

The Department of Teaching, Learning, and Leadership offers the Master of Arts in Education and Professional Development (with six concentrations), the Master of Arts in Educational Leadership (with five concentrations), the Specialist in Education in Educational Leadership, and the Doctor of Education in Educational Leadership (with four concentrations). The requirements for each of the programs are listed below. EDLD course descriptions may be found on pages 123-125; ED course descriptions may be found below, following the program descriptions.

Master of Arts in Education and Professional Development

The Master of Arts in Education and Professional Development provides a comprehensive professional development program with six distinct areas of concentration:
1. Early Childhood Education
2. Elementary School Teaching and Learning
3. Human Resources Development
4. Reading
5. Socio-Cultural Foundations and Educational Thought
6. Teaching in the Middle School

The Master of Arts in Education and Professional Development is designed to enhance the knowledge and skill of reflective practitioners for a variety of educational settings. It is our belief that teachers ought to be developed as leaders, change agents, intellectuals, researchers, and learners. They should be passionate learners who embrace diversity, actively inquire and reflect upon their own practice, nurture the development of new knowledge and skills, and weave the complexities of modern society into the learning process. This is accomplished through a process of continuous professional, intellectual, and social growth within an interrelated spiral of academic content preparation, professional knowledge, pedagogical skill, and guided practice. The Master of Arts in Education and Professional Development is predicated on the assumption that theory, research, policy, and practice must be integrated on an equal plane to provide innovative models that lead to the improvement of teaching, learning, and reflective practice.

Reflective practice suggests that teachers should be able to demonstrate professional expertise appropriate for their level of experience. They need to have the ability to analyze their own teaching, inquire into how teaching can be improved, and develop strategies to improve teaching that build on individual strengths. Reflective practitioners must also be able to situate their practice within the social, cultural, and economic dimensions of relationships among schooling, society, and the natural environment. It requires teachers to examine, interpret, and evaluate the teaching-learning process using the best practices described by research and experience as the referent for reflection.

Admission Requirements
1. Undergraduate grade point average of 3.0 (4.0 = A); graduate grade point average may be accepted upon review of recent and relevant course work completed at an accredited institution.
2. A written statement of purpose (1,000 to 1,500 words) outlining the applicant's philosophy of teaching and professional goals. The statement of purpose should indicate the candidate's career expectations and reasons for seeking admission to the program.
3. Congruence of applicant's goals and requested program concentration.
4. Two letters of recommendation from persons able to judge the applicant's potential to succeed in a graduate program.
5. Experience working in a professionally-related setting.

Additional requirements, such as possession of a valid Michigan Teaching Certificate or equivalent at the appropriate level, may be required for some areas of concentration. Candidates who meet all admissions criteria will be considered for admission to the program by the appropriate departmental unit. Because admission to some areas of concentration is governed by the number of available openings, the admission criteria listed above should be considered as minimum standards.

Upon admission, each student will be assigned an advisor who will assist in the preparation of a program of study. The program of study should be completed during the first semester of enrollment.

A maximum of nine appropriate Western Michigan University graduate credits taken before admission may be applied to the Master of Arts in Education and Professional Development with advisor approval.

EARLY CHILDHOOD EDUCATION, 36–39 hrs.

Advisors:
Ariel Anderson, Susanne Davis, Regena Fails Nelson, Andrea Smith
Room 2112, Sangren Hall

Program Requirements
1. Education and Professional Development Core (9 hrs.)
   ED 601 Introduction to Research in Educational Settings (3 hrs.)
   ED 633 Human Nature and Diversity (3 hrs.)
# Program Requirements

**1. Education and Professional Development Core (9 hrs.)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ED 601</td>
<td>Introduction to Research in Educational Settings (3 hrs.)</td>
</tr>
<tr>
<td>ED 633</td>
<td>Human Nature and Diversity (3 hrs.)</td>
</tr>
<tr>
<td>ED 634</td>
<td>Culture and Politics of Educational Institutions (3 hrs.)</td>
</tr>
</tbody>
</table>

**2. Program Concentration (18 hrs.) Required, 9 hrs.**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED 600</td>
<td>Fundamentals of Measurement and Evaluation (3 hrs.)</td>
</tr>
<tr>
<td>ED 602</td>
<td>School Curriculum (3 hrs.)</td>
</tr>
<tr>
<td>ED 636</td>
<td>Advanced Instructional Strategies (3 hrs.)</td>
</tr>
</tbody>
</table>

**Electives, 9 hrs.**

Advisor approved courses to be selected from three of the following five areas:

1. Reading Strategies
2. Science Methods
3. Mathematics Methods
4. Social Studies Methods
5. Socio-Cultural Studies

**3. Electives (6 hrs.)**

In consultation with a faculty advisor, the student will select 6 additional credits from the elective option areas or a course from a content area.

**4. Capstone Research Project or Master's Thesis (3-6 hrs.)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>ED 679</td>
<td>Capstone Research Project (3 hrs.)</td>
</tr>
<tr>
<td>OR</td>
<td>700 Master's Thesis (6 hrs.)</td>
</tr>
</tbody>
</table>

**HUMAN RESOURCES DEVELOPMENT, 36-39 hrs.**

**Advisors:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Room</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robert Brinkerhoff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nicholas Andreides</td>
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</tr>
</tbody>
</table>

**Room 3444, Sangren Hall**

**Room 3433, Sangren Hall**

**Program Requirements**

**1. Education and Professional Development Core (9 hrs.)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED 601</td>
<td>Introduction to Research in Educational Settings (3 hrs.)</td>
</tr>
<tr>
<td>ED 633</td>
<td>Human Nature and Diversity (3 hrs.)</td>
</tr>
<tr>
<td>ED 634</td>
<td>Culture and Politics of Educational Institutions (3 hrs.)</td>
</tr>
</tbody>
</table>

**2. Program Concentration (18 hrs.) Required, 9 hrs.**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED 660</td>
<td>Principles of Human Resources Development (3 hrs.)</td>
</tr>
<tr>
<td>ED 661</td>
<td>Fundamentals of Needs Analysis (3 hrs.)</td>
</tr>
<tr>
<td>ED 662</td>
<td>Evaluation of Human Resources Development Transfer and Impact (3 hrs.)</td>
</tr>
</tbody>
</table>

**Electives, 9 hrs.**

Select three courses from:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>ED 505</td>
<td>The Adult Learner (3 hrs.)</td>
</tr>
<tr>
<td>ED 641</td>
<td>Instructional Development (3 hrs.)</td>
</tr>
<tr>
<td>ED 663</td>
<td>Project Management in Human Resources Development (3 hrs.)</td>
</tr>
<tr>
<td>ED 664</td>
<td>Learning and Organizational Effectiveness (3 hrs.)</td>
</tr>
<tr>
<td>ED 665</td>
<td>Practicum in Human Resources Development (3 hrs.)</td>
</tr>
</tbody>
</table>

**3. Electives (6 hrs.)**

With advisor approval, select two courses in an area of interest.

**4. Capstone Research Project or Master's Thesis (3-6 hrs.)**

<table>
<thead>
<tr>
<th>Course Code</th>
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</tr>
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<tbody>
<tr>
<td>ED 679</td>
<td>Capstone Research Project (3 hrs.)</td>
</tr>
<tr>
<td>OR</td>
<td>700 Master's Thesis (6 hrs.)</td>
</tr>
</tbody>
</table>

**READING, 39-42 hrs.**

**Advisors:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Room</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joe Chapel</td>
<td></td>
<td></td>
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<tr>
<td>Jim Burns</td>
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<tr>
<td>Paul Wilson</td>
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<td>Karen Thomas</td>
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<td>Lauren Freedman</td>
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<tr>
<td>Ron Crowell</td>
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</table>

**Room 2112, Sangren Hall**

**Program Requirements**

**1. Education and Professional Development Core (9 hrs.)**

<table>
<thead>
<tr>
<th>Course Code</th>
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<td>ED 633</td>
<td>Human Nature and Diversity (3 hrs.)</td>
</tr>
<tr>
<td>ED 634</td>
<td>Culture and Politics of Educational Institutions (3 hrs.)</td>
</tr>
</tbody>
</table>

**2. Program Concentration (18 hrs.) Required, 9 hrs.**

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>ED 600</td>
<td>Fundamentals of Measurement and Evaluation (3 hrs.)</td>
</tr>
<tr>
<td>ED 602</td>
<td>School Curriculum (3 hrs.)</td>
</tr>
<tr>
<td>ED 636</td>
<td>Advanced Instructional Strategies (3 hrs.)</td>
</tr>
</tbody>
</table>

**Electives, 9 hrs.**

Advisor approved courses to be selected from three of the following five areas:

1. Reading Strategies
2. Science Methods
3. Mathematics Methods
4. Social Studies Methods
5. Socio-Cultural Studies

**Socio-Cultural Foundations and Educational Thought, 36-39 hrs.**

**Advisors:**

<table>
<thead>
<tr>
<th>Name</th>
<th>Room</th>
<th>Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paul Farber</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gunilla Hilm, G. Thomas Ray</td>
<td></td>
<td></td>
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<tr>
<td>Gerald Pillsbury, Elena Lisovskaya</td>
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</table>

**Room 2112, Sangren Hall**

**Program Requirements**

**1. Education and Professional Development Core (9 hrs.)**

<table>
<thead>
<tr>
<th>Course Code</th>
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<tbody>
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<tr>
<td>ED 633</td>
<td>Human Nature and Diversity (3 hrs.)</td>
</tr>
<tr>
<td>ED 634</td>
<td>Culture and Politics of Educational Institutions (3 hrs.)</td>
</tr>
</tbody>
</table>

**2. Program Concentration (15 hrs.)**

Select three courses in socio-cultural foundations from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>ED 603</td>
<td>Social and Philosophical Foundations (3 hrs.)</td>
</tr>
<tr>
<td>ED 629</td>
<td>Culture and Schooling (3 hrs.)</td>
</tr>
<tr>
<td>ED 630</td>
<td>History of Education in the United States (3 hrs.)</td>
</tr>
<tr>
<td>ED 631</td>
<td>Comparative Education (3 hrs.)</td>
</tr>
<tr>
<td>ED 673</td>
<td>Class, Ethnicity, and Gender in Education (3 hrs.)</td>
</tr>
<tr>
<td>ED 675</td>
<td>Multicultural Education (3 hrs.)</td>
</tr>
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</table>

Select at least one course in curriculum studies from the following:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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</thead>
<tbody>
<tr>
<td>ED 602</td>
<td>School Curriculum (3 hrs.)</td>
</tr>
<tr>
<td>ED 622</td>
<td>Middle School Curriculum (3 hrs.)</td>
</tr>
</tbody>
</table>
Master of Arts in Educational Leadership

Advisors:
Van Cooley, David Cowden, Joseph Kretovics, Jiaping Shen, Charles Warfield, Gary Wegenke.
Room 2110, Sangren Hall.

The Department of Teaching, Learning, and Leadership offers a Master of Arts in Educational Leadership with concentrations in five areas: General Leadership, School Principal, Central Office Administrator, Chief School Business Official, and Curriculum and Instructional Leadership. The master’s program prepares leaders for a variety of roles in private and public settings. Each concentration includes a leadership core, a specialty core, and a capstone experience. A Performance Driven Leadership model has been created with the emphasis on transferring theory into practice. Students actively engage in a number of activities while exploring effective leadership constructs.

Persons who wish to apply to the Educational Leadership concentration must apply directly to the Office of Admissions and Orientation. Applicants who seek information prior to admission are urged to contact the Teaching, Learning, and Leadership office. Satisfactory completion of courses prior to admission to a Department program does not guarantee admission.

GENERAL LEADERSHIP, 36 hrs.
This Master of Arts program is designed for graduate students who desire to develop and enhance their leadership skill in areas outside of K-12 education. The General Leadership program is designed for students who wish to work in nonprofit organizations, government agencies, hospitals, and other agencies. The required fifteen hours of leadership core include EDLD 602, Educational Leadership; EDLD 640, Introduction to Research or ED 601, Introduction to Research in Educational Settings; EDLD 679. This Master of Arts program is designed to prepare students for a leadership role in a chief school business official. The required fifteen hours of leadership core include EDLD 602, Educational Leadership; EDLD 640, Introduction to Research or ED 601, Introduction to Research in Educational Settings; EDLD 679.

CURRICULUM AND INSTRUCTIONAL LEADERSHIP, 36 hrs.
This Master of Arts program is designed to prepare students for a leadership role in curriculum and instruction. The required fifteen hours of leadership core include EDLD 602, Educational Leadership; EDLD 640, Introduction to Research or ED 601, Introduction to Research in Educational Settings; EDLD 679. This Master of Arts program is designed to prepare students for a leadership role in curriculum and instruction. The required fifteen hours of leadership core include EDLD 602, Educational Leadership; EDLD 640, Introduction to Research or ED 601, Introduction to Research in Educational Settings; EDLD 679.

SCHOOL PRINCIPAL, 36 hrs.
This Master of Arts program is designed to prepare students for a leadership role as a building principal. The required fifteen hours of leadership core include EDLD 602, Educational Leadership; EDLD 640, Introduction to Research or ED 601, Introduction to Research in Educational Settings; EDLD 679. This Master of Arts program is designed to prepare students for a leadership role in a chief school business official. The required fifteen hours of leadership core include EDLD 602, Educational Leadership; EDLD 640, Introduction to Research or ED 601, Introduction to Research in Educational Settings; EDLD 679.

CENTRAL OFFICE ADMINISTRATOR, 39 hrs.
This Master of Arts program is designed to prepare students for a leadership role in central office administration. The required fifteen hours of leadership core include EDLD 602, Educational Leadership; EDLD 640, Introduction to Research or ED 601.

Admission Requirements
Applicants to the Ed.S. program must submit application materials to the Office of Admissions and Orientation. Doctoral students in the Educational Leadership program are encouraged to complete a three hour internship/capstone experience, EDLD 679.
Doctor of Education in Educational Leadership

Advisors: Van Cooley, David Cowden, Joe Kotreva, Jianping Shen, Charles Warfield, Gary Wengenroth
Room 3312, Sangren Hall.

Admission Requirements
Admission to the Doctor of Education in Educational Leadership requires that students meet the Graduate College criteria for admission, submit 3 graduate reference forms, and complete a Resume of Leadership Experience form (available from the Department of Educational Leadership office). An interview will be held with members of the Educational Leadership faculty, and review and acceptance by the faculty as a whole at a meeting scheduled for student admission. The admission meetings are held in November and March.

Program Requirements
A program of study consists of a minimum of 66 credit hours beyond the baccalaureate degree and leads to an Ed.S. degree and endorsement as a central office administrator or superintendent, if the appropriate electives are completed, and includes the following courses: EDLD 602, Educational Leadership; EDLD 640, Introduction to Research; EDLD 665, Elementary Administrator or EDLD 670, Secondary Administrator; EDLD 661, School Law; EDLD 662, School Business Management; EDLD 673, Supervision; EDLD 674, School Community Relations; EDLD 680, The Superintendent; EDLD 712, Professional Field Experience (6 credit hours); and EDLD 720, Specialist Project (6 credit hours).

In addition, a minimum of 6 credit hours of elective courses will be selected, with advisor approval, which will complement and broaden strengths and skills already acquired. Contact the Teacher Certification Officer at Western Michigan University for complete information on the eligibility of Michigan certification as a central office administrator to be sure that you meet the other requirements.

Required Courses
EDLD 602, Educational Leadership; EDLD 609, Theories of Leadership; EDLD 640, Introduction to Research; EDLD 645, Research Design and Data Analysis I; EDLD 646, Research Design and Data Analysis II; EDLD 673, Supervision; EDLD 695, Dissertation Seminar; EDLD 712, Professional Field Experience (3 credit hours); and EDLD 730, Doctoral Dissertation (15 credit hours). In addition to these courses, students will choose Educational Leadership elective courses, with advisory committee approval, from among EDLD 645, Research Design and Data Analysis II; EDLD 646, Research Design and Data Analysis I; EDLD 673, Supervision; EDLD 695, Dissertation Seminar; EDLD 712, Professional Field Experience (3 credit hours); and EDLD 730, Doctoral Dissertation (15 credit hours). In addition, three courses will be selected, with advisory committee approval, from among EDLD 663, Personnel Administration; EDLD 681, Policy Development; EDLD 682, Computer Applications in Administration; and EDLD 683, Supervision seminar. Of the 12 credit hours, one course will be chosen from among EDLD 641, Measurement Techniques in Education; EDLD 642, Program Evaluation; EDLD 643, Personnel Evaluation; and EDLD 647, Survey Research Design and Analysis. Another 12 credit hours will be selected, with advisory committee approval, from related courses. A minimum of 6 credit hours will be selected from courses outside the Department of Educational Leadership.

CENTRAL OFFICE ADMINISTRATOR
This concentration within the Doctor of Education in Educational Leadership (90 hours minimum) is designed for persons who wish to develop leadership skills and service in administrative positions in public, private, or research interests (15 hours).

Required Courses
EDLD 602, Educational Leadership; EDLD 609, Theories of Leadership; EDLD 640, Introduction to Research; EDLD 645, Research Design and Data Analysis I; EDLD 646, Research Design and Data Analysis II; EDLD 665, Elementary Administrator or EDLD 670, Secondary Administrator; EDLD 661, School Law; EDLD 662, School Business Management; EDLD 664, Curriculum Development; EDLD 672, School Finance; EDLD 673, Supervision; EDLD 674, School Community Relations; EDLD 680, The Superintendent; EDLD 695, Dissertation Seminar; EDLD 712, Professional Field Experience (3 credit hours); and EDLD 730, Doctoral Dissertation (15 credit hours). In addition, a minimum of 6 credit hours will be selected from courses outside the Department of Educational Leadership.

SUPERNINTENDENT
This concentration within the Doctor of Education in Educational Leadership (90 hours minimum) leads to an endorsement as a superintendent. This degree is designed for persons who wish to pursue certification as a superintendent in the State of Michigan school systems. Contact the Teacher Certification Officer at Western Michigan University for complete information on compliance for State of Michigan certification as a superintendent to be sure that you meet the other requirements.

Required Courses
EDLD 602, Educational Leadership; EDLD 609, Theories of Leadership; EDLD 640, Introduction to Research; EDLD 645, Research Design and Data Analysis I; EDLD 646, Research Design and Data Analysis II; EDLD 665, Elementary Administrator or EDLD 670, Secondary Administrator; EDLD 661, School Law; EDLD 662, School Business Management; EDLD 664, Curriculum Development; EDLD 672, School Finance; EDLD 673, Supervision; EDLD 674, School Community Relations; EDLD 680, The Superintendent; EDLD 695, Dissertation Seminar; EDLD 712, Professional Field Experience (3 credit hours); and EDLD 730, Doctoral Dissertation (15 credit hours). In addition, a minimum of 6 credit hours will be selected from courses outside the Department of Educational Leadership.

SUPERINTENDENT
This concentration within the Doctor of Education in Educational Leadership (90 hours minimum) leads to an endorsement as a superintendent. This degree is designed for persons who wish to pursue certification as a superintendent in the State of Michigan school systems. Contact the Teacher Certification Officer at Western Michigan University for complete information on compliance for State of Michigan certification as a superintendent to be sure that you meet the other requirements.

Required Courses
EDLD 602, Educational Leadership; EDLD 609, Theories of Leadership; EDLD 640, Introduction to Research; EDLD 645, Research Design and Data Analysis I; EDLD 646, Research Design and Data Analysis II; EDLD 665, Elementary Administrator or EDLD 670, Secondary Administrator; EDLD 661, School Law; EDLD 662, School Business Management; EDLD 664, Curriculum Development; EDLD 672, School Finance; EDLD 673, Supervision; EDLD 674, School Community Relations; EDLD 680, The Superintendent; EDLD 695, Dissertation Seminar; EDLD 712, Professional Field Experience (3 credit hours); and EDLD 730, Doctoral Dissertation (15 credit hours). In addition, a minimum of 6 credit hours will be selected from courses outside the Department of Educational Leadership.

CAREER AND TECHNICAL EDUCATION
The Career and Technical Education concentration is designed to enhance skills in administrative leadership, curriculum, or instruction for individuals involved in adult, secondary, postsecondary, and four-year institutions.

Program Requirements
1. Educational Leadership Courses (9 hrs.)
EDLD 602 Educational Leadership (3 hrs.)
EDLD 609 Theories of Leadership (3 hrs.)
EDLD 673 Supervision (3 hrs.)
2. Research Techniques (9 hrs.)
EDLD 640 Introduction to Research (3 hrs.)
EDLD 645 Research Design and Data Analysis I (3 hrs.)
EDLD 646 Research Design and Data Analysis II (3 hrs.)
3. Leadership, Educational Evaluation, Measurement, or Research Design (18 hrs.)
CTE 614 Administration and Supervision of CTE (3 hrs.)
CTE 616 Occupational Selection and Training (3 hrs.)
CTE 643 Measurement and Evaluation in CTE (3 hrs.)
EDLD 674 School and Community Relations (3 hrs.)
EDLD 681 Policy Development (3 hrs.)
EDLD 643 Personnel Evaluation (3 hrs.)
Other EDLD or CTE electives (9 hrs.)
4. Focused on further technical knowledge in a particular CTE discipline, i.e., Business Education, Family Life Education, or Technology Education. Courses could be taken within the College of Education or other colleges within the University to enhance technical content proficiency needed, as a CTE instructor in an adult, secondary, or postsecondary institution.

Area #1: Curriculum
ED 622 School Curriculum (3 hrs.)
ED 628 Curriculum Theory (3 hrs.)
EDLD 642 Program Evaluation (3 hrs.)
EDLD 664 Curriculum Development (3 hrs.)

Area #2: Educational Leadership
EDLD Personnel Administration (3 hrs.)
EDLD Secondary Administration (3 hrs.)
EDLD 672 School Finance (3 hrs.)
EDLD 642 Program Evaluation (3 hrs.)

Area #3: Instruction
Focused on further technical knowledge in a particular CTE discipline, i.e., Business Education, Family Life Education, or Technology Education. Courses could be taken within the College of Education or other colleges within the University to enhance technical content proficiency needed, as a CTE instructor in an adult, secondary, or postsecondary institution.
5. Addressing Career, Professional, and Research Issues in Career and Technical Education (15 hrs. minimum)

CTE 812 Studies in Technology (1–4 hrs.)

CTE 815 Trends and Developments in CTE (2 hrs.)

CTE 817 Seminar in CTE (2–3 hrs.)

CTE 645 Lab Planning and Organization in CTE (2 hrs.)

CTE 646 Teaching Issues in CTE (2 hrs.)

CTE 648 Adult Education in CTE (3 hrs.)

CTE 650 Business/Industry Education Work-based Learning (3 hrs.)

6. Professional Field Experience (9 hrs.)

EDLD 712 Professional Field Experience (9 hrs.)

7. Dissertation Seminar (3 hrs.)

EDLD 695 Dissertation Seminar (3 hrs.)

8. Dissertation (15 hrs.)

EDLD 730 Doctoral Dissertation (15 hrs.)

Teaching, Learning, and Leadership Courses (ED)

Open to Upperclass and Graduate Students

ED 500 In-Service Professional Development I 1 hr.

This course develops specific professional skills related to current school responsibilities of teachers and other school personnel. Final course outcomes need to have demonstrated application to the classroom/workplace. May be repeated up to 9 hours. Credits/grade may be applied to teacher certification programs with approval of the Teacher Certification Office, but will not be applicable to graduate programs within the Department of Education and Professional Development. Graded on a Credit/No Credit basis.

ED 501 In-Service Professional Development II 2–3 hrs.

This course develops specific professional skills over an extended period of time related to current school responsibilities of teachers and other school personnel. Final course outcomes need to have demonstrated application to the classroom/workplace. May be repeated, but only three credit hours may be applied to graduate programs within the department. Topics included in a department program must be approved in advance of registration by the program advisor.

ED 502 Curriculum Workshop 1–6 hrs.

Opportunity provided for teachers, supervisors, and administrators in selected school systems to develop programs of curriculum improvement. This may include short-term offerings to resolve a particular curricular problem, as well as long-range curriculum reform efforts. 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 with advisor’s approval.

ED 503 Educational Technology Academy 1–3 hrs.

This course is designed to permit students to update knowledge and skills in current educational technology and apply this learning for use in educational programs for students in pre-kindergarten through college. Such applications include methods of using computers, video and auditoryvisual technologies in literacy development, content area programs, instructional management, and the arts, as well as others appropriate to preservice and inservice professions. Participation in the course presumes subject knowledge in educational technology literacy on the part of the students. Final course outcomes include an understanding of material to the classroom/workplace. These ETA offerings bring students with specific needs, instructors with unique expertise, and facilities with appropriate equipment together for intensive and highly-focused learning experiences. May be repeated. Graded on a Credit/No Credit basis.

ED 504 Adult Development 3 hrs.

This course provides an in-depth look at each age and stage in the life cycle. It explores such problems as the changing role of parents and singles, the changing societal pressures on teachers, new adult life-styles, mid-life career changes, the changing roles of males and females, and unique health stresses. Emphasis will be placed on the identification of patterns of lifelong leading to a more fruitful and fulfilling life.

ED 505 The Adult Learner 3 hrs.

This course provides an in-depth look at the learning adult from approximately age 22 through old age 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 well-being and problem-solving will be studied.

ED 506 Teaching in Adult Education 3 hrs.

This course is designed to provide teachers with a knowledge of special situations incurred in teaching of adults. Included also are techniques of interpersonal communication with adults, as well as practical exercise in the designing of learning experiences for adults. Extensive use will be made of audiovisual media, and computers, experts in the field, and field observation in adult learning activities. The course should be helpful to administrators in planning inservice programs for their own staff.

ED 508 Seminar in Parent Education 2 hrs.

Emphasis is placed on cooperative problem-solving between parents and teachers of school-age children and youth. Problems considered will include such topics as grief and loss through death, divorce, or separation; special needs and contributions of multicultural parents; parents as resource persons and paraprofessionals in the schools; and problems identified by members of the seminar. Members of the seminar will report on the current literature available through libraries and community resources and work toward potential solutions of problems.

ED 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 research in 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 literacy development. In addition, the course will provide a brief overview of the delivery systems and procedures used in the U.S. to teach reading. This will involve an historical overview as well as current and potential future practices.

ED 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 self-expression and communication. Each student is expected to produce new photographs each week and to submit one or more montages for group critique at each class meeting. Each student must have the use of appropriate equipment and should expect to spend $50 or more for supplies. Although no prerequisite is required, it is helpful to have had some experience with basic darkroom processes. May be repeated up to a total of six credits.

ED 575 Administration of Child Development Centers 3 hrs.

Examination of day care and preschool regulations and/or requirements and knowledge of administrative materials and duties in providing optimum growth for young children. Includes management, planning, and organizing child development centers. (Cross-listed with FCS 575.)

ED 597 Reading and Related Language Experiences 3 hrs.

A study of the current research on related skill acquisition and literacy development.

ED 598 Selected Reading in Education 1–4 hrs.

Designed for highly qualified students who wish to study in depth some aspect of their field of specialization under a member of the departmental staff. Prerequisite: Written consent of departmental advisor and instructor.

Open to Graduate Students Only

ED 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 the application of research techniques to evaluation, the interpretation of quantitative data in educational situations, and the application of basic evaluation models.

ED 601 Introduction to Research in Educational Settings 3 hrs.

This course is intended to provide students with an overview of major research methods models used in educational settings and to provide them with skills in interpreting and evaluating educational research studies. Emphasis is placed on careful reading and critique of current studies that are representative of the various models.

ED 602 School Curriculum 3 hrs.

This course, designed for teachers and administrators at all levels, analyzes the decision factors stemming from societal forces; psychological, cultural, and developmental needs and perceptions of learners; and internal structures of the discipline as guidelines for a curriculum emerging from and serving a democratic society.
ED 603 Social and Philosophical Foundations 3 hrs.
A cultural approach to the development of American educational policy and practice in its broad social setting. Consideration is given to historical, economic, social, and philosophical factors which influence educational thought and practice. The need for historical perspective and sound analysis of conflicting points of view is emphasized in the interpretation of current educational issues and the alternative solutions of present educational problems.

ED 604 Psychological Foundations of Education 3 hrs.
An overview of the psychological forces that influence learners in their educational settings, with special emphasis on the nature and significance of human variability, development of self, measurement and evaluation, and a consideration and application of principles of learning in classroom situations.

ED 605 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.

ED 606 Early Childhood Workshop: Learning and Curriculum 3 hrs.
This workshop promotes an understanding of how the young child learns; students will use these learning principles as bases for curriculum development. Students will construct materials and equipment and develop curriculum plans. Portions of the course can be designed to meet the individual needs of students. These will be taught by experts from appropriate fields within and outside of the University. Prerequisites: Admission to the master's program in Early Childhood Education and permission of instructor.

ED 607 Research Methods in Early Childhood Education 3 hrs.
The purpose of this course is to acquaint the student with major types of research about young children, the steps involved in conducting such investigations, and the basic statistical concepts needed for understanding and designing research. Students will be required to present a research proposal. Prerequisites: ED 606 and permission of instructor.

ED 608 Seminar in Early Childhood Development 3 hrs.
The content of this seminar may vary each semester depending on the interests and needs of the students, but is invariably designed to provide an in-depth exploration of some facet of development in young children. Each student is expected to conduct a search of the literature on a specific topic. Topics may include child-rearing practices, sex-role identification, cognitive development, language acquisition, psychomotor development, and parent education. Prerequisites: ED 606, ED 607 or ED 601, and permission of instructor.

ED 609 Early Childhood Education in Perspective 3 hrs.
A study of the history of the education of young children with emphasis on the philosophy, social settings, and people who have influenced the movement. Prerequisites: ED 606, ED 607 or ED 601, ED 608, and permission of instructor.

ED 610 Montessori Education 3 hrs.
This course is an introduction to the philosophy of Dr. Maria Montessori for teaching the child "for life" and its application to classroom practice. Students will become familiar with the life and work of Dr. Montessori and their influence on her philosophy of education. Students will study the techniques and the learning materials she developed and consider their universal applicability.

ED 611 Informal Approaches to Studying Young Children's Development 3 hrs.
This course helps teachers 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 account for children's psychological and social growth while creating classroom conditions to maximize this growth.

This course is designed to assist elementary classroom teachers and those interested in literacy for early childhood students in using appropriate strategies for accessing meaning of text. This course will give ways to help students use and apply strategies in using reading and writing as ways of knowing for young children. Prerequisite: ED 516.

ED 613 Early Childhood Problems and the Teacher 3 hrs.
Deals with the concepts of discipline and questions of behavior. Teachers will acquire practical knowledge of research concerning children's social behavior and will review and apply systems for promoting prosocial behavior in their classrooms.

ED 614 Parent Education for Teachers of Young Children 3 hrs.
Presents a variety of techniques for teachers to use in working together with parents. Teachers will study child-rearing factors which parents most need to know. The course will help teachers 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.

ED 615 Play and Young Children's Learning 3 hrs.
Students will develop understanding and appreciation of the nature of play in humankind, and of the relationship of play to humanity's artistic endeavor, invention, and problem-solving, and will look at play from historical and anthropological points of view. Emphasis will be placed on the stages of play in young children, and on the intimate relationship between play and young children's cognitive and affective development. Students will make practical application to their own curriculum for children.

ED 616 Piaget and Young Children 3 hrs.
This course examines significant contributions of Piaget to our understanding of young children's learning. Knowledge of how young children think will be applied to early childhood curriculum. Teachers will apply Piagetian tasks and will be able to improve curriculum for young children with growing understanding of these children's minds.

ED 617 Reading in the Content Areas 3 hrs.
Designed to acquaint elementary, middle school and high school teachers with reading strategies used in the process of reading to learn. Participants will consider the text factors which affect student learning, and develop and evaluate strategies and materials to enhance their students' learning in specific content areas.

ED 619 Clinical Studies in Reading 3 hrs.
This course is intended to provide the basic information needed in the examination of persons with reading disabilities. 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. Students will have the opportunity to construct, administer, score, and interpret both standardized and nonstandardized reading tests. Emphasis will be placed on producing a practical bibliography of measurement instruments and materials. Prerequisite: ED 312 or 322.

ED 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. Treatment, 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 301 and 619.

ED 621 The Early Adolescent Learner 3 hrs.
Theoretical background and research related to the intellectual, emotional, perceptual, social, and personality development are presented and explored. An emphasis is placed upon problems teachers face with early adolescent learners and appropriate strategies for helping these students realize their potential.

ED 622 Middle School Curriculum 3 hrs.
This course examines the historical and philosophical foundations of middle level schools, effective organizational components, supporting research and current trends and issues affecting early adolescent schooling. An emphasis on how appropriate middle level schools strive to meet the developmental needs of young adolescents undergirds all topics. Prerequisite: ED 621.

ED 624 Middle School Methods and Materials 3 hrs.
This course presents instructional strategies designed to meet the developmental needs of young adolescents. It reflects the middle school philosophy by focusing on personal, skill, and cognitive development. Students work in interdisciplinary teams on a group project. Other topics of concern to middle level educators are examined, including teaching responsibility, grading and evaluation, and whole language. Prerequisites: ED 621 and 622.

ED 625 Strategic Learning Through Texts for Middle School Teachers 3 hrs.
This course is designed to assist middle school classrooms teachers and those interested in literacy for middle school students in using appropriate strategies for
ED 628 Curriculum Theory 3 hrs.
This course provides students with an in-depth examination of significant historical and philosophical influences on curriculum, as well as important theoretical orientations within the field. The focus of the course is to enable students to engage in critical reflection from theoretical perspectives on the purposes and practices of schooling, and to bring this critical reflection to curriculum planning and evaluation, and to their own teaching practices.

ED 629 Culture and Schooling 3 hrs.
The purpose of this course is for students to examine culture as a system for organizing thought and perception and to explore its various influences on the content and methods of schooling in the United States. Particular attention is given to cultural dissonance among students, teacher, and text, and to culturally grounded ways of knowing that emerge from schooling experiences.

ED 630 History of Education in the United States 3 hrs.
Development of educational thought, practice, and social change in the United States. Critical examination of the development of the American commitment to commonality in education: The changing relationship between school and community since 1800; the rise of the professional educator; and the shift and progression of educational goals. Implications of historical background for present problems in education with emphasis on the revision of previously held conventional thinking about schooling in America will be addressed.

ED 631 Comparative Education 3 hrs.
This course provides an overview of comparative education, a field concerned with schooling national and historical contexts. Educational patterns and their societal determinants around the world will be examined. Selected problems and patterns of American education will also be highlighted from comparative perspectives. It will explore major theories and methodological approaches in comparative educational research as well as examine representative cross-national issues and themes.

ED 633 Human Nature and Diversity 3 hrs.
This course examines practical and theoretical issues in the definition of desirable educational aims and practices as related to the perceived needs, interests, and potentials of those involved. The course places the process of defining aims and practices in social, cultural, and historical perspective, with particular attention to the influence of perceptions of human nature and potential. Prominent views of human nature and diversity that have influenced the course of American schooling will be examined. The course provides basis for ongoing professional inquiry concerning the fit between educational practices and the diverse individuals whose subject they are, and the way educational practices tacitly inculcate cultural assumptions regarding human nature, interests, and potential.

ED 634 Culture and Politics of Educational Institutions 3 hrs.
This course examines practical and theoretical issues concerning learning organizations. It examines the ways educational aims and practices relate to wider patterns of belief, value, and controversy by exploring how choices emerge and change in organizational settings. It includes consideration of the organizational dynamics of institutionalized educational practices, and explores how cultural assumptions influence educational content and method. The course also examines the roles of professional educators in effecting organizational change. Prerequisite: ED 633.

ED 635 Children, Science, and Technology 3 hrs.
The course is intended to help elementary and middle school teachers capitalize on children's natural interest. In this course students will explore a number of inexpensive and practical activities that teachers can use to encourage children to explore. The activities teach science processes; that is, they involve the children in processes of gaining knowledge similar to what scientist use in their development of scientific knowledge. The processes will include observing, measuring, classifying, inventing, and problem solving. The course will explore different uses for computer technology including the World Wide Web. The course will also cover assessment issues for activity oriented science learning.

ED 636 Advanced Instructional Strategies for Elementary Teachers 3 hrs.
This is an advanced course on teaching strategies at the elementary grade levels. The course focuses on the development and application of instructional strategies that are effective for teaching primary grade students. Students will learn how to develop and implement successful instructional strategies that engage students in active learning and promote higher-order thinking skills. Prerequisites: ED 548 or equivalent.

ED 641 Instructional Development 3 hrs.
Intended for human resource development specialist, 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 assistants on projects of HRD professionals. Prerequisites: ED 548 or equivalent.

ED 643 Practicum in Clinical Studies in Reading 3 hrs.
This course is intended to give students experience in employing 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 emphasized. Prerequisites: ED 619 and 620.

ED 644 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. The course may be repeated for credit as different topics are offered. Prerequisite: ED 548 or equivalent experience.

ED 652 Oracy and Literacy 3 hrs.
This course explores the foundation of language, language acquisition, language development, and the ties between oral language and literacy. The role of oral language, applied linguistics, and dialects is studied and applied to the literacy process.

ED 653 Practicum in Reading Therapy 3 hrs.
This course affords students the opportunity to build on competencies attained in ED 643. Reading therapy is offered on an individual or group basis depending on scheduling. The course serves as an internship for working with pupils who have problems in 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.

ED 656 Creating and Administering a Balanced Literacy Program 3 hrs.
This course affords an opportunity to investigate and explore procedures to organize and administer elementary and secondary reading programs. The course will have students examine existing programs and study models of balanced literacy programs to improve upon existing programs. This course is intended to employ the best practices in the literacy research to create and administer a balanced literacy program, kindergarten through adult basic education.

ED 660 Principles of Human Resources Development 3 hrs.
The course provides an overview of the human resource development (HRD) function in an organization. This includes the role of the HRD professional, the nature of HRD structure and function, and the planning and operation of HRD. Special emphasis in the course is devoted to analysis of the HRD function in any organization to identify those elements and characteristics of HRD associated with successful, state-of-the-art and worthwhile operations. The course is a prerequisite for all HRD concentration students, and a good choice for any other person who wishes to gain a critical understanding of the HRD (staff development, inservice education) function.

ED 661 Fundamentals of Needs Analysis 3 hrs.
Development of skills in identifying organizational needs for performance improvement related to human resources development. The course is intended for persons whose current or future professional roles involve them in the development of learning strategies and interventions to promote individual and organizational change. The course will emphasize a holistic, performance-oriented problem solving approach to needs analysis. The goals of the course are: 1) to familiarize students with principles and strategies related to needs analysis, and 2) to provide students with opportunities to develop skill in applying needs analysis concepts and methods.

ED 662 Evaluation of Human Resources Development Transfer and Impact 3 hrs.
The course addresses the theories, methods, and issues addressed by human resource development (HRD) practitioners as they recommend, design, install, and assess HRD interventions to meet needs in organizations. Evaluation of HRD interventions is viewed from a macro level versus the micro (instructional design) level to help students develop an
understanding of the larger range of organizational and human performance factors that impinge on successful HRD efforts. Students analyze one or more major HRD interventions for a real or hypothetical organization, including plans for creating the pre- and post-training organizational environment needed to impact effective performance, and design evaluation approach to assure and assess the quality of the intervention.

ED 665 Project Management in Human Resources Development 3 hrs.
This course responds to both general project management concerns as well as the particular demands and problems associated with managing human resources development and other educational projects. Students will develop an understanding of project management needs, problems, concepts and strategies. They will be introduced to and practice particular project management skills, such as project definition, work flow analysis, dependency charting, budgeting, planning, etc. Emphasis in the course is on acquisition of practical skills and knowledge. The course is intended especially for persons who have recently or will in the near future assume responsibility for managing a project and have had little previous management experience.

ED 664 Learning and Organizational Effectiveness 3 hrs.
Examination of characteristics and elements of effective organizations that can be positively impacted by educational concepts and interventions, with special attention to the roles of individual and organizational learning in organizational effectiveness, development of skills in conceptualizing, planning, and designing the use of human resources development (HRD) to improve organization effectiveness efforts in real and hypothetical settings. Prerequisite: Completion of HRD required core, or permission of instructor.

ED 665 Practicum in Human Resources Development 3 hrs.
This course is a supervised practicum integrated with a class meeting component. Students work together on human resources development projects with real clients in a real workplace. The bulk of work takes place in the field, in project work and client contact. Class meeting sessions will be spent in project reviews and group problem solving. Students will develop skills in project research and gain experience in solving HRD application problems.

ED 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. Emphases on new approaches to working successfully with problem students and classes.

ED 671 Structuring Classroom Dialogue 3 hrs.
This course is designed to assist teachers in the development of their ability to conduct dialogue in a classroom. Each student prepares lessons, presents them to a small group of students, and is videotaped and critiqued with each presentation. Some ethnographic research methods are presented and applied during this course, specifically the use of fieldnotes, journals, and transcription as well as observation and self-observation methods. In addition, the course is designed to instruct the student about the ancient historical roots of dialogue, its transmission throughout the history of the western world, and the role that dialogue has played and continues to play in human interaction and learning. Students must be teaching or have access to a classroom for necessary application of course content.

ED 673 Class, Ethnicity, and Gender in Education 3 hrs.
This course centers on the significance of social class, race, gender, and ethnicity in educational practice and outcomes. Social identity and cultural diversity are explored in relation to classroom communication patterns, teacher expectations, and student achievement. Patterns of biases and discrimination are examined, as well as current issues, challenges, and opportunities of education with respect to student diversity.

ED 675 Multicultural Education 3 hrs.
This course provides a foundation to examine the major ethnic groups that make up school populations in the U.S. Special attention will be given to the subject of prejudice with an analysis of how stereotypes about ethnic groups and women are manifested and eliminated. The origin of racist theories will be studied. Strategies for resolving cross-cultural conflicts will be stressed.

ED 676 Teaching Thinking in the School 3 hrs.
This course investigates the issues involved in teaching thinking in classrooms. The focus is on the wide variety of current programs and materials and their underlying concepts. Students will learn to infuse the teaching of higher level thinking skills into the curriculum.

ED 677 Ethnography of Schooling 3 hrs.
This course is an in-depth exploration of the use of ethnography in the study of teaching and schooling. Participant observation, in-depth interviewing, and document analysis are the main data gathering techniques studied. Students will design and execute a small-scale ethnographic study focused on an aspect of schooling. The course will be taught as a seminar where methodological issues, such as reliability and validity, will be discussed as they arise in the work of students. Ethnographic research on educational issues, with an emphasis on teaching, will be read concurrently.

ED 679 Capstone Research Project 3 hrs.
Completion of an advisor-approved research, application, and curriculum project related to the student's professional practice. Project must reflect a synthesis of skills and knowledge from concentration core course work, but at the same time represent a practical application product which can be completed in a one semester time frame. Students will identify and define the nature and scope of the capstone project prior to enrollment in this course, and enroll when completion of the project is planned. Prerequisite: Completion of Master of Arts in Education and Professional Development core courses, program concentration courses, and advisor permission.

ED 680 Early Literacy Learning 3 hrs.
Focused on literacy acquisition, this course explores how the young learner creates a network of competencies which generate subsequent changes in literacy learning. Explanations of change over time in a child's control of literacy learning from school entry until the independence at the third year of schooling are emphasized. This cognitive view of literacy processes in a developmental perspective will explore different programmatic emphases which enable the young reader to extend the range and effectiveness of strategic reading.

ED 681 Reading and Writing with Young Children 3 hrs.
Reviews the developmental aspects of early writing and reading with young children, providing insights for the creation of programs in early literacy development. It aims to develop understanding of the early literacy process, helping teachers create an environment in which learners interrelate oral language learning, learning to read, and learning to write. The relationship of early writing to early reading is examined, and a model of interactive assessment with the teaching and learning cycle is stressed. Emphasis in this course will focus primarily on early writing, with a subordinate role for reading instruction.

ED 687 Strategic Learning through Texts for High School Teachers 3 hrs.
This course is designed to assist high school classroom teachers in developing in literacy for high school students in using appropriate strategies for accessing meaning of text. This course will give ways to help students use and apply strategies in using reading and writing as ways of knowing for high school students. Prerequisite: ED 516.

ED 693 Middle School Education Seminar 3 hrs.
This seminar serves as the capstone experience for the Teaching in the Middle School master's program. It provides a forum for synthesizing and integrating the content of prior course work, further examining current research and exploring middle level education issues. Students examine curricular issues with an emphasis on integrative approaches to organizing knowledge and then identify topics for study based on their professional interests and goals. These topics are explored along with a variety of middle level education issues and their policy implications. Students identify a culminating project and conduct a review of literature pertaining to the project. Projects are completed in ED 694.

ED 694 Middle School Project 3 hrs.
Students continue their investigation of middle level education issues identified in ED 693. The main focus of the course is the completion of the previously identified culminating project. Students work independently on their projects with periodic class sessions designed to discuss education issues and project progress. Students present their projects for critical review and analysis. Prerequisite: ED 693.

ED 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 and is designed to acquaint teachers, reading specialists, and administrators with the current research and literature pertinent to their areas of specialization. Students should 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.

ED 697 Special Topics in Reading 1–3 hrs.
A variable credit course designed to provide a vehicle for the development and implementation of special study in the field of literacy. The purpose is to provide students with the opportunity to study topical current issues.
ED 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 of Course Offerings 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.

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

ED 700 Master's Thesis
6 hrs.

ED 710 Independent Research
2–6 hrs.

ED 712 Professional Field Experience
2–12 hrs.
CONSTRUCTION ENGINEERING, MATERIALS ENGINEERING, AND INDUSTRIAL DESIGN

Dr. Roman Rabiej, Chair
Main Office: 2007 Kohrman Hall
Telephone: 387-6515
FAX: 387-6517
Osama Abudayyeh
Prina Ari-Gur
Mohammed Haque
David Middleton
Roman J. Rabiej

The Department of Construction Engineering, Materials Engineering, and Industrial Design offers two graduate degree programs, the Master of Science in Construction Management and the Master of Science in Materials Science and Engineering. Courses are offered in the evenings and in off-campus locations to enable working students to study without quitting their jobs. The programs are designed to enable qualified full-time students to complete their studies within two years and fully employed students within three years.

Master of Science in Construction Management
Advisor: Mohammed Haque, Room 1093, Kohrman Hall

The principal objective of persons working in the field of construction management is to facilitate completion of each construction project on time and within budget while maintaining an acceptable level of quality. Other objectives include the maintenance of good safety records, efficient operations, quality workmanship, and proper and adequate labor relations with other employees.

Western Michigan University's Master of Science in Construction Management is aimed at graduates of engineering and technology programs who want to play an active role in the management of local, state, national, or international construction. It provides advanced education and training for working construction professionals, as well as broad preparation for those who have recently completed their bachelor's degree.

Students may choose to work on an industrial project or participate in either basic or applied research. They also have the option of emphasizing one of the following areas: Information Management, and Computer Applications in Construction; Quantitative Tools for Construction Project Management; and Constructability, Quality, and Safety Issues on Construction Projects.

Admission Requirements:
1. Bachelor of Science in Civil Engineering, Construction Science and Management, or Construction Engineering and Management, Architecture, Architectural Engineering, or a related discipline. Applicants with other majors aspiring to enter the program are encouraged to apply, but may be required to take prerequisite courses, depending on their background.
2. Grade point average of 3.0 (A = 4.0) or better in the last two years of undergraduate work.

Applicants with less than the required academic record, or with need to elect more than three prerequisite courses, may seek Permission to Elect Graduate Courses (PTG) status or apply for probationary admission status and then complete the prerequisite course work and secure a grade of "B" or better in each course in the first nine hours of graduate work to establish regular admission status.

PROJECT OPTION
The Project Option is intended primarily for students who plan to work in the industry after graduation. Choosing to do an industry-supported project helps prepare students for future jobs by integrating classroom knowledge and real-life experiences.

Program Requirements:

1. An approved program with a minimum of 34 semester hours of credit and an overall average grade of "B" or better.

2. The 34 semester hours must be completed as follows:
   a. 12 semester hours of core course requirements (CMD 530, 630, 631, and 633);
   b. 4 semester hours of CMD 710, Independent Research, which requires a written report and a presentation;
   c. 18 semester hours of approved electives (not more than three hours of CMD 639 can be applied).

THESIS OPTION
The Thesis Option is intended primarily for research-oriented students and those planning to pursue a doctoral degree. But the Thesis Option also serves students pursuing industry jobs, because engineers with a master's degree are often expected to conduct applied research.

Program Requirements:

1. An approved program with a minimum of 30 semester hours of credit and an overall average grade of "B" or better.

2. The 30 semester hours must be completed as follows:
   a. 12 semester hours of core course requirements (CMD 530, 630, 631, and 633);
   b. 6 semester hours of CMD 700, Master's Thesis, which requires a written thesis meeting Graduate College requirements and an oral examination in defense of the thesis;
Master of Science in Materials Science and Engineering

Advisor:
Pnina Ari-Gur, Room 2126, Kohrman Hall

This degree program is designed to provide career advancement training for engineers and scientists working in the industry, as well for recent BS and BSE degree graduates. The program is aimed at graduates of engineering or physical sciences curricula.

Admission Requirements:
1. An undergraduate degree in an engineering field or in geology, physics, chemistry, or biology. The degree must include calculus through differential equations, at least two semesters of calculus-based physics, and at least four credit hours of chemistry. Based on the candidate’s background (experience and course-work), the graduate committee may require the incoming student to take some undergraduate courses.
2. A grade point average of 3.0 or better (A=4.0) in the last two years of undergraduate work. Applicants with grade point averages lower than 3.0 may be granted Permission to Take Graduate Courses (PTG). The project option is intended mainly for students whose objective is to work in industry after graduation. An option of an industrially funded project will prepare the student for the job and help the student integrate the knowledge from the courses to real-life applications. The thesis option is for students who are inclined towards research, as well as interested in pursuing a position in industry. Students opting to continue study for a Ph.D. will benefit from the thesis research experience, as will those engineers who are often expected to conduct applied research in their occupational careers.
3. Additional courses may be required if the student lacks any necessary course prerequisites.

Construction Engineering, Materials Engineering, and Industrial Design Courses (CMD)

Open to Undergraduate and Graduate Students

CMD 530 Construction Project Delivery Systems
3 hrs.
A comprehensive coverage of the standard contracts between various agencies involved in construction will be described in the course. Analysis of traditional and current project delivery methods will also be presented. Issues related to insurance and bonding in the construction industry will be highlighted. Advanced topics such as alternate dispute resolution will also be covered. Prerequisites: CMD 436, or equivalent, and departmental approval.

CMD 531 Advanced Construction Project Management
3 hrs.
This course will build on the information that is normally provided to students in the undergraduate construction management courses on planning and control of construction projects. The focus of this course will be to provide the students with knowledge of quantitative tools that can be used in planning and controlling construction projects. Topics to be covered will include cash flow forecasting, site planning, site administration, risk analysis, contract documents, and contracts administration. Advanced planning tools such as line of balance, velocity diagrams, time-cost trade off, resource planning with applications to construction projects will also be discussed. Prerequisites: CMD 431, 436, and 438, or equivalent, and departmental approval.

CMD 532 Wood Science and Engineering (2–2)
3 hrs.
Scientific study of dendrology and forest products industries. A study of the relationship between the macro and microscopic structure in wood and wood based composites as they relate to Engineering Design. Laboratory activities will involve machining theory, wood fluid relationships, and wood stabilization. Prerequisites: MATH 374, PHYS 207, ME 250, and consent of instructor.

CMD 559 Physical and Mechanical Properties of Polymers (3–0)
3 hrs.

CMD 566 Ceramics: Structure and Properties (2–2)
3 hrs.
Ceramic crystalline structure. Structure imperfections, deformation, and failure of ceramic materials. Processing, properties, and toughening mechanisms. Design with applications of ceramic materials. Prerequisites: MATH 374, PHYS 207, ME 250, and consent of instructor.

Open to Graduate Students Only

CMD 630 Computer-Aided Construction (3 hrs.
Provide the students with a thorough understanding of the important applications of computing concepts and techniques in the construction industry. The course will provide knowledge of important tools such as software modeling and database design issues related to information management in construction, knowledge-based system design, artificial intelligence, and object-oriented modeling methods. Advanced computing concepts such as neural networks, genetic algorithms, petri nets, collaborative and integrated environments, and 4D-CAD models will be highlighted. Use of real world applications in this course will further strengthen the knowledge and skills attained by the students. Prerequisites: CMD 431, 436, and 438, or equivalent, and departmental approval.

CMD 631 Design and Analysis of Construction Operations (3 hrs.
The basic objective of the course will be to provide the students the knowledge to design and analyze construction operations and processes. The course is designed to provide a thorough understanding of the fundamentals of discrete event simulation such as simulation algorithms. The CYCLIC Operations NEwork (CYCLONE) modeling methodology will be used as the basis for design and analysis of construction operations. Recent advancements in the area of simulation based project planning will also be provided. Issues related to object-oriented simulation, hierarchical and modular simulation, query based simulation, and web based simulation will also be highlighted in this course. Prerequisites: CMD 431, 436, and 438, or equivalent, and departmental approval.

CMD 632 Construction Project Control (3 hrs.
The course will involve instruction on a number of topics related to the administration of construction contracts. The major focus of the course will be on topics such as financial control, cost control, schedule update and monitoring, integrated project management systems, and computer integrated construction. The course will include the following: Cost/Schedule Control Systems (CSCC) will be used to demonstrate the importance of monitoring, updating, and control functions on a construction project. Prerequisites: CMD 431, 436, and 438, or equivalent, and departmental approval.

CMD 633 Design of Construction Systems (3 hrs.
This course will focus on construction practices, construction equipment, construction methods, and construction productivity. It will provide the students with an overview of issues related to construction site
logistics such as temporary structures, shoring structures, and supporting structures. Knowledge of structural analysis and design and construction practices will form the basis of this course. Prerequisites: CMD 336 and 386, or equivalent, and departmental approval.

CMD 639 Construction Management Seminar 1–3 hrs.
This course will allow graduate students to explore the recent advancements in the area of Construction Engineering and Management. A series of presentations by the graduate students, industry experts, visiting researchers, and the Construction Engineering and Management faculty will provide a broad information base to the students enrolled in this course. The course is repeatable. Prerequisite: Departmental approval.

CMD 651 Corrosion Science and Engineering (3–0)
3 hrs.
Corrosion and environmental degradation of metals, alloys, ceramics and polymers. Causes, theoretical background, methods of protection and design for prevention. Prerequisites: MATH 374, PHYS 207, ME 250, and consent of instructor.

CMD 653 Advanced Physical Metallurgy (3–0)
3 hrs.
Review of dislocation theory; interactions of dislocations with point defects, other dislocations and surfaces. Electronic structure and physical properties. Advanced metallographic techniques. Prerequisites: MATH 374, PHYS 207, ME 250, and consent of instructor.

CMD 657 Analysis of Metal Forming 3 hrs.

CMD 658 Structure of Polymers and Composites (3–0)
3 hrs.

CMD 695 Advanced Topics in Materials Science 3 hrs.
A specialized course dealing with some particular advanced area of materials science not included in other course offerings. May be repeated for credit with a different topic up to 6 credits. Prerequisite: Consent of advisor.

CMD 696 Advanced Topics in Construction Management 1–3 hrs.
New or special topics on advanced developments in different aspects of construction will be provided. Specific topics and prerequisites are identified by the instructor and will vary from semester to semester. The course is repeatable. Prerequisite: Departmental approval.

CMD 697 Problems in Materials Science and Engineering 1–6 hrs.
Special problems based on the 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 election of the course.

Open to Graduate Students Only—Please refer to the Graduate College section for course description

CMD 700 Master’s Thesis 6 hrs.

CMD 710 Independent Research 2–6 hrs.

ELECTRICAL AND COMPUTER ENGINEERING

Dr. S. Hossein Mousavinezhad, Chair
Main Office: 3058 Kohrman Hall
Telephone: 387-4057
FAX: 387-4096

Ikhlas Abdel-Qader
Johnson Asumadu
Kevin Davis
Raghavendra Gejji
John Gesink
Janos Granntner
Dean Johnson
Joseph Kelemen
Daniel Litynski
John Mason
Damon Miller
Hossein Mousavinezhad
Frank Severance

The Department of Electrical and Computer Engineering offers graduate programs leading to a Master of Science in Engineering (Electrical) and to a Master of Science in Engineering (Computer).

These programs are designed to prepare students for advanced-level graduate study in electrical and computer engineering or professional practice. They provide opportunities for engineering graduates to enhance their background in engineering science analysis and design. Courses are offered in the areas of computer engineering, control systems and signal processing, real-time embedded systems, electromagnetics, and power electronics.

Admission Requirements
Applicants must:
1. Satisfy the general admission requirements of The Graduate College.
2. Possess a Bachelor of Science in Electrical Engineering or Computer Engineering from an ABET accredited program in the U.S. or a reputable overseas school as certified by the WMU office of International Student Services.
3. Have a grade point average of 3.0 or better (A=4) in the last two years of undergraduate work.
4. Submit results of the GRE General Test. A student with a bachelor's degree in computer science, engineering, mathematics, or science can be considered for probationary admission into the MSE (Electrical) or the MSE (Computer) program with full admission granted after completing undergraduate courses in electrical engineering or computer engineering specified by the department.

Master of Science in Engineering (Computer)

Advisors:
John Gesink,
S. Hossein Mousavinezhad,
Room 3058, Kohrman Hall

Program Requirements
The program consists of thirty-three hours:
1. Twenty-two hours of required computer engineering courses.
2. A minimum of two hours of ECE 690, with a maximum of four hours allowed.
3. The remaining elective hours of additional graduate courses approved by the department from the following disciplines: computer, electrical, other engineering disciplines; computer science, mathematics, or physics OR
4. A student may elect ECE 700 (Master's thesis, 6 hours) and an approved elective course at the graduate level.
The thesis elective is open to selected students interested in research or project work. Students interested in this option must petition the department chair, and each student's thesis committee must be approved by the department chair and the graduate dean.

Master of Science in Engineering (Electrical)  
Advisors:  
John Gesink,  
S. Hossein Moussavinezhad,  
Room 3058, Kohrman Hall  

The program has two options—a thesis option and a course work option. A common requirement for each option is twenty-four hours of core courses.

THESIS OPTION  
The thesis option is open to selected students interested in research or project work. Students interested in this option must petition the department chair, and each student's thesis committee must be approved by the department chair and the graduate dean.

Program Requirements  
In addition to the twenty-four hours of core courses—comprised of eighteen (18) hours of approved electrical engineering graduate courses and six (6) hours of approved mathematically-oriented graduate courses—the student will elect six (6) hours of ECE 700 Master's Thesis and successfully defend the thesis.

COURSE WORK OPTION  
Program Requirements  
In addition to the twenty-four hours of core courses—comprised of eighteen (18) hours of approved electrical engineering graduate courses and six (6) hours of approved mathematically-oriented graduate courses—the student will elect three (3) hours of additional electrical engineering graduate courses approved by the department, and b) six (6) hours of additional graduate courses approved by the department from the following disciplines: electrical, computer, industrial, or mechanical engineering; mathematics; computer science; or physics.

Electrical and Computer Engineering Courses (ECE)  
Open to Upperclass and Graduate Students  
ECE 515 Real-Time Computing  
3 hrs.  
Characterizing, modeling, and specifying real-time systems. Software life cycle. Designing and programming sequential and concurrent real-time systems. Scheduling. Distributed real-time computing. Engineering case studies using C++/Ada. Prerequisite: CS 112 or equivalent.

ECE 532 Introduction to Evolutionary Computation  
3 hrs.  
Introduction to optimization algorithms which operate using the principles of Darwinian evolution. Both underlying theory and applications. Genetic algorithms, evolutionary programs, and evolution strategies. Prerequisite: CS 331.

ECE 551 Application Specific Integrated Circuit Design (4-0)  
4 hrs.  
Design, analysis and implementation of application-specific circuits (ASIC). Emphasis will be placed on programmable design (including field programmable gate arrays (FPGA) and programmable logic devices (PLD)). Custom design will also be discussed and full-custom design will be briefly introduced. Introduction to contemporary CAD systems.

ECE 552 Switching and Automata Theory (4-0)  
4 hrs.  

ECE 553 Advanced Microcontroller Applications (3-0)  
3 hrs.  
This course is intended to give graduate students and seniors the ability to specify, design, and test microcontroller based digital systems. Prerequisite: ECE 451 or equivalent.

ECE 555 Advanced Digital Signal Processing (3-0)  
3 hrs.  
Discrete-time signals and systems, time and frequency domain representations. Structures of Discrete-time systems and Digital Filters. DFT and FFT methods of spectral analysis and estimation. Discrete Hilbert Transforms and multidimensional signal processing. Prerequisite: ECE 455 or equivalent.

ECE 557 Design of Reconfigurable Digital Machines  
3 hrs.  
Introduction to hardware design languages. Modeling and simulation using VHDL. Advanced design techniques for digital machines based on Field Programmable Gate Arrays and Complex Programmable Logic Devices. System design with on-line reprogrammable FPGAs. Prerequisites: Computer engineering or electrical engineering major; ECE 357, ECE 451; or equivalent courses.

ECE 560 Time-Varying Fields (3-0)  
3 hrs.  
Electrodynamics, Maxwell's Equations, Boundary value problems and solutions of Helmholtz Equation in different coordinate systems. Green's functions, transmissions lines and waveguides. Introduction to perturbational and variational methods. Engineering EM Background needed for more advanced topics. Prerequisite: ECE 361.

ECE 570 Digital Control System (3-0)  
3 hrs.  
State variable technique, controllability and observability, digital control system design with state or output feedback, maximum principle, optimal control, state regulator—deterministic and stochastic state observers. Prerequisite: ECE 371.

ECE 580 System Modeling and Simulation  
3 hrs.  
This is a first course in the principles of mathematical modeling of stochastic and deterministic systems. It will focus on analytical models, mathematical rigor and computer simulation of problems. Students will simulate a number of systems using appropriate stochastic and deterministic models using a computer. This course is cross-listed with ME 580. Prerequisites: ECE 371, ECE 380 or equivalent.

ECE 581 Astrodynamics (3-0)  
3 hrs.  
A course in celestial dynamics as applied to space travel. Students will learn the basics of satellite orbit definition, determination, and navigation. While the general n-body problem will be taken up, the emphasis will be placed on the calculation of geocentric and heliocentric orbits. The primary application will be satellite systems such as the Global Positioning System. This course is cross-listed with ME 581. Prerequisites: ME 258.

ECE 585 Mechatronics (3-0)  
3 hrs.  
A course in fundamentals of motion control, primarily as it is applied to robotics. Students will learn the basics of control systems as applied to multiaxis servo systems. Appropriate time will be devoted to develop a sound basis in the electro-mechanical discipline. This course is cross-listed with ME 585. Prerequisites: ECE 210, ME 258 and ECE 371 or ME 360.

ECE 586 System Identification (3-0)  
3 hrs.  
This is a course in model determination. Students will learn the basics of defining system structure and techniques for finding parametric values. The emphasis will be placed on the application of modeling to practical problems in the student's specific discipline. This course is cross-listed with ME 586. Prerequisites: ECE 580 or ME 580.

ECE 591 Real-time Embedded System Seminar I  
1 hr.  
First of a three semester seminar sequence that provides students opportunities to 1) meet with engineering and scientific experts and discuss the theory and practice of RTES design and implementation, and 2) present technical RTES material to a peer group of students and faculty. Prerequisite: Senior standing in computer engineering.

ECE 592 Real-time Embedded System Seminar II  
1 hr.  
Second of a three semester seminar sequence that provides students opportunities to 1) meet with engineering and scientific experts and discuss the theory and practice of RTES design and implementation and 2) present technical RTES material to a peer group of students and faculty. Prerequisite: ECE 591.

ECE 595 Introduction to Advanced Topics (3-0)  
3 hrs.  
To introduce students to advanced topics in electrical/computer engineering not included in other course offerings. May be taken more than once up to six hours.

Open to Graduate Students Only  
ECE 605 Advanced Microprocessor Applications (4-0)  
4 hrs.  
Selected topics on designing high-performance microprocessor systems. System design for Harvard, RISC and CISC processors. Interfacing to high-speed parallel system bus. Shared memory and cache memory design. Prerequisite: ECE 451 or equivalent.

ECE 636 Applied Optics and Optical System Design  
3 hrs.  
Classical and conventional optical methods in use by the engineering and research community. More, Speckle and Speckle-shearing interferometry. Holographic interferometry. Photo-electricity and electronic speckle pattern interferometry. Optics and lasers for research and industrial applications. Digital image processing and optical system
design. This course is cross-listed with ME 636. Prerequisite: Consent of instructor.

ECE 640 Electronic Instruments (3-0)
3 hrs.
Analysis of instrumentation systems including basic instrumentation concepts, dynamic analysis of instruments, transducers, classical analog methods, digital methods and application. Prerequisites: ECE 330, ECE 371, ECE 251.

ECE 641 Electronic Instrumentation II (3-0)
3 hrs.
Description, analysis, and design of instrumentation systems with emphasis on sensors, signal acquisition, amplification, and processing. Both analog and digital sensors and signal processors will be considered. Prerequisite: ECE 640.

ECE 650 Advanced Computer Architecture (3-0)
3 hrs.
An introduction to the problems involved in designing and analyzing current machine architectures. Simulation and design automation of digital systems. The completion of a substantial design project is required. Prerequisites: ECE 355, ECE 357.

ECE 651 Objects, Architectures, and Parallel Computation (3-0)
3 hrs.
Integral approach toward the hardware and software design of computer systems. Design decisions due to interdependence among the different levels (architecture, operating systems, programming languages application programs) of modern computer systems design. Prerequisite: ECE 357.

ECE 664 Digital Communications (3-0)
3 hrs.
This course covers advanced concepts of modern digital communication theory, including information theory and coding theory. Important practical topics of recent interest are also covered. Prerequisite: ECE 460 or equivalent.

ECE 670 Modern Control Theory (3-0)
3 hrs.
Modern control theory using "state variable" formulations provides a unified approach to a wide variety of problems. Depends on matrix theory and linear algebra. Prerequisite: ECE 371 or permission of instructor.

ECE 671 Optimal Control Systems (3-0)
3 hrs.

ECE 672 Fuzzy Control Systems (3-0)
4 hrs.
Theoretical aspects of fuzzy sets, fuzzy logic, approximate reasoning, and fuzzy control, as well as implementation issues of fuzzy controllers. Supervisory controllers using fuzzy automata. Hardware accelerators for fuzzy logic. Prerequisites: ECE 355, ECE 371.

ECE 673 Artificial Neural Networks (3-0)
3 hrs.
Hardware implementations of feedforward, recurrent, and cellular neural networks using analog and/or digital techniques. Both discrete and integrated circuit approaches will be investigated. Applications of neural networks in engineering systems. Prerequisites: ECE 330; ECE 371; or consent of instructor. Proficiency in a high level programming language is required.

ECE 680 Design Factors for Distributed Systems (4-0)
4 hrs.
An introduction to distributed computing systems operation and design including interprocessor communication techniques, concurrency, distributed control, and fault tolerance with an emphasis on real-time environments. Current publications on distributed computing systems design will be surveyed.

ECE 690 Computer Engineering Seminar (1-0)
1 hr.
This seminar provides students with opportunities to meet with engineering and scientific experts and discuss the theory and practice of real-time embedded system design and implementation. It is also an opportunity for students to present technical RTES materials to a peer group and faculty. Prerequisite: Graduate standing in computer engineering.

ECE 693 Real-Time Embedded System Seminar III (3-0)
1 hr.
Third of a three semester seminar sequence that provides students opportunities to 1) meet with engineering and scientific experts and discuss the theory and practice of RTES design and implementation, and 2) present technical RTES material to a peer group of students and faculty. Prerequisite: ECE 591.

ECE 695 Topics in Electrical and Computer Engineering (3-0)
3 hrs.
Special topics in advanced area of Electrical Engineering or Computer Engineering not included in other courses. May be repeated for credit with a different topic for up to 6 hours maximum. Prerequisite: Consent of instructor.

ECE 697 Problems in Electrical and Computer Engineering (1-6)
3 hrs.
Special problems based on individual need or interest under the direction of a member of the graduate faculty. Open to Graduate Students Only—Please refer to The Graduate College section for course descriptions.

ECE 700 Master's Thesis (3-0)
6 hrs.

INDUSTRIAL AND MANUFACTURING ENGINEERING

Dr. Michael Atkins, Chair
Main Office: 2043 Kohrman Hall
Telephone: 387-3737
FAX: 387-4075
Michael B. Atkins
Kailash M. Bafna
Steven E. Butt
Paul V. Engelmann
Tycho K. Fredericks
Tarun Gupta
Abdolazim Houshyar
Mitchel J. Keil
Leonard R. Lamberson
David M. Lyth
Larry A. Mallak
Collin L. Phillips
Sam N. Ramrattan
Jorge Rodriguez
Frederick Z. Sitkins
Ralph Tarner
James VanDePolder
Bob E. White
Robert M. Wygant

The Department of Industrial and Manufacturing Engineering offers a Master of Science in Engineering (Industrial), a Master of Science in Engineering Management, a Master of Science in Manufacturing Engineering, a Master of Science in Operations Research, and a Doctor of Philosophy in Industrial Engineering.

Master of Science in Engineering (Industrial)

Advisor: Abdolazim Houshyar, Room 20700, Kohrman Hall

The objectives of the program leading to a Master of Science in Engineering (Industrial) are:

1. To prepare students who hold a baccalaureate degree in industrial engineering or other engineering or related disciplines for advanced level professional practice in industrial engineering.

2. To prepare students for formal post-master's and doctoral programs, as their inclination and professional growth require.

Graduates of the program can look forward to career opportunities with higher levels of responsibility and remuneration. These include jobs at a variety of levels in manufacturing and service-related industries.

Admission Requirements

1. Possess a baccalaureate degree in engineering or a related discipline.

2. Have an undergraduate grade point average of 3.0 for regular admission. Probationary admission may be granted to students with a grade point average of at least 2.5 and less than 3.0.

3. Submit GRE (Graduate Record Examination) scores for the General Test.

4. Where the student's background is found deficient, foundation courses will be required. Students with a baccalaureate degree in industrial engineering will typically not be required to take any prerequisite classes.

THESIS OPTION

Program Requirements

1. An approved integrated program with a minimum of 30 hours of graduate work, distributed as follows:
a. Eighteen (18) hours, six (6) courses, of core requirements: IME 516 Design of Experiments and Regression Analysis; IME 606 Capital Budgeting and Cost Analysis; IME 611 Operations Research for Engineers; IME 612 Productivity and Operations Management; IME 630 Advanced Simulation Modeling and Analysis; IME 642 Ergonomics and Occupational Biomechanics.
b. Six (6) hours of IME 700, Master's Thesis.
c. Six (6) hours of electives. The specified number of electives may be taken from 500- or 600-level courses offered within the Department of Industrial and Manufacturing Engineering or elsewhere in the University, unless restricted by program requirements. The elective courses must be compatible with the overall program and the career objectives of the student, and must be approved by the program advisor prior to registration. No more than half of the credit hours needed for graduation can be at the 500 level.
2. A written thesis which meets The Graduate College requirements and an oral examination in defense of the thesis.
3. An overall 3.0 grade point average.

NON-THESIS OPTION

Program Requirements
1. An approved integrated program with a minimum of 36 hours of graduate work distributed as follows:
a. Eighteen (18) hours, six (6) courses, of core requirements: IME 516 Design of Experiments and Regression Analysis; IME 606 Capital Budgeting and Cost Analysis; IME 611 Operations Research for Engineers; IME 612 Productivity and Operations Management; IME 630 Advanced Simulation Modeling and Analysis; IME 642 Ergonomics and Occupational Biomechanics.
b. Fifteen (15) hours of electives, at least 6 of which will be from the Department of Industrial and Manufacturing Engineering. The specified number of electives may be taken from 500- or 600-level courses offered within the Department of Industrial and Manufacturing Engineering or elsewhere in the University, unless restricted by program requirements. These elective courses must be compatible with the overall program and the career objectives of the student, and must be approved by the program advisor prior to registration. No more than half of the credit hours needed for graduation can be at the 500 level.
c. IME 697, with a written report and oral presentation, or an approved 600-level IME elective.
2. An overall 3.0 grade point average.

Master of Science in Engineering Management

Advisors:
David Lyth, Room 2017, Kohrman Hall
Robert Wygant, Grand Rapids Regional Center

The objectives of the graduate program leading to a Master of Science in Engineering Management are:
1. To increase the breadth of understanding of the students' responsibilities as technically educated individuals through the development of analytical and management skills, and knowledge in cognate areas.
2. To develop the capabilities to deal appropriately with resources available in commerce and industry (i.e., people, time, and money).
3. To prepare students for formal post-master's and doctoral programs, as their inclination and professional growth require.

Admission Requirements
1. Possess a baccalaureate degree with a major in a technical field, such as engineering, technology, mathematics, computer science, or the physical sciences. For other majors, see item 2.
2. Show evidence of completion of at least eight semester hours of mathematics and eight semester hours of physics and/or chemistry with a minimum overall grade point average of 2.5 in these areas.
3. Submit GRE (Graduate Record Examination) scores for the General Test.
4. Undergraduate courses should have been completed in calculus, statistics, computer programming, work methods analysis, operations planning and control, and quality control. Where the student's background is deficient, foundation courses will be required.

Program Requirements
The Master of Science in Engineering Management requires a minimum of thirty (30) hours: Eighteen (18) hours of core courses and twelve (12) hours of electives.
2. Elective courses (12 hours at minimum) to be selected from graduate courses available in the Department of Industrial and Manufacturing Engineering, or any other department within the University. Among the electives is IME 697, with a written report and oral presentation. The elective courses must be compatible with the overall program and the career objectives of the student, and must be approved by the program advisor prior to registration.
3. An overall 3.0 grade point average.

Master of Science in Operations Research

Advisor:
Steven Butt, Room 2016, 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 relationships between operations research and his or her professional field. The participating departments are Economics, Industrial and Manufacturing Engineering, Management, and Mathematics and Statistics. The responsibility for administering the program is with the Department of Industrial and Manufacturing Engineering.

The objective of the program leading to the Master of Science in Operations Research 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. The student's program will be based on his or her undergraduate preparation, work experience, and occupational goals.

Admission Requirements
1. Possess a baccalaureate degree in economics, industrial engineering, management, or mathematics. Students with degrees in other areas will also be considered.
2. Where the student's background is found deficient, prerequisite courses will be required.
Program Requirements

1. Complete a minimum of 30 hours of teaching and research careers in industrial engineering in colleges and universities. The emphasis on original research in a chosen area requires students to conduct a significant, dissertation research project.

Admission Requirements

Application materials may be obtained from the Office of Admissions and Orientation. International students must contact the Office of International Student Services for admission information and to obtain application materials. Admission decisions will be made by the departmental doctoral committee. All students must meet the general requirements for a master's degree as specified elsewhere in this College Catalog. In addition to these requirements, the student must fulfill either of the following requirements:

a. The determination of how the master's degree can be used to fulfill the requirements listed below is made at the time of admission.

b. A student entering the program with a bachelor's degree, a maximum of twenty-one (21) credit hours of 500-level, post-baccalaureate graduate courses beyond the bachelor's degree, may be admitted to the Ph.D. program; for a student entering the program with a master's degree, a maximum of six (6) credit hours of 500-level courses beyond the master's degree can be applied to the Ph.D. program.

Candidacy Requirements

Successful completion of the teaching and research careers in industrial engineering in colleges and universities. The emphasis on original research in a chosen area requires students to conduct a significant dissertation research project.

Doctor of Philosophy in Industrial Engineering

Advisor: Bob White, Room 2014, Kohrman Hall

The Doctor of Philosophy in Industrial Engineering is designed to intensify the student's knowledge and comprehension in the various disciplines of the subject with emphasis on original research in a chosen area of specialty. It will assist individuals wishing to pursue a career as a research practitioner in industry and government or teaching engineers in industry and government.

Admission Requirements

Application materials for admission to the graduate program in Industrial Engineering may be obtained from the Office of Admissions and Orientation. International students must contact the Office of International Student Services for admission information and to obtain application materials. Admission decisions will be made by the departmental doctoral committee. All students must meet the general requirements for a master's degree as specified elsewhere in this College Catalog. In addition to these requirements, the student must fulfill either of the following requirements:

a. The determination of how the master's degree can be used to fulfill the requirements listed below is made at the time of admission.

b. A student entering the program with a bachelor's degree, a maximum of twenty-one (21) credit hours of 500-level, post-baccalaureate graduate courses beyond the bachelor's degree, may be admitted to the Ph.D. program; for a student entering the program with a master's degree, a maximum of six (6) credit hours of 500-level courses beyond the master's degree can be applied to the Ph.D. program.

Program Requirements

In addition to the Graduate College requirements, the following requirements must be fulfilled:

1. Eighty-four (84) credit hours of courses beyond the baccalaureate degree. A student with a master's degree may be able to transfer up to thirty-six (36) credit hours, with this decision being made by the doctoral committee at the time of admission.

2. The credit hours are grouped into seven areas as follows:
   a. Core Courses (22 hours): Mathematics (minimum of 12 hours), Operations Research (minimum of 3 hours), and Engineering Systems (minimum of 7 hours).
   b. Theses and Dissertations (36 hours): The candidate must complete a dissertation in the area of specialization.
   c. Elective Courses (12 hours): The candidate must complete a minimum of 12 hours of elective courses beyond the master's degree.
   d. Additional Requirements (9 hours): The candidate must complete a minimum of 9 hours of additional requirements, including a minimum of 6 hours of research tools.

Applicancy Requirements

The applicancy requirements are those stated in the general requirements of The Graduate College. The student should establish a dissertation committee by the end of the first year. The committee will be composed of at least four members of The Department of Industrial and Manufacturing Engineering, and one or more outside examiners.

Candidacy Requirements

The applicant must seek candidacy no later than the end of the third calendar year after enrollment in the Ph.D. program. By this time the student should have completed the course work and have a preliminary plan for the dissertation endorsed by the chair of his/her dissertation committee. To be admitted to candidacy, the student must successfully complete the comprehensive examination. This exam, administered by the doctoral committee, will be composed of both a written and an oral component. The written portion will include questions submitted by the student's doctoral committee and those drawn from the departmental pool of questions relating to the core courses. The questions are designed to evaluate the student's knowledge in the engineering management area of concentration as well as his/her area of specialization. The oral component will be administered by the doctoral committee. The student's performance in this exam will be evaluated by the doctoral committee. If the student fails the comprehensive exam, the student can apply to retake the exam in the next semester. A second failure results in dismissal from the program. Completion of the comprehensive examination, and a positive recommendation of the dissertation committee, are required for candidacy.

Research Tool

The required research tools are computer programming and statistics. Competency will be based on successful completion of CS 506 and MATH 660 or equivalent with a grade of "B" or better.

Financial Assistance

The Department of Industrial and Manufacturing Engineering offers opportunities for financial support of doctoral students through doctoral associations, graduate assistantships, and fellowships. Information is available from the department or The Graduate College.

Industrial and Manufacturing Engineering Courses (IME)

Open to Upperclass and Graduate Students

IME 500 Advanced Industrial 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: IME 403 or permission of instructor.

IME 501 Survey of Industrial Engineering Topics (3–0) 3 hrs.
Course devoted to studying the basics of the industrial engineering profession. Subjects will include work analysis, engineering economy, statistical quality control, production planning and control, and materials handling. Emphasis is placed on the application of these techniques to manufacturing related problems. This course cannot be applied toward the Master of Science degrees in engineering management or industrial engineering. Prerequisites: MATH 122 or MATH 200, MATH 260 or MATH 360, or equivalent.

IME 502 Manufacturing Engineering Fundamentals (3–3) 4 hrs.
This course reviews the fundamental principles of Computer-Aided Design (CAD), Computer-Aided Manufacturing (CAM), and metrology used in the practice of manufacturing engineering. Topics covered include: CAD documentation techniques, CAM modeling, Geometric Dimensioning and Tolerancing (GD&T), EIA/ISO format (G&M code) Numerical Control (N/C) programming, graphical N/C programming systems, and Statistical Process Control (SPC). The laboratory includes hands-on experiences with commercial CAD/CAM systems, N/C machines, and instruments of precision measurement. This course cannot be applied for credit toward the Master of Science in Manufacturing Science. This course may be used to meet the stated prerequisite requirements normally satisfied by IME 246, IME 358, and IME 481 in the graduate program. Prerequisites: MATH 122 or MATH 200, CS 104 or CS 105, IME 142 and IME 154.

IME 503 Manufacturing Engineering Fundamentals (2–3) 3 hrs.
The course is focused upon the study of identification, properties, processing, applications, and testing techniques of metalic materials. The course is required for ECE and ECE majors. The course content includes: plastics, metals, ceramics, wood, and composites materials. Analysis and property determination utilizing standardized (appropriate) testing techniques will be carried out for selected metalic materials. Processing of plastics and composites will be investigated. This course cannot be applied for credit.
The purpose of this course is to introduce topics related to computer integrated manufacturing. Tests of significance, operations (3-0) 318 or 328 or 501 or equivalent. CNC, CAD, FMS. Hands-on experience with miniatures computer controlled equipment will be included. Prerequisite: Course in computer programming.

IME 508 Advanced Quality Management (3-0) 3 hrs. Analysis and application of new concepts in the field of quality control. Tests of significance, probability studies, and other uses of statistics as applied to quality control. Prerequisite: IME 316 or 328 or 501 or equivalent.

IME 512 Management of Service Operations (3-0) 3 hrs. An analysis of service industries exploring differences in planning and controlling operations. Emphasis will be on service system design, service quality, and comparing customer expectations with their perceptions.

IME 516 Design of Experiments and Regression Analysis (3-0) 3 hrs. Topics related to experimental design and regression analysis. Topics include randomized blocks, Latin squares, factorials, multiple correlation and regression, and its application to response surfaces. Prerequisite: IME 261 or equivalent.

IME 542 Human Factors Engineering (3-0) 3 hrs. The process of designing for human use. The course covers the study of the interactions between the individual, equipment, products, and the environment in any human-task-environment system. Topics include human capabilities and limitations; human input, output, and control; work space design; and the work environment. (Cross listed with PSY 542).

IME 546 Concurrent Engineering (3-0) 3 hrs. The synthesis of automated design, analysis, and manufacturing processes through integrated computer systems. Topics in automated graphics, wire-frame, surface and solid modeling, boundary element analysis, and manufacturing process generation will be investigated. Prerequisite: CAD experience.

IME 550 Advanced Plastics Processing (3-0) 3 hrs. Review of optimum machine components and systems, identification of key process variables within injection molding and extrusion systems. Discussion of the causes of process instability. Determination of the process capability within injection molding and extrusion systems. Prerequisites: Basic understanding of plastics processing, as documented on work record.

IME 557 Special Topics in Industrial Engineering (3-0) 3 hrs.

Group study of special topics in industrial 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: Consent of instructor.

Open to Graduate Students Only

IME 600 Concepts and Principles of Engineering Management (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.

IME 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: IME 404, 414, or permission of instructor.

IME 606 Capital Budgeting and Cost Analysis (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.

IME 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. Prerequisites: IME 261 and 262 or MATH 362.

IME 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 is studied. Prerequisite: MATH 123.

IME 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 IME 610. Prerequisite: MATH 362.

IME 612 Production/Operations Management (3-0) 3 hrs. Topics relating to the planning and control functions of manufacturing systems are presented. These topics include management of the production system, strategies of product design and process selection, design of production systems, production planning, shop floor control, purchasing, quality management, and productivity improvement. Prerequisite: IME 326 or 416 or 501, or equivalent.

IME 614 Project Management (3-0) 3 hrs. To address the basic nature of managing projects and the advantages and disadvantages of this method of getting things done. The problems of selecting projects, initiating them, and operating and controlling them are discussed. The demands made on the project manager and the interaction with the parent organization are also presented.

IME 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. Prerequisite: IME 600 or permission of instructor.

IME 626 Advanced Engineering Economics (3-0) 3 hrs. Advanced topics in engineering economics including deterministic and stochastic investment analysis, life cycle analysis, and linear programming and applications in capital budgeting. Prerequisites: IME 606 and 610.

IME 630 Advanced Simulation Modeling and Analysis (3-0) 3 hrs. Advanced topics in modeling of complex systems using both discrete and continuous simulation. Emphasis on the simulation of manufacturing systems. Prerequisite: IME 430 or equivalent.

IME 642 Ergonomics and Occupational Biomechanics (3-0) 3 hrs. Topics related to work physiology and biomechanics. Topics include anthropometry, skeletal system and muscle, neuromuscular control system, biomechanics, respiratory system, circulatory systems, and metabolic system.

IME 643 Physiology of Work (2-3) 3 hrs. A thorough review of the musculoskeletal system and energy development in the work environment. A practical guide to what the body can do and how this is influenced by the respiratory, circulatory, and metabolic systems. Laboratory projects emphasize applications in actual work tasks.

IME 645 Design for Manufacturability (3-0) 3 hrs. Production methods and materials will be applied to product development projects that relate to the design of efficient and cost effective manufacturing. Topics include the design of part families, geometric classification coding for storage and retrieval, database transfer compatibility standards, process influence on functional product design, statistical determination and the application of linear and geometric tolerancing.

IME 650 Plastics Processing Improvement (3-0) 3 hrs. Analysis of plastics processing variables to determine relative impact on product quality. Review of process instrumentation and data acquisition equipment. Implementation of experimental strategies for process improvement. Strategies for attaining a robust plastics processing. Prerequisites: IME 550 and a course in experimental design.

IME 654 Nontraditional Manufacturing Processes (3-0) 3 hrs. Nontraditional manufacturing processes may use electric currents, amplified light, gases, loose abrasives, chemical solutions, explosives or water to convert materials that are sometimes difficult to process by conventional methods. Topics include nontraditional manufacturing methods, process capabilities, tooling, and fixturing.

IME 656 Material Selection and Processing (3-0) 3 hrs. Properties of metals, ceramics, polymers, wood, and composites. Factors in selection of materials and their fabrication process. Failure mechanisms and prevention. Prerequisite: An
The specific topic will be shown in the course introductory course in engineering materials or Advanced work organized around topics of current interest in engineering and technology. 

IME 657 Studies in Industrial Engineering (3-0)
Consent of instructor. 

IME 658 CAM Applications (3-0)
Computer hardware and software requirements for integrated manufacturing. Prerequisite: IME 507.

IME 681 Process Manufacturing and Control (3-0)
The study of process improvement techniques which will ultimately lead to quality products. Processes improvement includes the reduction of variability in process during the manufacturing stage resulting in improved product quality. A team problem solving approach utilizing data acquisition systems and statistical methods are emphasized. Practical industrial applications of process monitoring and control are reviewed. Prerequisite: An introductory course in statistics.

IME 683 Thesis Proposal (1-0)
Study of research methodologies including review and synthesis of previous work, and strategies for conducting investigation. Discussion of format and expectations of the master's thesis. An approved thesis proposal is required for the completion of this course. Prerequisite: Approval of advisor preceding enrollment.

IME 697 Problems in Industrial Engineering (3-0)
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.

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

IME 700 Master's Thesis 6 hrs.
IME 712 Professional Field Experience 2-12 hrs.
IME 725 Doctoral Research Seminar 2-6 hrs.
IME 730 Doctoral Dissertation 15 hrs.

MECHANICAL AND AERONAUTICAL ENGINEERING

Dr. Parviz Merali, Chair
Main Office: 2065 Kohrman Hall
Telephone: 387-3368
FAX: 387-3358
URL: http://www.mae.wmich.edu
Judah Art-Gur
Kasim Biber
Christopher S.K. Cho
Jay Easwaran
Mechemul Groper
Philip J. Guchelavar
Jerry H. Hamelink
Richard Hathaway
Arthur Hoadley
James Karczewski
Daniel Kujawski
Ho Sung Lee
William W. Liou
Parviz Merali
Koorosh Naghshineh
Iskender Sahin
Rameshwar P. Sharma
Dennis J. VandenBrink
Molly W. Williams

Master of Science in Engineering (Mechanical)

Advisor: Jerry Hamelink
Room 2065, Kohrman Hall

Graduates with the Master of Science in Engineering (Mechanical) look forward to career opportunities at higher levels of responsibility. The areas of opportunities include, but are not limited to, mechanical system and structural dynamics, system design and controls, materials, experimental stress analysis, tribology, vehicle dynamics, experimental and computational fluid dynamics, thermal and power systems, noise and vibrations, and finite element analysis. Opportunities for mechanical engineers continue to develop with the rapid expansion of the knowledge base. 

Class scheduling and scheduling (in the evening hours) are arranged so that a working engineer can complete the program in three years while maintaining full-time employment.

Admission Requirements
1. Bachelor of Science in Mechanical Engineering from an institution with an ABET/EAC accredited program.
2. Grade point average of 3.0 (A=4.0) or better in the last two years of undergraduate work.

Applicants with degrees in other engineering fields or related disciplines may be considered for admission after they have satisfactorily completed the necessary prerequisite courses prescribed by the department's graduate advisor.

Probationary admission is granted to a student with a baccalaureate degree and less than the required academic record or anyone having a baccalaureate degree from a non-accredited college or anyone needing more than three prerequisite courses. A student admitted on non-degree probationary status may establish eligibility for regular admission by completing the specified prerequisite courses, and securing grades of "B" or better in each course in the first nine hours of graduate work.

A student with a baccalaureate degree who wishes to enroll in courses but does not plan to pursue a program leading to a master's degree, or is not eligible for regular admission may enroll in courses for which prerequisite requirements are satisfied with Permission to Take Graduate Classes (PTG) status. If the student later decides to apply for regular admission, no more than nine hours of work taken under PTG status will be considered part of a degree program.

Program Requirements
The Master of Science in Engineering (Mechanical) consists of thirty hours, of which up to six hours may be taken as a thesis or project. A specific program of study for each student is determined in conjunction with and subject to the approval of the student's advisor. The program of study includes the following: Twenty-four hours of approved courses in the area of mechanical engineering plus six hours of electives. Of the thirty hours, six hours must be mathematics oriented. The mathematics-oriented courses may include mechanical engineering courses (e.g., ME 560, ME 561, ME 562, ME 637, and ME 661) or electives selected from any engineering department in the College of Engineering and Applied Sciences, or computer science, and the physical sciences. Students who choose to take a class outside the ME approved list of graduate courses must obtain the approval of the ME graduate advisor prior to registering for such classes.

Doctor of Philosophy in Mechanical Engineering

Advisor: Parviz Merali
Room 2065, Kohrman Hall

The Doctor of Philosophy in Mechanical Engineering is designed to intensify the knowledge and comprehension of the student in the various disciplines of the subject, with emphasis on original research in a chosen area of specialty.

Admission Requirements
In addition to the general admission requirements for a doctoral degree at Western Michigan University, a Master of Science in Mechanical Engineering or a related engineering discipline will be required. Students with a Master of Science in mathematics or in a natural science discipline may also be admitted if they have a Bachelor of Science in Mechanical Engineering or a related engineering discipline. The Master of Science should be from a university recognized and approved by the Graduate Committee of the department. Evidence of scholarship and potential for independent research in mechanical engineering must be presented to the Graduate Committee. The level of achievement in mathematics, physics, and chemistry courses, which are prerequisites for success in doctoral studies in engineering, will also be considered in evaluating the application. The applicant must also submit the results of the verbal, analytical, quantitative, and engineering portions of the Graduate Record Examination.

Program Requirements
The main accomplishment of the Ph.D. student should be an original, high quality research. The program is oriented toward that achievement. The course work and number of credit hours that a student is required to take depend on the individual qualifications, level of preparation for independent research, and the needs for successful accomplishment of the dissertation. The doctoral student must acquire through course work and demonstrate in a qualifying examination a broad knowledge and understanding of mathematics and two of the following core areas of mechanical
engineering; thermodynamics and heat transfer; fluid mechanics; structural mechanics; machine elements; and dynamics and vibrations. Intensive and successful use of a required area of competency in the research work must be approved by the dissertation committee. A minimum of 46 graduate credit hours beyond the Master of Science is required, including a minimum of 30 credit hours of course work and 15 credit hours of dissertation (ME 730). At least 18 of the 30 non-dissertation credit hours must be taken from the graduate courses of the Department of Mechanical and Aeronautical Engineering. To ensure adequate preparation for the graduate research subject, enrollment in courses from other programs must be approved by the dissertation faculty advisor. A minimum grade point average of 3.25 is required in the doctoral studies. These graduation requirements complement the general university requirements.

Details of the Ph.D. study process may be obtained from the office of the Department of Mechanical and Aeronautical Engineering.

Mechanical and Aeronautical Engineering Courses (ME)

Open to Upperclass and Graduate Students

ME 530 Theoretical and Computational Fluid Mechanics (3-0) 3 hrs.

The theory and numerical implementation of ideal and viscous flows, and exact solutions of Navier-Stokes equations. Special emphasis will be on planning methods, conformal mapping, and singular distributions for flows around two- and three-dimensional bodies. Familiarity with VMS and some FORTRAN experience are required. Prerequisites: ME 356 and consent of instructor.

ME 540 Automatic Control of Flight Vehicles (3-0) 3 hrs.

Synthesis of basic autopilot and stability augmentation systems for flight vehicles. Advanced flight control structures including integrated flight control, control of inertial cross-coupling. Human pilot plus airframe and the relationship with flying qualities requirements. Extensive use of commercial software tools. Prerequisite: ME 356.

ME 545 Computational Fluid Dynamics I (3-0) 3 hrs.

Basics of Computational Fluid Dynamics (CFD) including classification of partial differential equations, finite difference formulations, parabolic partial differential equations, stability analysis, elliptical equations, hyperbolic equations, scalar representations of the Navier-Stokes equations and grid generation. Prerequisite: ME 356, CSE 201 or CS 306.

ME 553 Advanced Product Design (3-0) 3 hrs.

An engineering design project from concept to adoption. Static and dynamic analysis, Mechanism analysis, design and layout. Prerequisite: ME 360, 453.

ME 555 Intermediate Dynamics (3-0) 3 hrs.

Three dimensional kinematics and dynamics of rigid bodies; equations of motion, Lagrange's equations; work and energy; impulse and momentum; virtual work; stability; computer simulation; introduction to vibrations. Prerequisites: ME 258, MATH 374.

ME 558 Mechanical Vibrations (3-0) 3 hrs.

A study of the oscillatory motion of physical systems with emphasis on the effects of vibrations on the performance and safety of mechanical systems. Prerequisites: ME 258, MATH 374.

ME 560 Engineering Analysis (3-0) 3 hrs.

Application of vector analysis and differential equations to the solution of complex engineering problems. Prerequisite: ME 360 or equivalent.

ME 561 Finite Element Method (3-0) 3 hrs.

Weighted residual methods, finite element techniques in one-, two-, and three-dimensional problems of heat transfer, fluid flow, and solid mechanics. Prerequisite: Consent of instructor.

ME 562 Application of Numerical Methods in Engineering (3-0) 3 hrs.

Finite difference methods for initial value and boundary value problems; 2D finite differencing, boundary element methods applications to differential equations of heat transfer, fluid flow, and solid mechanics. Prerequisite: Consent of instructor.

ME 564 Engineering Noise Control (2-3) 3 hrs.

Introduction to basic concepts of noise control, nature of sound and its effect on our environment. Indoor and outdoor sound propagation. Noise standards and measurements. Case studies of real-world implementation of noise control engineering. Laboratory experiments. Prerequisites: MATH 374, ME 258.

ME 569 Principles of Fatigue and Fracture (3-0) 3 hrs.

Basics of experimental techniques and modeling used in industry to study inelastic deformations, fatigue, and fracture of engineering materials and structures. Prerequisite: ME 365 or consent of instructor.

ME 571 Gas Dynamic (3-0) 3 hrs.

Basic equations of compressible flow, isentropic relationships, normal and oblique shocks, Prandtl-Meyer expansion, Fanno Line and Rayleigh Line flow. Applications to nozzles, diffusers, supersonic wind tunnels; and linearized flows and method of characteristics. Prerequisites: ME 431, 432.

ME 572 Advanced Thermodynamics (3-0) 3 hrs.

Conditions of equilibrium, process and thermodynamic engines, the extremum principle, Maxwell relations, stability of thermodynamic systems, phase transitions, chemical thermodynamics, irreversible thermodynamics, and an introduction to the statistical thermodynamics. Prerequisites: ME 431, 432.

ME 573 Engineering Materials (3-0) 3 hrs.

Material selection for resistance to both load and environment. Design parameters for material selection and various metal systems, corrosion, service failures and mechanical behavior of engineering alloys at high and low temperatures. Prerequisite: ME 250.

ME 575 Tribology-Principles and Applications (3-0) 3 hrs.

Surface chemistry, topographical measurement and description, contact mechanics, wear mechanisms, lubrication and film formation, hydrodynamic theory and application in bearings, application to friction and wear in machine elements. Prerequisites: ME 356, 365.

ME 576 Principles of Heat Exchanger Design (3-0) 3 hrs.

Overview of heat transfer coefficients, UA-LMTD method, E-NTU methods, counterflow and crossflow heat exchangers, heat transfer enhancement, phase-change heat exchangers, fouling phenomena, heat exchanger systems, and optimization of heat exchangers. Prerequisite: ME 431.

ME 580 System Modeling and Simulation (3-0) 3 hrs.

This is a first course in the principles of mathematical modeling of stochastic and deterministic systems. It will focus on analytical models, mathematical rigor and computer simulation of problems. Students will simulate a number of appropriate stochastic and deterministic models using a computer. This course is cross-listed with ECE 580. Prerequisites: ECE 371, ECE 380 or equivalent.

ME 581 Astrodynamic (3-0) 3 hrs.

A course in celestial dynamics as applied to space travel. Students will learn the basics of satellite orbit definition, determination, and navigation. While the general n-body problem will be taken up, the emphasis will be placed on the calculation of geocentric and heliocentric orbits. The primary application will be satellite systems as applied to the Global Positioning System. This course is cross-listed with ECE 581. Prerequisite: ME 258.

ME 585 Mechatronics (3-0) 3 hrs.

A course in fundamentals of control, primarily as it is applied to robotics. Students will learn the basics of control systems as applied to multi-axis servo systems. Appropriate time will be devoted to develop a sound basis in the electro-mechanical discipline. This course is cross-listed with ECE 585. Prerequisite: ECE 210, ME 258 and ECE 371 or ME 360.

ME 586 System Identification (3-0) 3 hrs.

This is a course in model determination. Students will learn the basics of defining system structure and techniques for finding parametric values. The emphasis will be placed on the application of modeling to practical problems in the student's specific discipline. This course is cross-listed with ECE 586. Prerequisite: ECE 580 or ME 580.

ME 595 Topics in Mechanical Engineering 1-4 hrs.

A specialized course dealing with some particular area of mechanical engineering not included in other course offerings. This course may be repeated for credit with a different topic to a total of six credit hours. Prerequisite: Consent of department.

Open to Graduate Students Only

ME 621 Theory of Plates and Shells (3-0) 3 hrs.

ME 622 Stability of Thin-Walled Structures (3-0) 3 hrs.

ME 630 Advanced Fluid Dynamics (3-0) 3 hrs.
Modern developments in fluid dynamics of compressible and incompressible fluid flow. Inclu- sion of fluid motion, lang, Z and turbulent flow in pipes, fluid machinery, and supersonic flow. Prerequisites: ME 356, 432, and MATH 374.

ME 631 Elastic and Inelastic Buckling of Bars and Frames (3-0) 3 hrs.
Elastic and inelastic stability of prismatic and non-prismatic columns. Failure of beam-columns, multiply loaded columns, non-prismatic bars under varying axial forces, and systems of bars. Prerequisite: ME 457.

ME 632 Energy Resources and Conversion (3-0) 3 hrs.
Availability and economic utilization of energy resources. Terrestrial and thermodynamic limitations. Energy conversion applications. Fission and fusion. Applications of solar, water, wind, and geothermal energy. Prerequisites: ME 223 or consent of instructor.

ME 633 Advanced Control Systems (3-0) 3 hrs.
Prerequisites: Control Theory and Analysis, introduction to modern control, state variable analysis, system simulation techniques, optimal design, parameter sensitivity and stability analysis, robotics control applications. Prerequisite: ME 360.

ME 634 Digital Flight Control Systems (3-0) 3 hrs.
Analysis and design of discrete and sampled-data control systems applied to aircraft and missile systems. Basic digital system concepts, mathematical models of open and closed-loop systems containing a digital computer, and Z transform analysis. Compensation techniques applied to aerospace systems. Digital filtering, including Butterworth and pole-zero mapping. P-plane and W-plane analysis of system stability and performance. Computer simulation of sampled-data systems. Extensive use of commercial software tools. Prerequisites: ME 533, or equivalent, and 540.

ME 636 Applied Optics and Optical System Design (3-0) 3 hrs.
Classical and conventional optical methods in use by the engineering and research community. Moiré, Speckle and Speckle-shearing interferometry. Holographic interferometry. Photo-elasticity and electronic speckle pattern interferometry. Optics and lasers for research and industrial applications. Digital image processing and optical system design. This course is cross-listed with ECE 636. Prerequisite: Consent of instructor.

ME 637 Design Optimization (3-0) 3 hrs.

ME 645 Computational Fluid Dynamics II (3-0) 3 hrs.
Advanced topics in Computational Fluid Dynamics (CFD) including transformation of the equations of fluid motion from physical space to computational space, the Euler equations of gasdynamics, the Parabolized Navier-Stokes equations of gasdynamics, the Navier-Stokes equation of gasdynamics, finite volume methods and turbulent flows. Prerequisite: ME 545.

ME 651 Advanced Strength of Materials, Elasticity, and Plasticity (3-0) 3 hrs.
Torsion of non-circular cross sections, shear center, curved beams, beams on elastic foundations, flat plates, and an introduction to two-dimensional elasticity and plasticity. Prerequisite: ME 453.

ME 652 Mechanics of Composite Materials (3-0) 3 hrs.

ME 653 Fatigue of Engineering Materials (3-0) 3 hrs.
Advanced approach to the problem of fatigue damage and life prediction; cyclic stress-strain response under uniaxial and multiaxial loading, fatigue limit, high and low cycle fatigue; surface integrity and fatigue life improvement. Prerequisites: ME 569 or consent of instructor.

ME 654 Composite Materials (3-0) 3 hrs.
Introduction to matrix and fiber materials that form the basis of modern composites. Fabrication of these materials into composites. Behavior of unidirectional and short fiber composites. Experimental characterization of composites. Fracture mechanics, fatigue, impact, and environmental effects. Prerequisite: ME 350 or consent of instructor.

ME 655 Advanced Materials Science (3-0) 3 hrs.
Engineering behavior of metals, ceramics, engineering resins and composite materials. Composition and temperature effects on micro and macroscopic properties. Failure mechanisms. Materials selection criteria. Prerequisites: ME 250, 350.

ME 657 Viscoelastic Behavior of Solids (3-0) 3 hrs.

ME 658 Similarities in Structural Dynamics (3-0) 3 hrs.

ME 659 Multibody Dynamics (3-0) 3 hrs.
Kinematic and dynamic analyses of constrained mechanical systems consisting of many interconnected rigid bodies. Analytical and numerical methods are presented for the computer-aided formulation and solution of the non-linear equations of motion of complex mechanical systems. Prerequisite: ME 555.

ME 661 Advanced Finite Elements (3-0) 3 hrs.

ME 663 Structural Vibrations (3-0) 3 hrs.
Vibration response of coupled and uncoupled structures. Wave propagation, transmission, and reflection. Effects of internal and external damping, impedance discontinuities, and curvature. Four-pole parameter technique for vibration isolation system design. Modal analysis. Sound generation. Prerequisite: ME 555 or ME 558.

ME 664 Acoustics (3-0) 3 hrs.
Principles of acoustics, stressing the physical concepts underlying the derivations, associated assumptions and solutions to the wave equations in bounded and unbounded fluids and solids. Topics include: acoustic wave equations; integral equations; attenuation, acoustics of pipes, ducts, cavities, wave guides and resonators; environmental, architectural, underwater acoustics. Prerequisite: ME 564 or consent of instructor.

ME 665 Sound and Structure Interaction (3-0) 3 hrs.
Introduction to acoustic radiation from vibrating infinite and finite plates and the effect of fluid-loading on them. Acoustic transmission through and reflection from single-leaf and double-leaf partitions. Acoustic excitation of elastic plates and coupling between panels and open and enclosed acoustic spaces. Prerequisite: ME 564 or consent of instructor.

ME 669 Engineering Fracture Mechanics (3-0) 3 hrs.
Fundamentals of the theory of linear elastic fracture mechanics (LEFM), crack-tip opening displacement (CTOD), j-integral, R-curve, mixed-mode fracture and fracture toughness testing. Prerequisite: ME 569 or consent of instructor.

ME 671 Advanced Heat Transfer I—Conduction Heat Transfer (3-0) 3 hrs.
Fundamental aspects of conductive heat transfer applied to steady state and transient conditions. One-, two-, and three-dimensional conduction problems with exact and approximate solution techniques utilizing the computer are studied. Prerequisites: ME 431, 432.

ME 672 Advanced Heat Transfer II—Convection and Radiation Heat Transfer (3-0) 3 hrs.
Fundamentals of thermal radiation for black, gray, non-gray, diffuse, and specular surfaces. Gaseous radiation and special applications of thermal radiation including derivation and application of equations of mass, energy, and momentum transfer. Prerequisites: ME 431, 432.

ME 673 Power Plant Design (3-0) 3 hrs.
Theory and application of internal combustion engines, gas turbine power plants, steam turbine power plants, and other prime movers. Emphasis is on application of thermodynamic principles combined with open-ended design problems in power plant applications. Prerequisites: ME 431, 432.
PAPER AND PRINTING SCIENCE AND ENGINEERING

Dr. Thomas Joyce, Chair
Main Office: 2650 McCracken Hall
Telephone: 387-2770
FAX: 387-2768
Raja G. Aravamudhan
John H. Cameron
Paul D. Fleming
Margaret Joyce
Thomas W. Joyce
Lois Lermann
Peter E. Parker
Alexandra Pekarovicova
David K. Peterson
Dewel Qi
Adjunct Faculty
John F. Bergin
Do Ik Lee
Jay Unwin

Master of Science in Paper and Imaging Science and Engineering
Advisor:
John Cameron,
Room 2690, McCracken Hall

The Master of Science in Paper and Imaging Science and Engineering is designed to provide theoretical, laboratory, and pilot plant experiences which are basic to the development of professional competence in pulp, paper, and printing science and engineering. The department has leadership in the areas of pulping and bleaching, recycling and deinking, papermaking, coating, and printing, and it is internationally recognized in the fields of paper coating and coating rheology. Its laboratories and equipment are the most complete of any similar academic institution featuring a semicommercial-sized thermomechanical pulper, complete recycled fiber pilot plant, papermachine, coater, and printing presses. A Thesis Option and a Non-thesis Option are available. While the program requirements for each option differ, the admission requirements for both options are identical.

Admission Requirements
1. Applicants with science, engineering, and related baccalaureate degrees may qualify for admission based upon demonstrated competence at an accredited college or university.
2. At least one semester of college chemistry and two semesters of calculus are required.
3. After admission, the student's graduate advisor will approve a plan of study, which may include courses not eligible for graduate credit.
4. Applicants are encouraged to submit results of the Graduate Record Examination to support their application for admission.

THESIS OPTION
Program Requirements
1. A minimum of thirty (30) semester hours of credit.
2. A minimum of fifteen (15) semester hours of Paper and Printing Science and Engineering courses, including the required courses, PAPR 620 and PAPR 650, but excluding the thesis research credits.
3. A minimum of three (3) semester hours of course work outside the Department of Paper and Printing Science and Engineering.
4. Satisfactory completion of PAPR 700, Master's Thesis (6 hrs.), based on either an experimental or theoretical topic, under the guidance of a Thesis Committee.

NON-THESIS OPTION
Program Requirements
1. A minimum of thirty-six (36) semester hours of credit.
2. A minimum of twenty-four (24) semester hours of Paper and Printing Science and Engineering courses, including PAPR 620 and PAPR 650.
3. A minimum of six (6) semester hours of course work outside the department approved by the graduate advisor.

Doctor of Philosophy in Paper and Imaging Science and Engineering
Advisor:
John Cameron,
Room 2690, McCracken Hall

The Doctor of Philosophy in Paper and Imaging Science and Engineering is designed to prepare engineers and scientists for performing advanced research or for teaching at the university level. The emphasis of the program is on paper making processes, paper coating, paper recycling, and imaging technologies. This is a research-intensive degree, based on fundamental scientific and chemical engineering principles; the emphasis is on learning techniques for advanced research, the production of such advanced research, and the reporting of the research. Close supervision of the research will be maintained by the student's Dissertation Advisory Committee and particularly by the chair of that committee. Some formal course work, much of it possibly accepted from course work completed to achieve a master's degree, is required to prepare for and support original research. The key component of the program is the Dissertation Advisory Committee's careful and continuous mentoring of the student to develop necessary skills and knowledge to support advanced research.

Admission Requirements
Application materials may be obtained from the Office of Admission and Orientation. Graduate Admissions or from the Department of Paper and Printing Science and Engineering. International students should contact the Office of International Student Services for the appropriate materials and information.

All applicants must meet the general admissions requirements for the Ph.D. specified by the Graduate College. In addition, the applicant must have completed a master's degree in a discipline relevant to paper and imaging science with a minimum 3.25 grade point average. The Graduate Record Examination, General Test, is required of all applicants, as are at least three letters of recommendation and a letter describing the applicant's research interest. International students must also submit the TOEFL scores.

Admission determinations will be made by the department's Doctoral Studies Committee and will take into consideration the student's previous academic training and record of
achievement, the GRE score, the recommendations provided in letters from three referees, and the information about the proposed area of study described in the letter of interest.

Program Requirements

Following a student's admission to the program, the department's Graduate Advisor will be the student's temporary advisor until the Dissertation Advisory Committee is formed, typically within one year of the student's commencement of the program. With the assistance of the Graduate Advisor, the student will select a Chair of the Dissertation Advisory Committee and, in consultation with the Chair, the student will form an entire Dissertation Advisory Committee, comprising at least three members. After the Chair of the Dissertation Advisory Committee is chosen, primary responsibility for the student will be transferred to the Graduate Advisor, however, will continue to monitor the student's progress and assist the Chair of the Dissertation Advisory Committee to ensure prompt compliance with all University program requirements.

Graduate College policy requires that all doctoral students complete at least thirty three hours of course work, exclusive of the dissertation, at WMU after admission to the doctoral program. However, in this research-based degree program, if an exceptionally well prepared student enters the program having satisfied one or more of the research tools and has completed PAPR 620 and 650, the student may be able to satisfy all the requirements and competencies with fewer than thirty hours. Upon formal petition by the Chair of the Dissertation Advisory Committee and the Graduate Advisor and with the Chair's submission of a program of study that indicates the completion of all requirements and competencies, the dean of The Graduate College may waive that requirement. Such waivers must be sought and approved in a case by case basis. In addition to the requirements of The Graduate College, the following requirements for the Doctor of Philosophy in Paper and Imaging Science and Engineering must be fulfilled.

1. Since applicants must have a master's degree, it is expected that applicants will have fulfilled at least twenty-four hours of foundation course work at the graduate level, exclusive of seminars and research. At the discretion of the Doctoral Studies Committee, applicants may receive credit toward the doctoral course requirements for up to twenty-four hours of course work germane to paper science and engineering at the time of admission to the program. Such graduate level foundation course work may include, as examples, paper physics (PAPR 660), papermaking (PAPR 650), pulping and bleaching (PAPR 698), recycling (PAPR 665), environmental engineering (PAPR 693), digital printing (PAPR 621), and ink technology (PAPR 620).

The required courses PAPR 620 (Paper, Printing, and Ink) and PAPR 650 (Advanced Paper Processes) must be completed with at least a grade of "B," if not previously elected in a master's program as described above. Additional course work required will be determined at the time of admission by the Doctoral Studies Committee to ensure readiness for the research or after admission by the Dissertation Advisory Committee. Any deficiencies revealed by the Comprehensive Examination

2. Two research tools chosen in consultation with the Dissertation Advisory Committee from the following three options:

a. Reading proficiency in one foreign language other than English at the course level of 401 (with a grade of "B" or better).

b. Statistics and experimental design at the level of MATH 567 (with a grade of "B" or better).

c. Computer modeling and simulation expertise at the level of CS 581 (with a grade of "B" or better).

3. An oral Comprehensive Examination will evaluate the student's general knowledge of paper and imaging science and engineering as well as competency of the formal dissertation research plan. The student is encouraged to take the Comprehensive Examination as soon as deemed appropriate by the Dissertation Advisory Committee. It is expected that all students will demonstrate knowledge of the fundamentals of paper and imaging science and engineering through the level of PAPR 650 and PAPR 655, additional expected knowledge and competency will be specific to the student's proposed research. The Dissertation Advisory Committee will rate the examination with a rating of "Pass" on the Comprehensive Examination; or may give a rating of "Conditional Pass" and recommend additional courses, if the Comprehensive Examination is generally of passable quality but reveals specific areas of deficiency; or may give a rating of "Fail." A student who fails the examination may apply to resit the Comprehensive Examination in a subsequent semester or term. A second failure will result in dismissal from the program.

4. Full-time enrollment on campus for at least four semesters.

5. Completion of at least one University-sponsored TA training workshop and completion of five hours of PAPR 713, Teaching Practicum. The first three credits of PAPR 713 will be earned by observing a faculty member teach a class and by preparing to teach that course under the guidance of a graduate faculty member. The second three credits will be earned by having primary responsibility for teaching one course and supervision of a member of the department's graduate faculty.

6. Completion of at least six hours of PAPR 725, Research Seminar. The objective of this requirement is to participate in discussion of recent research findings which may be used in the student's research and to gain practice in the presentation of research results.

7. Completion of six to nine hours of PAPR 735, Graduate Research. The objective of this requirement is to ensure that the student prepare a thoughtful, coherent research plan for the dissertation under the guidance of the Dissertation Advisory Committee.

8. Completion of at least twelve hours of PAPR 730, Doctoral Dissertation. The objective of this requirement is to ensure that the student carries out the research and prepares the dissertation under the guidance of the Dissertation Advisory Committee. The student must successfully defend the dissertation and have the dissertation approved by the Dissertation Advisory Committee and by the graduate dean. The student, with approval of the Dissertation Advisory Committee, may choose between the following options:

a. Option 1: The student will present a traditional comprehensive dissertation and two journal papers based on the doctoral research and judged by the Dissertation Advisory Committee to be ready for submission to an identified, refereed journal. These must be submitted with an introduction, review of relevant literature, and a summary explaining the significance of the research.

b. Option 2: The student will present at least four journal papers based on the doctoral research and judged by the Dissertation Advisory Committee as ready for submission to an identified, refereed journal, a summary explaining the significance of the research.

Financial Assistance

The Department of Paper and Printing Science and Engineering offers opportunities for financial assistance of doctoral students through graduate assistantships and fellowships. Information concerning these opportunities is available from the department's graduate advisor or from The Graduate College.

Paper and Printing Science and Engineering Courses (PAPR)

Open to Upperclass and Graduate Students

PAPR 510 Printability Analysis (2–3) 3 hrs.

Relationships between printed substrate, ink, printing process and resulting print quality from both the theoretical and measurement standpoints. Printing problems from the point of view of substrate formation and its physicochemical properties, ink characteristics, and printing process parameters. Main techniques of printability evaluation that include modern optical methods of light interaction with both printed and unprinted substrate, spectrophotometry, and image analysis. Prerequisite: PAPR 204 or 250.

Open to Graduate Students Only

PAPR 600 Surface and Colloid Chemistry (3–0) 3 hrs.

Intermolecular forces are considered in detail to build a sound background for consideration of surface and colloidal behavior of matter. The thermodynamics of the internal surfaces is covered in detail considering the topics of absorption, surface films, wetting, capillary penetration, and diffusion. Colloidal topics covered include areas such as ionic boundary layers, electrokinetic potential, swelling and shrinkage of gels, ion exchange, surface active agents, detergency, and retention of particles.

PAPR 620 Paper, Printing, and Ink (2–3) 3 hrs.

A detailed analysis of the interrelationships of paper and the printing process. Testing methods for printing smoothness, ink receptivity, picking and runnability are the major areas of concentration. Printing problems and quality are also considered as they are influenced by paper, coating, ink, and press conditions and operation.

PAPR 621 Nonimpact Printing (3–0) 3 hrs.

Nonimpact printing processes are discussed in terms of fundamental printing mechanisms. The effects of substrate, paper, for example, properties on the printing processes are considered. Processes discussed include electrophotography, electrography, ink jet, die sublimation, magnetography, and ionography.
PAPR 640 Coating Rheology (2–3) 3 hrs.
The theories of flow of non-Newtonian liquids 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.

PAPR 641 Coating Formulations (2–3) 3 hrs.
Intensive study of the functional properties and cost considerations involved in developing coating formulations. Contributions of pigments, additives, and binders to optical, mechanical, printing, and surface properties are discussed in the context of coating formulations.

PAPR 650 Advanced Paper Processes (3–0) 3 hrs.
Advanced treatment in the production of paper starting at stock preparation, including paper coating, converting, and printing. Particular emphasis on relationship of paper making to production of printing papers. Role of recycled fibers.

PAPR 655 Recycling and Deinking (3–0) 3 hrs.
Survey of current technology relevant to recycling of paper. Fundamental mechanisms involved. Future trends and research needs.

PAPR 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 standpoint. Stress-strain-analysis, theory of elasticity and flow, statics, reflection, absorption, transmission, and light scattering of these systems will be covered.

PAPR 680 High Polymer Topics (3–0) 3 hrs.
The physical chemistry, engineering properties, and behavior of synthetic and natural polymers and their solutions are presented. Methods of characterization and significance of molecular parameters are included.

PAPR 690 Pulp and Paper Operations I 3 hrs.
A study of unit operations integral to pulp and paper manufacturing. The interdependence, design and optimization of the unit processes are included. The pulp manufacturing and chemical recovery phases are emphasized.

PAPR 691 Pulp and Paper Operations II 3 hrs.
Continuation of the study of the unit operations integral to pulp and paper manufacturing. The paper manufacturing phase is emphasized while completing the systematic study of unit operations used in the industry.

PAPR 693 Environmental Systems Engineering 3 hrs.
The course will focus on the environmental issues associated with the pulp and paper industries. Air, water, solid waste, thermal, and noise emissions, control processes, economic, and legal issues will be studied in concert with the operation of pulp and paper manufacture.

PAPR 695 Graduate Topics in Paper/Printing 1–4 hrs.
A special course dealing in some particular subject of interest in pulp and paper and/or printing. May be repeated with different topics. Prerequisite: Permission of the instructor.

PAPR 696 Paper Industry Control Systems 3 hrs.
A study of the control of pulping and papermaking processes with emphasis on computer control strategies and the sensors and instrument systems unique to the pulp and paper industry. Areas covered include process control concepts, process response analysis, digital and distributed digital control systems, programmable logic controllers and other hardware of control loops.

PAPR 698 Pulping and Bleaching 3 hrs.
The course will cover principles of kraft and sulfite pulping, use of other pulping chemicals such as anthraquinone, borohydride, and polysulfides. It will also cover all types of high yield pulps and bleaching of both chemical and high yield pulps. Bleaching chemicals that will be discussed will include chlorine, chlorine dioxide, hypochlorite, dithionite, hydrogen peroxide, oxygen, and ozone. Various bleaching sequences that are currently in practice and under development will be discussed. Prerequisites: PAPR 203, 333.

PAPR 699 Pilot Plant Research 1 hr.
Research experience using the department's papermaking, recycling, paper coating, and printing pilot plants. Project management and experimental design of research. Preparation of research reports. Course is repeatable to a maximum of 6 hours.

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

PAPR 700 Master's Thesis 6 hrs.
PAPR 710 Independent Research 2–6 hrs.
PAPR 712 Professional Field Experience 2–12 hrs.
PAPR 713 Practicum in Teaching in the Discipline 3 hrs.
A practicum in teaching in paper and imaging science and engineering done as a collaborative effort with an experienced faculty member in an undergraduate course. Six hours are required for the doctoral degree.

PAPR 725 Doctoral Research Seminar 2–6 hrs.
Seminars presented by graduate students, faculty, and visiting lecturers concerning their research. Course is repeatable.

PAPR 730 Doctoral Dissertation 12 hrs.
PAPR 735 Graduate Research 2–10 hrs.
The mission of the College of Fine Arts is to provide scholarly activity, creative experiences and research that informs and supports instruction, performance and exhibitions. In addition, the College must provide the resources that will allow students to become effective performers, artists, educators, practitioners, scholars, researchers and specialists in their chosen disciplines. These professionals will be sensitive and experienced in working with diverse populations in schools, arts organizations, communities and families. Critical to this mission are the constant evolution of effective instruction for students; the exploration of meaningful and ever-changing aesthetic issues; educational and artistic partnerships throughout the region; and national and international outreach that enrich the lives of all.

The Goals are:
• to graduate students who will be artist-practitioners in the various fine arts;
• to train teachers who will perpetuate the strong traditions of the arts;
• to train therapists to use the arts in a healing capacity;
• to prepare scholars who will continue to disseminate historical and theoretical information;
• to foster an appreciation of the arts among general university students, who will constitute the growing body of people whose lives are enriched by the arts;
• to contribute to the cultural life of the university and the greater Kalamazoo community;
• and to expand our outreach nationally and internationally.
following practice oriented areas of emphasis: Sculpture, ceramics, printmaking, photography, painting/watercolor, and graphic design. All programs have the same admission requirements. Western Michigan University is an accredited member of the National Association of Schools of Art and Design and subscribes to the recommendations of this organization.

Master of Arts in Art
Advisors:
Ellen Armstrong,
Room 1406, Sangren Hall
Richard dePeaux, Graduate Coordinator
Room 1402, Sangren Hall

Admission Requirements
1. An undergraduate degree with a major in art or its equivalent.
2. A completed application for admission.
3. A portfolio of slides must be submitted directly to the Graduate Coordinator of the Department of Art. It should include twenty slides in the applicant’s area of concentration. The slides must be submitted in a plastic sleeve with artist’s name, size of work, year, and medium.
4. A statement of intent outlining the reasons for seeking admission to a graduate program in a specific area of concentration.
5. Two hours in ART 613, Graduating Presentation. This course includes a final exhibition and oral presentation which must be approved by the student’s Graduate Committee before the Master of Fine Arts is granted.

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. At the end of each student’s first and second semester, a formal review by a Graduate Committee will (a) determine continued status in degree program; (b) delay review for one semester; (c) drop the student from further degree status in the program.
5. Two hours in ART 613, Graduating Presentation. This course includes a final exhibition and oral presentation which must be approved by the student’s Graduate Committee before the Master of Fine Arts is granted.
6. Eight hours in electives, five of which must be taken within the Department of Art.

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. At the end of each student’s first and second semester, a formal review by a Graduate Committee will (a) determine continued status in degree program; (b) delay review for one semester; (c) drop the student from further degree status in the program.
5. Two hours in ART 613, Graduating Presentation. This course includes a final exhibition and oral presentation which must be approved by the student’s Graduate Committee before the Master of Fine Arts is granted.
6. A current resume.

ART 523 Topics in Modern Art
3 hrs.
Investigation of changing topics in modern art. Advanced theory and methods are stressed. Research papers are required. Course has variable topics. Prerequisites: Art History major or minor with junior status or higher; MFA candidates and other undergraduate and graduate students with permission of instructor.

ART 524 Topics in Native American and African Art
3 hrs.
Investigation of changing topics in Native American and African art in seminar sessions. Advanced theory and methods are stressed. Research papers are required. Course has variable topics. Prerequisites: Art History major or minor with junior status or higher; MFA candidates and other undergraduate and graduate students with permission of instructor.

ART 525 Topics in Asian Art
3 hrs.
Investigation of changing topics in Asian art in seminar sessions. Advanced theory and methods are stressed. Research papers are required. Course has variable topics. Prerequisites: Art History majors or minors with junior status or higher; MFA candidates and other undergraduate and graduate students with permission of instructor.

ART 527 Art History Methods
3 hrs.
Intensive study of the methods, literature, and research techniques used in art historical inquiry and writing. Prerequisite: Art History major or minor with junior status or higher; MFA candidates and other undergraduate and graduate students with permission of instructor.

ART 529 Art History Internship
1 hr.
Designed to provide Art History majors with practical experience in art historical and related fields. Students are supervised by an Art History faculty member and a supervisor in the organization where the student is placed. Art History majors and minors only; registration requires approval by supervising faculty member.

ART 530 Ceramics Workshop
1–6 hrs.
Advanced work in ceramics on an independent basis. Repeatable for credit. Prerequisite: ART 330.

ART 531 Sculpture Workshop
1–6 hrs.
Continuation of ART 331. The advanced student explores the expressive possibilities of his or her own individual sculptural direction, with bronze and aluminum casting related techniques. Repeatable for credit. Prerequisite: ART 331.

ART 535 Multi-Media Workshop
1–6 hrs.
Various forms of art that deviate from the conventional media, such as light, kinetic, and performance art. The student is expected to have a solid background in one of the traditional art forms, such as ceramics, painting, sculpture, printmaking, drawing, graphic design, metals, or textiles. Repeatable for credit. Permission of instructor is required.

ART 538 Jewelry and Metalsmithing Workshop
1–6 hrs.
Advanced work in jewelry design and metalworking. Students collaborate with the instructor to plan a suitable and particular direction for study. Repeatable for credit. Prerequisite: ART 338.
ART 540 Painting Workshop 1–6 hrs. Continuation of ART 340. Repeatable for credit. Prerequisite: ART 340.

ART 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 300 level print-making course. Repeatable for credit.

ART 542 Watercolor Workshop 1–6 hrs. Continuation of advanced watercolor techniques with emphasis on experimentation. Repeatable for credit. Prerequisites: ART 342.

ART 544 Hand Papermaking 1–6 hrs. Continuation of ART 244 and ART 344. Prerequisite: ART 344.

ART 548 Photography Workshop 1–6 hrs. Professional development through research in advanced projects. Repeatable for credit. Prerequisite: ART 348.

ART 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. Prerequisite: ART 452 and art major status.

ART 553 Independent Studies in Art Education 1–6 hrs. An arranged elective course in which the student investigates and researches a problem, a project, or trends in art education. (Not to be taken in place of required art education courses.) This course is open to graduate and non-degree level students. Prerequisites: 252, 352, 452, 552, and permission of the art education chairperson.

ART 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.

ART 570 Intern I 3 hrs. Design Practicum in Design Center. Involves an introduction to problem solving for real clients from the community and university. Focus is on the design process from concept to completion and involves client contact, budget preparation, electronic pre-press production, and interface with printers and the printing industry. Fall and winter semester. Prerequisites: ART 351 and ART 361.

ART 571 Intern II 3–6 hrs. Design Practicum in Design Center. Involves an introduction to problem solving for real clients from the community and university. Focus is on the design process from concept to completion and involves client contact, budget preparation, electronic pre-press production, and interface with printers and the printing industry. Credits are variable due to the fact that larger more intense projects are sometimes given and the credits are determined by the depth of the project. Winter semester only. Prerequisites: ART 460 and ART 580.

Open to Graduate Students Only
ART 610 Advanced Drawing 1–6 hrs. Graduate level work in drawing. Repeatable for credit. Prerequisite: ART 510 and official admission to an Art graduate program.

ART 613 Graduating Presentation 2 hrs. Preparation and presentation of graduating exhibition, portfolio, and oral examination with the assistance of the student's major advisor. Evaluated by the student's Graduate Committee. Prerequisite: Last year of graduate study.

ART 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. Repeatable for credit. Prerequisites: ART 220, 221, and a 500-level course in the area of interest or the equivalent; permission of instructor.

ART 621 Graduate Topics in Art History 3 hrs. Graduate level seminar in art history covering varying topics, ranging from prehistoric to modern periods.

ART 625 Graduate Art Seminar 1 hrs. A survey, investigation, discussion, and evaluation of selected topics in contemporary art and associated practicum activities. Topics for investigation may include: Exhibition Preparation in Galleries and Museums; the Artist and the Market; Technology and Computers in Art; Funding Artists and Art Programs; Artists and Society; The Audience and Formation of Taste; Moral Philosophy and Art. Graded on a Credit/No Credit basis. Prerequisite: Art major status.

ART 630 Advanced Ceramics 1–6 hrs. Graduate level work in ceramics. Repeatable for credit. Prerequisite: ART 530 and official admission to an Art graduate program.

ART 631 Advanced Sculpture 1–6 hrs. Graduate level work in sculpture. Repeatable for credit. Prerequisite: ART 531 and official admission to an Art graduate program.

ART 635 Advanced Multi-Media Art 1–6 hrs. Graduate level work in multi-media art. Repeatable for credit. Prerequisite: ART 535...

ART 640 Advanced Painting 1–6 hrs. Graduate level work in painting. Repeatable for credit. Prerequisite: ART 540 and official admission to an Art graduate program.

ART 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 and official admission to an Art graduate program.

ART 642 Advanced Watercolor 1–6 hrs. Graduate level work in watercolor. Repeatable for credit. Prerequisite: Official admission to an Art graduate program.

ART 645 Advanced Graphic Design 1–6 hrs. Graduate level work in graphic design. Repeatable for credit. Prerequisite: ART 545.

and official admission to an Art graduate program.

ART 648 Advanced Photography 1–6 hrs. Graduate level work in photography. Repeatable for credit. Prerequisite: ART 548 or equivalent experience and official admission to an Art graduate program.
DANCE
Professor Jane Baas, Chair
Main Office: 3107 Dalton Center
Telephone: 387-5830
FAX: 387-5809
Janet Stillwell
Sharon Garber
Trudy Cobb
Wendy Comish
David Curwen
Nina Nelson
Lindsey Thomas

Open to Upperclass and Graduate Students
Advanced students with good standing may elect to pursue independently a program of readings in areas of special interest. 

DANC 598 Readings in Dance
1–4 hrs.

DANC 599 Non-reading Independent Study in Dance
1–4 hrs.

MUSIC
Dr. Richard O’Hearn, Director
Main Office: 2146 Dalton Center
Telephone: 387-4687
FAX: 387-5809
Richard Adams
William Appel
John Campos
David Lobberg Code
Curtis Curtis-Smith
Igor Fedotov
Deiores Gauthier
Ellen Griggs-Dranie
Daniel Jacobson
Stephen Jones
Renata Arment Knifc
Thomas Knifc
Trent P. Kynaston
David Little
John A. Lynchner
James McCarthy
Joe Miller
Michael Miller
Judy Moonett
Richard O’Hearn
William Pease
Johnny Phorigo
Robert J. Ricci
Silvia Roederer
Wendy Rose
David A. Sheldon
Lori Sims
Christine Smith
David S. Smith
Robert Spradling
Matthew Steel
Scott W. Thornburg
Linda Trotter
Bruce Uchimura
Robert L. Whaley
Karen Wickland
Brian Wilson
Steve M. Woflinbarger
Bradley Wong
Stephen Zegree

Master of Music
Advisors: David Sheldon
Room 2144, Dalton Center
Brian Wilson
Room 2305, Dalton Center

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 five different areas of concentration: Performance, Composition, Conducting, Music Education, 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 accrediting 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 School of Music does not imply that the student will be permitted to pursue a specific area of concentration (performance, 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. At that time a recommendation for degree candidacy will be approved if the student has demonstrated a sufficient level of scholarship and musicianship.

Preliminary Examinations are administered prior to entry to the graduate music program. Areas of examination include performance, music history/literature, music theory, music therapy, functional piano, and conducting (including aural skills). The areas in which the student will be tested are determined by the choice of area of concentration.

Program Requirements
The graduate student advisor in the School of Music works closely with each student in planing 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 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. The program of study in each of the five areas of concentration is as follows:

PERFORMANCE (Minimum of 30 hrs.)

Admission Requirements/Procedures
Preliminary Examinations in theory, history/literature, and performance. The performance preliminary examination will determine if the student will be permitted to pursue this major area of concentration. Sight-reading may be requested. Vocal majors must demonstrate piano skills and a proficiency in French, German, and Italian diction. Deficiency course work will not apply toward the degree.

Concentration Requirements
1. Electives to make a total of at least 30 semester hours. Must include a 600-level music theory and a 600-level music history course, unless already required in the program.

COMPOSITION (Minimum of 30 hrs.)

Admission Requirements/Procedures
Preliminary examinations in theory, history/literature, and placement interview-auditions in piano, composition, electronic composition, musical acoustics, and counterpart. Before the student will be admitted to this area of concentration, the composition faculty must review and approve the student’s prior compositional work.

Concentration Requirements
1. Required courses: MUS 610, Introduction to Research in Music (3); MUS 660, Applied Music (8); MUS 690, Graduate Recital (2), including oral exam.
2. Cognate music studies: composition, music education, history/literature, theory, jazz studies (9–12).
3. Electives to make a total of at least 30 semester hours. Must include a 600-level music theory and a 600-level music history course, unless already required in the program.
4. Proficiency in keyboard must be demonstrated, but course work may not apply to degree.

CONDUCTING

Admission Requirements/Procedures

1. Bachelor's degree in music or its equivalent, including sixty (60) semester hours of acceptable work in music.
2. Two years of conducting experience in public school or equivalent experience recommended.
3. A videotape (VHS) demonstrating the candidate's conducting skill must be received on or before February 15. Applicants who pass this initial screening will be invited for a conducting audition in April.
4. A live audition will be administered on the Western Michigan University campus by three full-time members of the conducting faculty, with one being outside the conducting candidate's area of music. Applicants will a) conduct an appropriate University ensemble, which may include one or more works to be selected in consultation with the appropriate conducting faculty member; b) demonstrate aural perception and score reading skills; and c) demonstrate, if a choral conductor, keyboard competency, singing proficiency, and diction proficiency (English, French, Italian, and German). Applicants will be informed of their audition results within ten (10) days of their audition date by the coordinator of graduate studies in music. Applicants must be accepted to the conducting program prior to their first semester of enrollment.
5. The preliminary examinations in music theory, history, and literature must be completed prior to the applicant's first semester of enrollment. Applicants must achieve a minimum score of 70% in each area of the examinations. Remediation may be prescribed as a result of deficiencies in any of the audition/preliminary examination areas. Courses prescribed to remedy deficiencies will not count toward degree requirements.

Concentration Requirements

1. Required courses: MUS 530, Advanced Choral Conducting (2) or MUS 531, Advanced Instrumental Conducting (2); MUS 577, Symphonic Literature (2) or MUS 581, Choral Music Literature (2) or MUS 582, Wind Music Literature (2); MUS 600, Applied Conducting—2 semesters (4); MUS 610, Introduction to Research in Music (3); MUS 664, Form in Music (2); MUS 670, Seminar in Musicology (2) or MUS 679, Composers (2); and MUS 690, Graduate Recital (2), including oral exam.
2. Cognate music studies: Nine (9) hours of course work in a secondary area of specialization to be determined in consultation with the candidate's major professor and graduate coordinator. To be chosen from the applied, composition, theory, history/literature, jazz, or music education areas. Cognate must include at least one 600-level course.
3. Three (3) hours of electives are selected in consultation with the candidate's major professor and graduate coordinator and are to support the major curriculum in the program.
4. Special information: One component of MUS 600 will be the preparation and performance of a work with a major ensemble, each semester MUS 600 is taken. Documentation of these performances must be included in the candidate's video tape log of conducting experiences, which will be compiled over the course of the candidate's conducting study. This log will become a part of the materials reviewed by the Graduate Committee during the MUS 690 Project and Oral Examination process. The video tape log must include a minimum of twenty minutes of conducting in two or more performances and must be completed prior to registering for MUS 690. Additional special conducting activities as determined by the student and the major professor may also be included. Consult the Graduate Coordinator for further details.

MUSIC EDUCATION

Admission Requirements/Procedures

1. Bachelor's degree in music or its equivalent, with a major in music education, and a teaching certificate are required for admission. Preliminary Examinations in theory and history/literature.

Concentration Requirements

1. Required courses: MUS 610, Introduction to Research in Music (3); MUS 642, Philosophy of Music Education (2); MUS 650, Seminar in Music Education (2); Culminating option (choose a, b, or c); a) MUS 691, Special Project in Music (2)* or b) MUS 681, Research in Musical Behavior (2) or c) MUS 700, Master's Thesis (6)* or c) eight (8) hours of pre-approved graduate courses, including written comprehensive exam.
2. Electives in music education: applied music, composition, theory, history/literature, jazz studies (9-12).
3. Electives to make a total of 30-36 semester hours. Must include a 600-level music theory and a 600-level music history course, unless already required in the program.

(*Every student is required to register for one of these culminating projects, each of which includes an oral exam. For students anticipating doctoral studies, a thesis is strongly recommended.)

MUSIC THERAPY

Admission Requirements/Procedures

1. Bachelor of Music degree or its equivalent (60 hours of music courses) and a major in music therapy are required for admission. Students who have a Bachelor of Music degree, but do not have a major in music therapy, may complete the required undergraduate courses, including the six-month internship, for RMT certification while the graduate program is in progress. This undergraduate degree, however, will not apply to the graduate degree. Equivalency requirements may be obtained from the Director of Music Therapy in the School of Music.

Upon entrance to the program, the student will take Preliminary Examinations in theory, history/literature, music therapy, and functional piano. Information derived from these examinations plus information derived from the audition, transcripts, and initial interviews will be used to determine the program of study.

Concentration Requirements

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, including 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 including at least one course in statistics: Anthropology, Blind Rehabilitation and Mobility, Counselor Education and Counseling Psychology, Mathematics and Statistics, 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.)

Master of Arts in the Teaching of Music

The School of Music and the Department of Education and Professional Development offer a Master of Arts 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 are 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. At that time, a recommendation for degree candidacy will be approved if the student has demonstrated a sufficient level of scholarship and musicianship. Preliminary Examinations will be administered in the areas of music history/literature 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, will realize the full value and depth of the University's graduate offering. The student's needs are determined by an evaluation of the results of Preliminary Examinations and a review of the student's 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, Social 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); Elective in Music Education (2); Culminating option (choose a or b); a) MUS 691, Special Project in Music (2) with oral exam or MUS 681, Research in Musical Behavior (2) with oral exam, or b) eight (8) hours of pre-approved graduate courses, including written comprehensive 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.

Music Courses (MUS)
Open to Upperclass and Graduate Students
MUS 501 Master Class
2 hrs.
The study of literature, performance practices, and techniques for a specified musical medium (instrument or voice). Individual performance assignments will be made appropriate to each student's level of accomplishment. Class meetings may vary from small groups of students with common performance levels to meetings for the entire class for the purpose of dealing with materials and techniques common to all performers. May be repeated for credit.

MUS 514 Instrumental Chamber Music
1 hr.
Special ensembles formed to perform standard instrumental chamber music works. Ensembles may include a variety of combinations, e.g., string quartets, woodwind quintets, brass quintets, percussion ensembles, piano trios, etc. Credit will be given only if a sufficient rehearsal/ performance schedule warrants.

MUS 516 Music Theatre Practicum
1 hr.
A production experience in music theatre. Each semester culminates in an opera or musical comedy production. Open to singers, actors, accompanists, instrumentalists, and persons interested in production techniques. Admission by audition or permission of the instructor. May be repeated for credit.

MUS 517 Collegium Musicum
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 toward graduation. Membership by audition.

MUS 518 Improvisation
2 hrs.
A course in the fundamentals of instrumental improvisation. Assignments will be made in such areas as improvisation in the early music tradition, improvisation on given melodic, harmonic, and/or rhythmic materials, as well as "free" improvisations. Prerequisite: MUS 161.

MUS 530 Advanced Choral Conducting
2 hrs.
Supervised experience in conducting vocal groups. The student may be called upon to prepare an ensemble for public performance. Prerequisite: Audition required.

MUS 531 Advanced Instrumental Conducting
2 hrs.
Supervised experience in conducting instrumental groups. The student may be called upon to prepare an ensemble for public performance. Prerequisite: Audition required.

MUS 542 Studies in Music Education
2 hrs.
Topic to be announced. Selection will be made from the following or similar topics: Music in the Humanities, Evaluation of Music Education Materials, and Curriculum Planning for Innovation in Music Education. This course may be repeated to an accumulation of not more than four credits.

MUS 546 Computer Assisted Instruction in Music
3 hrs.
The primary goal of the course is to teach students who already program, some of the specific techniques used in developing original software for CAI in music. The main activity in the course will be programming, and one of the products of the course should be, for example, a program of sufficient sophistication as to at least potentially qualify it for publication. Prerequisite: CS 105 or 502 or consent of instructor.

MUS 555 Jazz Arranging
2 hrs.
Jazz Arranging is a study of the art of arranging for the jazz ensemble—both traditional and contemporary. The course will undertake a detailed study of instrument ranges, transpositions, and sound potential, and will cover voicings, scoring practices, calligraphy, and contemporary trends within the medium. Prerequisite: MUS 158 (or consent of instructor) and MUS 161; "C" or better required in each course.

MUS 556 Advanced Jazz Arranging
2 hrs.
A study and application of the art of arranging for the jazz ensemble, studio orchestra and show orchestra. The course will undertake a detailed study of scoring for winds, brass strings, voices and percussion in relation to traditional and contemporary trends within the medium. Prerequisite: MUS 555 and MUS 264 or concurrently.

MUS 559 Jazz Improvisation I
2 hrs.
A study and directed application of the fundamentals of jazz improvisation including basic chord and scale construction and recognition, harmonic function, chord-scale relationships, and basic blues and popular song forms. All students will be required to develop aural and performance skills relative to those theory skills. Prerequisite: MUS 158 (or consent of instructor) and MUS 161; "C" or better required in each course.

MUS 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 and progressions, and complex scales and their applications. All students will be required to develop aural and performance skills relative to those theory skills. Prerequisite: MUS 558 and MUS 218 Jazz Ensemble or concurrently.

MUS 560 Counterpoint
2 hrs.
A study of the contrapuntal techniques of the 18th, 19th, and 20th centuries. Written assignments are closely correlated with the contrapuntal styles of significant composers. Prerequisite: MUS 161 with a grade of C or better.

MUS 561 Counterpoint
2 hrs.
A continuation of MUS 560. Prerequisite: MUS 560.

MUS 564 Electronic Music Composition
2 hrs.
Original music composition with digital and analogue synthesizers and computers. Creation of sound scores for concert performance, film, video, dance, theatre, or art installations. Includes the investigation of various types of sound synthesis, as well as the operation of studio control mixers and multi-track recorders. In addition to the weekly seminar, the student will be assigned a number of hours weekly for independent work in the studio for the realization of the project, which will receive periodic guidance and criticism from the instructor. May be repeated for credit. Lab fee required ($30). Prerequisite: MUS 263 or permission of the instructor.

MUS 565 Seminar in Music Theory
2 hrs.
Research projects in music theory. Research methods and analytic discipline are stressed. Study will be focused in an area of the student's need or interest. Prerequisite: MUS 261.

MUS 566 Musical Acoustics
3 hrs.
A course designed for the music student. Discussion as well as laboratory demonstration of such concepts 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; psychoacoustics. In addition, the instruments of the orchestra, the human voice, and recent developments in sound system components will be investigated. Prerequisite: MUS 161.

MUS 567 Orchestration
2 hrs.
A study of the characteristics of instruments, and of arranging for the various individual choirs, for combinations of choirs, and for full orchestra. Prerequisite: MUS 261.

MUS 568 Orchestration
2 hrs.
A continuation of MUS 567. Prerequisite: MUS 567.

MUS 570 Introduction to Musicology I
3 hrs.
A course in general methods and techniques or research in the field of music. Students will complete annotated note cards on important reference works and write a research paper on a topic of their choice. Prerequisite: Permission of instructor.

MUS 571 Introduction to Musicology II
3 hrs.
The course will deal with the history, purposes, and scope of musicology. Topics to be studied include leading historians, past and present; modern methods of research, with special emphasis on primary sources; and bibliography of the field. Prerequisite: MUS 570.

MUS 572 Baroque Music (1600–1750)
3 hrs.
A survey of the choral and instrumental music of the Baroque masters such as J. S. Bach and G. F. Handel. Special attention to the development of style from monody through harmonic polyphony. Prerequisites: MUS 270 and 271.

MUS 573 Classical Music (1750–1800)
2 hrs.
Examination of the chief works of Mozart and Haydn, with intensive study of the symphonic form and the development of the classic opera. Prerequisites: MUS 270 and 271.

MUS 574 Romantic Music (1800–1910)
3 hrs.
Music of the important composers of the period beginning with Beethoven, along with the historical, cultural, and political background of the era. Prerequisites: MUS 270 and 271.

MUS 577 Symphonic Literature
2 hrs.
A survey of music written for symphony orchestra during the Classic and Romantic periods.
MUS 578 Chamber Music Literature 2 hrs.
A survey of chamber music literature of the Classic and Romantic periods.

MUS 579 Operatic Literature 2 hrs.
A survey of opera from 1600 to the present.

MUS 580 Solo Literature (topics) 2 hrs.
Solo literature for a specific medium (voice, piano, violin, etc.) will be studied from a theoretical, historical, and performance point of view. Topics to be announced. May be repeated for credit. Prerequisite: MUS 270 and 271.

MUS 581 Choral Music Literature 2 hrs.
A survey of choral music (mass, motet, anthem, cantata, oratorio) from the Renaissance through the Romantic period.

MUS 582 Wind Music Literature 2 hrs.
A survey of windband ensembles and literature from the Renaissance period through the twentieth century.

MUS 583 Jazz History and Literature 4 hrs.
A survey of the history of jazz including aspects of sociology and history as they relate to the art form of jazz. All periods in jazz history, from its earliest roots in Africa and the slave culture in the United States, up through the blues, dixieland, swing, bop, mainstream and the more eclectic period of jazz rock and free-jazz will be explored. Important works will be examined from each period in order to grasp the essentials of a particular style. Prerequisite: MUS 558 or department's consent.

MUS 585 Medieval Music 2 hrs.
A survey of music in Western Europe from the end of Antiquity to the early 15th century. The major developments in style, theory, and notation will be explored within the context of the general cultural and political environment of the era. Problems of performance practice will receive special attention with emphasis on primary manuscript sources and scholarly performing editions. Prerequisites: MUS 270 and MUS 271.

MUS 586 Renaissance Music 2 hrs.
A survey of music in Western Europe from the early 15th century to the early 17th century. Development effects in style, theory, and notation will be explored within the context of the general cultural and political environment of the era. Problems of performance practice will receive special attention with emphasis on primary manuscript sources and scholarly performing editions. Prerequisites: MUS 270 and MUS 271.

MUS 587 Contemporary Music 2 hrs.
A survey of trends in European music and music of the Americas from about 1910 to the present.

MUS 588 Music Cultures of the World 3 hrs.
This topics course is designed to provide students with an intensive study of the musical traditions of a single cultural-geographic area. Attention will focus on the characteristics of instruments and instrumental ensembles, vocal traditions, sound structures, and theatrical traditions as well as the historical, political, and socio-demographic factors that shape the area's performing traditions. May be repeated for credit with different topics. Prerequisite: Consent of instructor for non-music majors.

MUS 589 Topics in Ethnomusicology 3 hrs.
This topics course examines various methods, problems, and issues in ethnomusicological writing and research. Topics will vary and be announced each semester. The approach taken in the course reflects current practice in the field of ethnomusicology, drawing upon theoretical writings in a variety of disciplines (including ethnomusicology, musicology, anthropology, theater, cultural studies, and women's studies). May be repeated for credit with different topics. Prerequisite: Consent of instructor for non-music majors.

MUS 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.

MUS 594 Electronic Media 2 hrs. ($30)
The purpose of this course is to expose the student to the equipment used in various recording situations and its operations, as well as discussing the artistic use of this equipment. Although probably a technique course, areas which affect the creative aspects of the final recording will be discussed (such as microphone placement, tasteful vs. insensitive 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).

MUS 595 Workshops in Music Education 1–4 hrs.
Intensive, short-term courses that address the instructional and pedagogical issues found in today's schools, as well as issues of specific concern for current teachers in the field of music. Topics will be from all areas of music education. Prerequisite: Advisor consent.

MUS 596 Multi-track Recording 2 hrs.
A course in the theory and techniques of multi-track recording and mixing. Students begin with an in-depth study of the mechanics of a multi-track recorder and the signal flow of a recording/mixing console. Microphone techniques as well as various approaches to room set-up are presented through reading assignments and studio demonstrations. Attention is given both to traditional techniques and the need for engineers to try new approaches to familiar circumstances. Students also study the most commonly used signal processors and how they might be used during recording and mixing. Students will be required to produce a final mix. Prerequisites: MUS 594 or instructor consent.

MUS 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 School of Music.

MUS 599 Projects in Recording Technology 1–4 hrs.
An independent study allowing the unusually qualified student the opportunity to explore a topic or problem in recording technology. Prerequisite: MUS 594, approved application, and instructor permission required.

Open to Graduate Students Only

MUS 500 Applied Music 1–2 hrs. ($7)
Private lessons for the graduate student in a non-major area of performance.

MUS 600 Applied Music 1–4 hrs. ($7)
Private lessons for the graduate student in the major performance area. Includes conducting.

MUS 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.

MUS 614 Chamber Music Ensemble 1 hr.
Special ensembles comprised of graduate students to perform all original works. Ensembles may include a variety of combinations, e.g., string quartets, woodwind quintets, percussion ensembles, piano trios, vocal ensembles, etc. The course may be repeated for credit. Prerequisite: Approved application.

MUS 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.

MUS 640 Band Techniques and Organization 2 hrs.

MUS 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 techniques, and conducting.

MUS 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.

MUS 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. This course may be repeated for credit.

MUS 662 Seminar in Composition 2 hrs.
The completion of an original composition of larger scope for any combination of acoustic instruments, and which may include...
MUS 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.

MUS 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.

MUS 670 Seminar in Musicology
2 hrs.
A course designed to permit the student to explore selected areas of music history. A project is required which will be subject to group analysis and discussion. The course may be repeated for credit.

MUS 672 Seminar in Jazz
2 hrs.
A course designed to permit the student to explore selected areas in jazz studies. A project is required which will be subject to group analysis and discussion. The course may be repeated for credit.

MUS 674 Seminar in Music Therapy
2 hrs.
A course designed to permit the student to explore areas of music therapy. A project is required which will be subject to group analysis and discussion. The course may be repeated for credit.

MUS 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 Course Offerings. The course may be repeated for credit when dealing with a different composer.

MUS 680 Seminar in Music Therapy
2 hrs.
A course designed to permit the student to explore selected areas in music therapy, i.e., therapeutic techniques, evaluation procedures, or 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.

MUS 681 Research in Musical Behavior
2 hrs.
Development and employment of research methods and techniques applied 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) or, in the case of music therapy students, will provide the data basis for the required MUS 700, Master's Thesis. 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.

MUS 690 Graduate Recital
2 hrs.
Presentation of a full-length recital in the student's area of concentration (music performance or composition). When this course is the culminating project for the master's degree, an oral examination on the recital material and related areas is an integral part of the requirement.

MUS 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 Advisor 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.

MUS 698 Readings in Music
1-4 hrs.
An advanced, designated project of study. Graduate students may enroll in this course after consultation with the graduate advisor. Prerequisite: Approval of graduate advisor.

MUS 700 Master's Thesis
6 hrs.

MUS 710 Independent Research
2-6 hrs.

MUS 712 Professional Field Experience
2-12 hrs.
BLIND REHABILITATION

Dr. William Wiener, Chair
Main Office: 3513 Sangren Hall
Telephone: 387-3456
FAX: 387-3567
URL: http://www.wmich.edu/hhs/blrh/html/blrh.htm

The Department of Blind Rehabilitation offers four master's degree programs, each described below. The programs in Orientation and Mobility and in Rehabilitation Teaching are approved by the Association for Education and Rehabilitation for the Blind and Visually Impaired. The program in Rehabilitation Counseling is accredited by the Council on Rehabilitation Education.

It is the mission of the department's programs to promote quality rehabilitation services for individuals who are blind or have other disabilities by educating rehabilitation personnel, providing services to rehabilitation agencies, facilities, and associations; and sponsoring research related to rehabilitation.

Federal grants from the United States Department of Education provide students enrolled in most of our masters' programs with tuition assistance and stipend awards. The programs are designed to prepare individuals for entry level positions in orientation and mobility, rehabilitation teaching, rehabilitation counseling/teaching, and teaching children who are visually impaired/orientation and mobility in public and private blindness agencies, in schools, and in rehabilitation facilities. The Orientation and Mobility and the Rehabilitation Teaching programs require 37 and 39 semester hours of course work respectively and can each be completed in three consecutive semesters. The Rehabilitation Counseling/Teaching program requires 74 semester hours of course work and can be completed in six consecutive semesters. The Teaching Children Who are Visually Impaired/Orientation and Mobility program requires 59 semester hours and can be completed in four consecutive semesters. Curriculum guides for the four programs are available from the Department office.

Students are expected to work with advisors in order to be informed of policies, course offerings, prerequisites, and applications required for designated courses. A student's performance and progress will be evaluated throughout the program. This includes "check points," such as candidacy, assignment of a grade below "B" in any course, and final grade point check prior to internship placement.

The professional preparation for students entering any of the four degree programs described below includes academic study on campus, simulated disability experiences, a research project, practicum, and an off-campus supervised clinical field experience.

Admission Requirements

Admission to a Master of Arts program in the department is based upon undergraduate academic record, appropriate goals, related experience, interpersonal and communication skills, emotional maturity, and functionally independence. Prior to consideration by the M.A. Admissions Committee, applicants are required to complete and return a departmental application obtained from the Department of Blind Rehabilitation and a Graduate Self-Managed Application obtained from the Office of Admissions and Orientation. Upon admission, an applicant is assigned an advisor who will assist in preparing a Program of Study.

The Department recognizes the importance of increasing the educational opportunities of minority students as well as insuring diversity of role models in the field of rehabilitation. Therefore, the Department strives to create an atmosphere conducive to the concerns of diverse populations, to integrate these concerns into programs and course offerings, and to fulfill its commitment to recruit, admit, and graduate minority students prepared for their chosen careers. Toward this end, the Department, the College of Health and Human Services, and The Graduate College provide additional financial and program support for eligible minority students.

Master of Arts in Orientation and Mobility

Advisor: Marvin Weessies,
Room 3410, Sangren Hall

The thirty-seven hour Orientation and Mobility (OMS) degree program prepares specialists who teach adults, who are blind and visually impaired, the conceptual and physical processes involved in moving independently, safely, and efficiently in their homes and communities. If a student so chooses, an additional semester's work may be elected to complete a specialized concentration in Low Vision or Gerontology. One may also earn dual degrees in Orientation and Mobility and in Rehabilitation Teaching.

Master of Arts in Rehabilitation Teaching

Advisor: Susan Ponchillia,
Room 3405, Sangren Hall

The thirty-nine hour Rehabilitation Teaching (HTB) degree program prepares a practitioner
to offer instruction to people who are blind and visually impaired in the following skills of independent living: communications, adapted computer technology, personal management, home management, minor household repairs, and leisure time activities. If a student so chooses, an additional semester’s work may be elected to complete a specialized concentration in Low Vision or Gerontology. One may also earn dual degrees in Orientation and Mobility and in Rehabilitation Teaching.

Master of Arts in Rehabilitation Counseling/Teaching
Advisor: Jennifer Wiebold, Room 3409, Sangren Hall

This program** (RC) is jointly administered by the Department of Blind Rehabilitation and the Department of Counselor Education and Counseling Psychology.

The seventy-four hour Rehabilitation Counseling/Teaching degree program prepares a dual competency practitioner who is able to provide both rehabilitation counseling and rehabilitation teaching skills. Graduates receive two Master of Arts degrees that make them eligible to become certified rehabilitation counselors (CRC) and AER certified rehabilitation teachers (AA). They provide the full range of vocational rehabilitation counseling services to individuals impaired by sensory handicaps, physical handicaps, and mental disability. As rehabilitation counselors, the graduates assist clients with career choices, manage their acquisition of work-related skills, develop jobs, and assist with placement into employment. As rehabilitation teachers, they serve blind and visually impaired individuals by providing instruction in the activities of daily living, communications, and recreation/leisure.

**Bachelor of Science in Rehabilitation Counseling**

Advisor: Annette Skelenger, Room 3404, Sangren Hall

This degree* is offered through the Teaching Children Who are Visually Impaired/Orientation and Mobility Program (SEO) which is jointly administered by the Department of Blind Rehabilitation and the Department of Educational Studies.

This fifty-nine hour degree program prepares a dual competency practitioner who is able to serve in the schools as a teacher of children who are visually impaired and as an orientation and mobility specialist. Graduates receive two master’s degrees that make them eligible to become certified teachers and certified orientation and mobility specialists (COMS). For individuals who already possess certification in one of the areas, it is possible to complete the degree in the second area. These teacher-practitioners are able to educate students in academic studies and teach them to travel independently. A curriculum guide for the program is available in the department office.

*Leads to national certification
**Leads to Michigan license as a counselor and national certification

Blind Rehabilitation Courses (BLRH)

Open to Upperclass and Graduate Students

BLRH 577 Services for Persons Who Are Blind or Have Other Disabilities 1–2 hrs.

This course explores issues that affect services for people who are blind or have other disabilities. It includes prevalence and incidence of various disabling conditions, adaptive recreation, history and current status of service legislation, consumer organizations, professional organizations, accreditation, models of service delivery, national and international agencies and organizations, national and international resources, social service programs, and trends and future issues.

BLRH 584 Computer Technology in Rehabilitation 3 hrs.
This course is designed to introduce the student to computer technology, as it relates to persons with disabilities. Students will learn the uses, parts, and operating commands of common adaptive computers, as well as the software used with them. In addition, the major adaptive forms of input and output are investigated.

BLRH 588 Psychosocial Aspects of Disability 2 hrs.
This course provides an understanding of the psychosocial factors that impact upon the integration into society of individuals with disabilities. It examines the philosophy of rehabilitation, major classifications and paradigms, common stereotypes, attitudes and their measurement, psychiatric disabilities, theories of adjustment, psychosocial losses, issues relating to sexuality, personal adjustment training, the role of the family, the use of effective interaction skills, and the stages of group process.

BLRH 589 Medical and Functional Aspects of Rehabilitation 2 hrs.
This course presents an interdisciplinary approach to the study of multi-handicapping conditions in rehabilitation. It includes information on the major disabling conditions such as traumatic brain injury, orthopedic, neuromuscular, visual, learning, speech and hearing, cardiovascular, mental and emotional disabilities, and other selected disabilities. Emphasis is placed upon the cumulative effects of concomitant disabilities with additional emphasis on visual impairment.

BLRH 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 is emphasized.

BLRH 591 Braille and Tactual Communication Systems 2 hrs.
This course is designed to teach the Braille literary code as it applies to Rehabilitation Teaching. Braille teaching methods are also presented.

BLRH 592 Introduction to the Education of Visually Impaired Children 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.

BLRH 593 Methods of Teaching Adaptive Communications 2–3 hrs.
Adaptive communication methods used by visually impaired persons and the techniques of teaching them are explored in this course. Specifically, Braille, handwriting, listening, and recording devices and typewriting are presented. This course also includes a supervised practical teaching experience with a visually impaired person.

BLRH 594 Principles of Orientation and Mobility 3 hrs.
An examination and application of the fundamental principles underlying the acquisition of sensory information by severely visually impaired individuals.

BLRH 595 Introduction to Orientation and Mobility 4 hrs.
The content of this course relates to problems of independent travel which result from reduced vision. Simulated experiences are provided which emphasize the sensory, conceptual, and performance levels needed for independence travel in a variety of environments.

BLRH 596 Electronic Devices 1 hr.
This course provides systematic instruction in the use of fundamental electronic travel aids. An overview of major electronic devices is also explored. **Prerequisite:** BLRH 595.

This course deals with assessment and rehabilitation 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. The concepts are explored that deal with initial intake procedures, assessment of near and distant visual acuity, assessment of near and distant visual field, color testing, evaluation of sunwear, evaluation of optical aids, training in the use of optical and non-optical aids, and the use of equipment such as the lensometer and tonometer. **Prerequisite:** Approval of advisor.

BLRH 598 Readings in Blind Rehabilitation 1–4 hrs.
This course is arranged on an individual basis to provide students an opportunity to independently pursue an in-depth study of special areas of interest.

BLRH 599 Gerontology 2 hrs.
This course covers 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

BLRH 601 Small "N" Research: Design and Analysis 3 hrs.
This course explores standard group research design, single subject and small numbers design. The emphasis is placed upon providing students with a working knowledge of an experimental methodology for demonstrating control in social/behavioral research where more traditional experimental control group paradigms are not feasible or desirable. This approach is based on an...
experimental methodology for demonstrating control with single or small numbers of subjects which includes design, internal replication, measurement, reliability, and visual or statistical analysis.

BLRH 602 Gerontology in Orientation and Mobility and Rehabilitation Teaching 2 hrs. Elderly individuals who are visually impaired have specific rehabilitation needs that differ from those of younger people. This course is intended to provide students with discipline specific knowledge and adapted skills necessary to assist older persons who are blind or visually impaired meet their independent living and travel needs. The course begins with a brief overview of aging. Topics then include vision loss related to aging, assessment, hearing and vision screening, environmental evaluation and modification, and adaptation of independent living and travel techniques for people who are elderly.

BLRH 604 Issues in Travel 1 hr. This course is taken concurrently with BLRH 595. It presents theoretical content which facilitates effective teaching of independent travel skills to visually handicapped individuals. The topics of this course include development and use of spatial maps, use of the computer in mobility, conditions of travel, orientation to various environments, and types of guidance devices.

BLRH 605 Practice in Low Vision 1 hr. This is a laboratory course which provides experiences in initial intake procedures, assessment of near and distant visual acuity, assessment of near and distant visual field, color testing, evaluation of sunwear, evaluation of optical aids, training in the use of optical and non-optical aids, and use of equipment such as the lensometer and tonometer. Prerequisite: Approval of advisor.

BLRH 606 Adaptive Sports Activities for Visually Impaired Children 1 hr. This course introduces students to the adapted methods that are utilized in teaching physical education, recreation, and sports skills to young learners with visual impairments. The course will include a combination of lecture and practice. It will present: a) basic techniques and rules for each sport; b) techniques for adapting the activities; c) methods for teaching these activities; d) an overview of appropriate elementary games; and e) resources useful for obtaining sports and recreational materials and information. Participation will be required. Each enrollee will take part in many physical activities while under the blindfold or using low vision simulators.

BLRH 607 Adaptive Art Activities for Visually Impaired Children 1 hr. This course will prepare students to instruct children who are visually impaired in the application of three-dimensional media such as raised line drawing, braille graphics, clay, plaster, wood, etc. Prerequisite: Approval of advisor.

BLRH 610 Assisted Research 2–6 hrs. This course requires a semi-independent research project related to rehabilitation. The student contributes a project that has been developed by a faculty member and is conducted by more than one student.

BLRH 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.

BLRH 691 Practicum in Rehabilitation Teaching 1–2 hrs. This course provides supervised teaching experiences with blind or visually impaired individuals in a variety of settings. Course may be repeated. Graded on a Credit/No Credit basis.

BLRH 695 Practicum in Orientation and Mobility 1–3 hrs. This course provides supervised teaching experiences with blind or visually impaired individuals in a variety of settings. Included within this course is a weekly seminar to discuss procedures of assessment, principles of professional practice and effective strategies.

BLRH 697 Clinical Practice in Low Vision 3 hrs. The course will familiarize the student with current practice and resources in the administration of a comprehensive low vision service. Further, the course allows for a practicum to be served in a low vision clinic where the student gains experience both in administration of the service, and in applied training methodologies with low vision clients. Prerequisites: BLRH 587 and 597.

BLRH 699 Job Analysis and Job Placement 2 hrs. This course applies career choice and job placement concepts to persons with disabilities. It includes occupational aspects of disability, pertinent laws and regulations including ADA and sections 501–504, labor market analysis, job analyses, rehabilitation engineering, job development, and work modification strategies. It provides experience in making employer contacts, overseeing clients' job seeking efforts, and training in job-related social skills.

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

BLRH 710 Independent Research 2–6 hrs. This course requires the completion of a creditable research project related to rehabilitation and conducted with faculty guidance.

BLRH 712 Professional Field Experience 2–12 hrs. This course requires a supervised internship experience in an organization that serves blind and visually impaired persons, during which the opportunity is provided for practical application of principles and methods in blind rehabilitation.

COMMUNITY HEALTH SERVICES
Dr. Janet Pisaneschi, Dean, and Director of School of Community Health Services
Main Office: B302 Ellsworth Hall
Telephone: 387–3800
FAX: 387–3348
Thomas Holmes
James Kendrick
Janet Pisaneschi
C. Dennis Simpson
Molly Vass
Elo Weits
Donna Weinreich

The School of Community Health Services encompasses educational programs targeted at the significant unmet health and human service needs of our society, at developing health and human service professions and disciplines, and at emerging health and human service specialty and research areas. Units within the School of Community Health Services offer courses and programs in alcohol and drug abuse, community health services, gerontology, health and human services, and holistic health care.

Alcohol and Drug Abuse
Dr. C. Dennis Simpson, Director
Main Office: B304 Ellsworth Hall
Telephone: 387–3350
FAX: 387–3348

Certificate Program in Alcohol and Drug Abuse
Advisors:
Dr. C. Dennis Simpson, Director
Room B304, Ellsworth Hall
Janice Dekker, Coordinator of Student Services
Room B329, Ellsworth Hall

Western Michigan University offers a program for the training of substance abuse specialists through the Graduate Certificate Program in Alcohol and Drug Abuse (SPADA). The departments of Biological Sciences, Counselor Education and Counseling Psychology, Occupational Therapy, Psychology, Public Affairs and Administration, Sociology, and the School of Social Work provide the multidisciplinary and interdisciplinary bases to the specialty. Courses are planned and taught by program faculty and grants 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.

Admission Requirements
Persons who are eligible for graduate credit may apply for admission to the SPADA Program.

Program Requirements
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, 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 a department or school in which the student earns his or her graduate degree or in the certificate program. In some graduate degree programs 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 Certificate Program in Alcohol and Drug Abuse: ADA 630 Legal and Illegal Drugs of Abuse (3 hrs.); SOC 617 The Etiologies of Substance Abuse (3 hrs.); and ADA 631, CEC 631, or SWRK 663—Seminar in Substance Abuse I (3 hrs.) or ADA 632, CEC 632, or SWRK 665—Seminar in Substance Abuse II (3 hrs.).

*These courses are cross-listed in the departments and school indicated.

SPADA participants must also elect one of the following courses: PSY 526 Human Drug Use and Abuse (3 hrs.); PSY 663 Marital Therapy (3 hrs.); SOC 642 Social Epidemiology (3 hrs.); SOC 687 Evaluation Research I (3 hrs.); SWRK 636 Theory and Practice of Group Treatment (3 hrs.); SWRK 667 Seminar in Social Policy, Planning, and Administration (3 hrs.); or any one of the twenty-one Alcohol and Drug Abuse (ADA) courses offered for graduate credit.

Alcohol and Drug Abuse Courses (ADA)

Open to Upperclass and Graduate Students

ADA 520 Family and Addiction 3 hrs.
This course provides students with knowledge on the effects of substance abuse on the family. Included in the course are specific topics related to dysfunctional relationships, children of substance abusers, and resulting disorders.

ADA 525 Women and Substance Abuse Treatment 3 hrs.
This course provides knowledge on gender specific treatment of substance abusers. This includes physiological aspects of women, as well as cultural aspects and methods to enhance the treatment of women substance abusers.

ADA 530 Clinical Theory in Substance Abuse Services 1–4 hrs.
This course covers selected theories which form the foundation for substance abuse services practice in specific areas. Students are expected to master the content as a basis for building foundation knowledge for applied practice. The specific topics are announced with each semester offering.

ADA 535 Drug Testing 3 hrs.
This course explores the theory and practice of drug testing and its applications in both clinical practice and employment settings. The spectrum of testing ranges from field dexterity to gas chromatography. Federal requirements are reviewed for application in both clinic and work settings.

ADA 537 Constructive Confrontation and Referral in Substance Abuse Services 3 hrs.
This course provides students with knowledge of intervention strategies for active substance abusers. Emphasis is placed on strategic constructivie confrontation techniques and effective referral processes.

ADA 540 Current Issues in Alcohol and Drug Abuse 1 hr.
This course, taught in seminar, reviews basic and applied research advances in prevention and treatment of substance abuse. Emphasis is on bridging research advances to practice areas. The focus of the course is research published in the previous year.

ADA 541 Group Home Treatment 1–6 hrs.
This course reviews custodial, milieu, and function aspects of group home treatment. Theories and practices are presented with emphasis on long-term treatment outcomes.

ADA 545 Alcohol, Drugs, and Aging 3 hrs.
The problems of alcohol, medication, and legal and illegal drug use, misuse, and abuse among older persons will be discussed. Prevention, intervention, and treatment will be considered. This course is cross-listed with GRN 545.

ADA 560 Clinical Practice in Selected Substance Abuse Services Areas 1–4 hrs.
This course covers variable topics in clinical substance abuse services practice. It is a skills development course which helps students to become proficient in specific techniques and procedures related to clinical service. The specific areas are announced with each semester.

ADA 565 Alcohol, Drug Abuse, and Violence 3 hrs.
This course provides the student with knowledge on the multiple relationships of substance abuse and violence, childhood, and other assultive behaviors.

ADA 571 Legal Offenders and Substance Abuse 3 hrs.
This course provides the student with knowledge on the theories associating substance abuse with criminal and civil offenses. Specific focus is on the treatment strategies and techniques related to the offending population and long-term outcomes of decreased recidivism.

ADA 570 Field Education: Substance Abuse 1–4 hrs.
A clinical, prevention, research, or administrative field experience in substance abuse services. The field experience involves direct supervision by faculty and clinical supervisors. Graded on a Credit/No Credit basis. Prerequisite: Admission to certificate program and permission of instructor.

ADA 580 Substance Abuse Prevention 3 hrs.
This course explores the multiple theories and techniques used in the prevention of substance abuse. The history and evolution of prevention is presented, as well as cognitive, effective, and behavioral strategies.

ADA 585 Student Assistance Programs 3 hrs.
This course provides students with knowledge of the theories and practices of student involvement with drugs. Intervention strategies, referrals, and follow-up.

ADA 590 Applied Alcohol and Drug Dependence Recovery Techniques 3 hrs.
This course provides the student with knowledge of self-help groups and formal relapse prevention strategies. Application of relapse prevention strategies are integrated into multiple aspects of the continuum of care.

ADA 598 Readings in Substance Abuse Services 1–4 hrs.
This course is offered as independent study and reading under the guidance of a faculty member. Initiative for planning the topic for investigation and seeking the appropriate faculty member comes from the student, with consultation from the advisor. May be repeated up to a maximum of 4 hours in a program of study. Prerequisite: consent of instructor and program advisor.

Open to Graduate Students Only

ADA 610 Drugs and the Workplace 3 hrs.
This course provides knowledge of work based programming theories and practices regarding drugs of abuse. Course work and readings focus on policy formulation and implementation of procedures.

ADA 630 Legal and Illegal Drugs of Abuse 3 hrs.
This course deals with the pharmacological aspects of psychoactive/psychotropic drugs having abuse potential. Special emphasis is placed on observable signs and symptoms resulting from use/abuse/dependence of those drugs.

ADA 631 Seminar in Substance Abuse I 3 hrs.
This interdisciplinary seminar is designed to reflect broadly conceived intervention strategies ranging from primary prevention to rehabilitation of the addict. (Cross-listed with CEC 631 and SWRK 663.)

ADA 632 Seminar in Substance Abuse II 3 hrs.
Continuation of ADA 631. This course is cross-listed with CEC 631 and SWRK 665.

ADA 650 Substance Abuse Assessment 3 hrs.
This course deals with the physical, social, psychological, vocational, economic, and legal symptoms of substance abuse. Instrumentation for assessment in clinical practice is presented as well as medical and non-medical diagnostic criteria. This course includes clinic-based instruction in assessment strategies.

ADA 680 Clinical Supervision in Substance Abuse Service 3 hrs.
This course explores the theories and techniques used in the provision of clinical supervision to substance abuse services practitioners. Direct clinical supervisory skills are covered in detail and clinic-based instruction in clinical supervision is included.

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

ADA 710 Independent Research 2–6 hrs.

ADA 712 Professional Field Experience 2–12 hrs.
Community Health Services

Community Health Services Courses (CHS)

Open to Upperclass and Graduate Students
CHS 530 Seminar in Community Health Services
1-4 hrs.
This course focuses on emerging issues relevant to the certificate programs in the School of Community Health Services.

CHS 598 Readings in Community Health Services
1-4 hrs.
This course is arranged on an individual basis to provide students an opportunity to pursue independently the study of interdisciplinary areas of interest. May be repeated up to a maximum of four hours in a program of study. Prerequisite: Consent of instructor.

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

CHS 700 Master's Thesis
6 hrs.

Gerontology

Dr. Donna M. Weinreich, Director
Main Office: B303 Ellsworth Hall
Telephone: 387-2647
FAX: 387-3348

Western Michigan University offers a multidisciplinary Graduate Certificate Program in Gerontology. This program consists of 20 hours of course work, field experience, and/or thesis/dissertation credit. A certificate in gerontology will be awarded at the completion of the course of study.

Admission Requirements
Students apply for admission to the Graduate Certificate Program through the Admissions Office and the Gerontology Program Office.

Program Requirements
Persons seeking the Graduate Certificate in Gerontology must complete a course of study totaling 20 semester hours. Some required courses for the specialization may be integrated into related graduate degree programs. Four courses are required: BLRH 599 Gerontology, 2 credit hours; BLRH 602 Blind Rehabilitation for the Elderly, 2 hrs.; GRN 680 Multidisciplinary Seminar in Gerontology, 3 credit hours; and GRN 681 Program Planning and Development in Gerontology, 3 credit hours. Up to six hours of thesis/dissertation or field experience in Gerontology or from a related graduate department may also be counted. The thesis/dissertation topic or the field placement must be approved by the Gerontology advisor.

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.

Gerontology Courses (GRN)

Open to Upperclass and Graduate Students
GRN 521 Women and Aging
3 hrs.
This course offers an examination of the impact of aging on women, with special emphasis on the diverse experiences, challenges, and social and economic conditions of older women. The course will explore the status and roles of women in an aging society. Topics to be covered include the economics and politics of aging, the health status of women, women as caregivers, and retirement. The plight of minority older women will be addressed.

GRN 525 Religion and Aging
3 hrs.
A survey of the views of and attitudes toward the aging process and older people held by the world's major religions will be explored. Particular attention will be paid to the relation of religious views and social policy in the U.S.

GRN 530 Special Topics in Gerontology
1-4 hrs.
This is a variable topic, variable credit course for consideration of current and special interests in gerontology. Specific topics, number of credit hours and prerequisites, if any, will be announced each time the course is scheduled. May be repeated for credit with different topics.

GRN 543 Survey of Geriatric Medicine
3 hrs.
This course provides an overview and survey of the care of the elderly patient from a medical perspective. The issues of medical problems, long-term care, nursing, rehabilitation, and the social considerations will be broadly discussed. In addition, the interaction of all of the issues of elderly care will be analyzed.

GRN 544 Aging and Mental Health
3 hrs.
This is a survey of mental health and mental health treatment problems of older adults. Topics include the courses of major mental illness in old age, depression, and dementia. Consideration will be given to etiologies, current therapies, and treatments, as well as barriers to treatment in this population.

GRN 545 Alcohol, Drugs, and Aging
3 hrs.
The problems of alcohol, medication, and legal and illegal drug use, misuse, and abuse among older persons will be discussed. Prevention, intervention, and treatment will be considered. This course is cross-listed with ADA 545.

GRN 547 Alzheimer's Disease and Other Dementias
3 hrs.
Dementia is a complex illness compounded by stereotypical views of aging and the aged. This course focuses on social, psychological, etiological, and epidemiological issues related to dementia together with the problem of diagnosis and treatment. Alzheimer's Disease, probably the most common cause of dementia, will receive specific attention. The purpose of this course is to help students gain an understanding of dementia as both a social and medical problem.

GRN 598 Readings in Gerontology
1-4 hrs.
This course is offered as independent study and reading under the guidance of a faculty member. Initiative for planning the topic for investigation and seeking the appropriate faculty member comes from the student, with consultation from the advisor. May be repeated up to a maximum of 4 hours in a program of study. Prerequisite: Consent of instructor.

Open to Graduate Students Only
GRN 680 Multidisciplinary Seminar in Gerontology
3 hrs.
This is 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 the contributions of various academic fields to the understanding of aging.

GRN 681 Program Planning and Development in Gerontology
3 hrs.
This seminar in the gerontology graduate specialty 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.

GRN 690 Field Education in Gerontology
1-6 hrs.
This course is designed to give the student a learning experience during which the student can apply some of the knowledge and information acquired in the gerontology academic setting and further develop and refine higher professional skills with the guidance and assistance of those professionals currently working in gerontology. Prerequisite: Admission to the program and permission of instructor.

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

GRN 710 Independent Research
2-6 hrs.

GRN 712 Professional Field Experience
2-12 hrs.

Health and Human Services

Health and Human Services Courses (HHS)

Open to Upperclass and Graduate Students
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 interaction and movement of forces within the system as well as between the system and its environment.

HHS 512 Principles of Health Finance
3 hrs.
This course is an examination of the principles of finance as applied to health care management. The course will provide a basis for understanding the financial management function in a health care administration environment and on the use of financial information in health care management decision making.
HHS 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 group medical practice.

HHS 514 Basic Principles and Organization of Health Planning 3 hrs.
This course is an introduction to the principles and methods of planning in the health system. It includes a descriptive analysis of the significance of planning effective health care services, alternative planning frameworks, and technical approaches to the planning process. In addition, the course surveys the history of planning in the health systems as well as the current structure arrangements for carrying out planning in the health arena both at the macro- and micro-levels.

HHS 515 Administrative Functions in the Health Care Setting 3 hrs.
This course focuses on the knowledge and skills necessary for the major administrative functions in health organizations. These include goal setting, decision making, personnel management, data processing, service design, and general principles of financial management.

HHS 530 Clinical Theory for Health and Human Services 1-4 hrs.
This course covers selected theories which form the foundation for health and human service practice in specialized areas. Students are expected to master the content as a basis for building foundation knowledge for clinical practice. Theory of environmental health, systems, theory for the health setting, and community health theory are among the possible areas of study. The specific topics are announced with each semester offering. Prerequisite: Consent of instructor.

HHS 560 Clinical Practice in Selected Health and Human Service Areas 1-4 hrs.
This course covers variable topics in clinical health and human service practice. It is a skills 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, and community health education practice are among the possible areas of study. The specific areas are announced with each semester. Prerequisite: Consent of instructor.

HHS 561 Problem Solving in Health and Human Service Organizations 1-4 hrs.
This seminar covers variable topics relating to problem solving in health and human services. It is a 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 and at home. Prerequisite: Consent of instructor.

HHS 569 AIDS/HIV: Perspective on an Epidemic 3 hrs.
This course is intended to provide a historical perspective and introduction to the social, psychological, biological, political, economic, ethical, and medical implications of HIV infection and the Acquired Immune Deficiency Syndrome (AIDS). The course will be taught by faculty and others in a variety of fields.

HHS 570 Field Education 1-6 hrs.
This course is designed to give the student a total learning experience during which the student can apply some of the knowledge and information obtained in the health and human services academic setting and further develop and refine his/her professional skills with the guidance and assistance of those professionals currently working in the health and human service areas. Prerequisite: Consent of instructor.

HHS 598 Readings in Health and Human Services 1-4 hrs.
This course is offered as independent study and reading under the guidance of a faculty member. Initiative for planning the topic for investigation and seeking the appropriate faculty member comes from the student, with consultation from the advisor. Prerequisite: Consent of instructor and program advisor.

Open to Graduate Students Only
HHS 663 Ethical Issues in Human Service Professions 3 hrs.
This course provides knowledge about the contribution of ethics and moral values to the development of one's professional competence. The course will cover ethical problems which exist at different levels of society: (a) in direct practice with clients and their families; (b) within human service agencies; and (c) at state and national levels of socio-political policy debate. Consideration will be given to such issues as client rights and confidentiality, professional advocacy and liabilities, and distribution of scarce resources. Prerequisite: Consent of instructor.

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

HHS 712 Professional Field Experience 2-12 hrs.

Holistic Health Care
Dr. Thomas Holmes, Director
Main Office: B302 Ellsworth Hall
Telephone: 387-3389
FAX: 387-3348

Certificate Program in Holistic Health Care
Advisors:
Dr. Thomas Holmes, Director
B313 Ellsworth Hall
Jan Dekker, Coordinator of Student Services
B329 Ellsworth Hall

The Graduate Certificate Program in Holistic Health Care is designed to provide education and experience in holistic approaches to health. Multidisciplinary in nature, it includes eighteen semester hours of study in holistic health care and related topics. The Holistic Health Care specialization may be taken independently or can be used to supplement graduate training in related fields such as counselor education and counselor psychology, psychology, social work, speech pathology and audiology, occupational therapy, blind rehabilitation, and physical education and recreation. It also complements many other graduate areas such as business, public administration, theology, nursing, medicine, and education.

The certificate program can help health and human service professionals gain new knowledge and skills to be more effective in their present professional role or to equip themselves for new job opportunities in a health care setting that emphasizes holistic approaches. The program is designed to provide opportunities for advanced training in the following areas: emerging health care paradigms, lifestyle assessment, health counseling, stress management and biofeedback, spirituality in health and healing, community and healing, and environment and health. Graduates of the program are employed by various public and private agencies and often work with interdisciplinary teams of health care professionals.

Admission Requirements
Successful completion of HOL 531 Introduction to Holistic Health Care (3 credit hours) is a prerequisite to admission. Admission forms are available through the Holistic Health Program Office and the Office of Admissions and Orientation, Graduate Admissions.

Program Requirements
The academic program consists of eighteen semester hours, distributed in the following manner:

HOL 531 Introduction to Holistic Health Care (3 hrs.)
HOL 650 Holistic Methods I (3 hrs.)
HOL 651 Holistic Methods II (3 hrs.)
HOL 570 Field Education in Holistic Health (3 hrs.)
or
HOL 712 Professional Field Experience (3 hrs.) or equivalent credit from a related graduate degree program with approval of the Holistic Health Faculty Advisor.

Cognates in Holistic Health (6 hrs.)

Holistic Health Care Courses (HOL)
Open to Upperclass and Graduate Students
HOL 530 Special Topics in Holistic Health 1-4 hrs.
This is a variable topics, variable credit course for consideration of current and special interests in holistic health. Specific topics, number of credit hours and prerequisites, if any, will be announced each time the course is scheduled. May be repeated for credit with different topics.

HOL 531 Introduction to Holistic Health Care 3 hrs.
The primary purpose of this course is to provide an introduction to the philosophies, concepts, principles and approaches involved in holistic health care. It is meant to serve both as a general educational experience for persons wishing to become familiar with holism and as essential basic instruction for persons wishing to apply for admission to the graduate specialty program in Holistic Health Care. Prerequisite: Senior undergraduate or graduate status.
HOL 532 Holistic Approaches to Relationships

This course is designed to provide an understanding of relationship development. In order to do this, students will acquire knowledge in self-concept formation, social systems, values development, and communication models. A major emphasis in this course will be on how to assist people in establishing and maintaining healthy relationships.

HOL 533 Holism and Community

This course is designed to help students understand the dynamics of community and the potential for holistic growth and health through the investment of self in a common and purposeful experience with others.

HOL 534 Holistic Health and Spirituality

This course helps students better understand the spiritual dimensions of each individual and the relationship of spirituality to the meaning of health. Various spiritual traditions, philosophies, and practices will be explored with the primary emphasis on the implications of these teachings for everyday living. The course will address the role of spirituality in the therapeutic process for health care professionals and resources available for practitioners and educators. The format for this course will include lecture, discussion, experiential activities, and audio/visual presentations.

HOL 535 Holistic Approaches to Stress

This course will focus on the nature, sources, and symptoms of stress, and provide a holistic approach for the management of stress. The relationship between stress and personality, lifestyle, health, illness, work, and academic performance will be explored. In addition, the reasons for and management of professional and organizational "burnout" will be presented.

HOL 536 Counseling Skills for Health Professionals

This course is an introduction to basic counseling approaches for students and professionals working in the health and human services fields. This course is designed to provide basic information on the counseling process and techniques as they apply to health care settings. This course is designed for health care professionals in allied health professions and not for majors in Counseling Education and Counseling Psychology or in Social Work.

HOL 570 Field Education in Holistic Health

This course is designed to give the student a total learning experience during which the student can apply some of the knowledge and information obtained in the health and human services academic setting and further develop and refine his/her professional skills with the guidance and assistance of those professionals currently working in the health and human service area. Graded on a Credit/No Credit basis. Prerequisite: Admission to the graduate certificate program and permission of instructor.

HOL 596 Readings in Holistic Health

This course is offered as individualized, independent study and reading under guidance of a faculty member. Initiative for planning the topic for investigation and seeking the appropriate faculty member comes from the student, with consultation from the advisor. May be repeated up to a maximum of 4 hours in a program of study. Prerequisite: Consent of instructor and advisor.

Open to Graduate Students Only

HOL 650 Seminar in Holistic Methods I

This course will provide students with an understanding of health from a whole perspective. Through experiential activities and the exploration of new models and paradigms of health, students will develop a deeper knowledge of the relationship between body, mind, and spirit, and the effect on health and healing. The course will provide an opportunity for students to discuss ways to integrate holistic models and modalities into a health care setting or practice and to work with other health care providers. The format for this course will include lecture, discussion, small group activities, guest speakers, and audio and video presentations. Prerequisite: HOL 531.

HOL 651 Seminar in Holistic Methods II

An opportunity for further exposure to additional holistic methods utilizing the same format and evaluation system as HOL 650. Prerequisite: HOL 531.

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

HOL 712 Professional Field Experience 2-12 hrs.

The purpose of this course is to provide advanced students in a health care related area an opportunity to become familiar with the "holistic" approach to health care. While using their own discipline as a take-off point, each student will become acquainted with different approaches to health care from both traditional and non-traditional perspectives. The principal goal is to encourage a perception of clients as whole persons whose symptoms represent an underlying disconnection in mind, emotions, and body. Prerequisites: HOL 531, 650, 651.

OCCUPATIONAL THERAPY

Dr. Cindee Peterson, Chair
Main Office: 1259 Ernest Whitney Bldg.
Telephone: 387-7260
FAX: 387-7262
Ben Atchison
Richard Cooper
Diane Dirette
Sandra Edwards
Debra L. Hazel
Berit Miller
David Orchanian
Stanley Paul
Cindee Peterson
Jacyln West-Fraser

The Department of Occupational Therapy offers two graduate programs which lead to the Master of Science: The graduate professional program (entry level) for non-therapists—i.e., those with a baccalaureate degree in an area other than occupational therapy—and the graduate program for certified therapists (advanced level). The Department also offers a Graduate Certificate Program in Hippotherapy.

Master of Science in Occupational Therapy

Advisor: Dr. Ben Atchison, Room 1163, Ernest Whitney Building

THE GRADUATE—PROFESSIONAL PROGRAM

This entry-level program for non-therapists is designed to prepare the student to treat clients with various disabilities, and to be eligible for certification as an occupational therapist after successful completion of the Master of Science. This twenty-eight month program of combined academic and clinical education is intended for the student who has a baccalaureate degree in an area of study other than occupational therapy. It consists of seventy-nine semester credit hours with forty-nine semester hours in professional undergraduate courses and thirty-six semester hours of graduate courses. The program is accredited by the American Council for Occupational Therapy Education. A.O.T.A. Accreditation Department, 4720 Montgomery Lane, P.O. Box 31220, Bethesda, MD 20824-1220, 301-652-2682. Graduates are eligible to take the National Board for Certification in Occupational Therapy and are eligible to apply for licensure/registration in those states regulating the practice of occupational therapy.

The Professional Curriculum

The curriculum design of the occupational therapy program is based on a developmental progression intended to provide students with entry-level competencies in their chosen profession and to develop the personal and professional characteristics that will allow them to assume the role(s) of occupational therapy practitioners in a variety of settings. In recognition of the fact that clinical practice occurs in an increasingly technological, interdependent and rapidly changing world, the curriculum simultaneously focuses on the development of self-directed, adult—and hence potentially life-long—learning.

Admission Requirements

To be eligible for regular admission to this program, each applicant must present evidence of the following criteria:

1. An earned bachelor's degree from an accredited college or university.
2. A cumulative grade point average of 3.0 or better in the most recent 60 hours of undergraduate and graduate academic course work.

Because admission is considered competitive, the academic criteria listed above should be considered as minimum standards.

Prerequisite Course Work

The following courses (with the WMU equivalent noted in parentheses) are required for admission to the professional occupational therapy program; some prerequisites may be elected as self-instructional courses (*). All prerequisite course work must be completed before the first semester of the occupational therapy program. All prerequisite courses must be completed with a grade of "C" (2.00) or better. Students are allowed to repeat only one course. For the course that is repeated, only one repeat is accepted.

1. Human Growth and Development through the Life Span (OT225*)
2. A course in medical terminology (MDSC 301*)
3. A course in, or demonstration of, basic computer literacy skills (CS 105 or BS 102)
4. A course in orientation to occupational therapy (OT 202*)
5. A course in social/behavioral sciences (BIO 111, or BIO 211 and 240)

Admission Procedure

To apply, the applicant must complete both the university application for admission and the departmental application. The equal consideration date (deadline) for receiving all departmental application. Admissions is on a competitive basis, and the equal consideration date (deadline) for receiving all departmental application.

To apply, the applicant must complete both the university application for admission and the departmental application. Admission is on a competitive basis, and the equal consideration date (deadline) for receiving all departmental application.

Admission Requirements

1. An earned bachelor's degree from an accredited college or university.
2. A cumulative grade point average of 3.0 or better. (By policy of The Graduate College, 2.0 GPA is defined as having received signatures of completion by all readers and the submission of a grade of "C" or better in the required six months, full-time fieldwork level I (OT475, OT482) or level II (OT 490, OT 491) are subject to the academic policy for remediation and continuation, and will repeat the experience in a similar setting.
3. Successful completion of OT 475 and all professional and prerequisite course work is required for OT 490.
4. Successful completion of all undergraduate course work required for graduation is required for OT 491.
5. Students who fail fieldwork, or who are asked to withdraw, are subject to review in accordance with the departmental remediation and remediation and continuation policy.

THE GRADUATE POST PROFESSIONAL PROGRAM

This advanced level program for the certified occupational therapist leads to the Master of Science in Occupational Therapy (OT700) and is designed to enhance growth in professional leadership potential by developing skills in administration, program development, theories of practice, professional issue resolution and research. Admission Requirements

To be eligible for regular admission to this program, each applicant must present evidence of the following criteria:
1. An earned bachelor's degree from an accredited college or university.
2. A cumulative grade point average of 3.0 or better.
3. Certified as an occupational therapist.

Because admission is considered competitive, the academic criteria listed above should be considered minimum standards.

Remediation and Continuance Policy

1. Students who fail fieldwork, or who are asked to withdraw, are subject to review in accordance with the departmental remediation and remediation and continuation policy.

Program Requirements

Completion of thirty hours of graduate courses, designed to enhance growth in occupational leadership potential by developing skills in

Michigan and the midwest states with some sites throughout the United States. All fieldwork must be completed within 24 months following the completion of academic course work. Part-time enrollment is possible.

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administration, program development, theories of practice, professional issue resolution and research. This thirty hour component includes the following:

OT 610 Professional Issues (3 hours)
OT 633 Administration in Occupational Therapy (3 hours)
OT 640 Theory in Occupational Therapy (3 hours)
OT 660 Research in Occupational Therapy (3 hours)
OT 700 Master's Thesis (6 hours)
OT 710 Independent Research (6 hours)

It is expected that students will complete their 710/700 projects by the end of the winter semester for which they enrolled.

It is expected that students will complete their coursework until prerequisites are completed for the completion of a master's degree.

Admissions Requirements

Prerequisites for admission will include a baccalaureate degree and certification or licensing as an occupational or physical therapist. Other characteristics considered for admission include clinical and therapeutic riding experience. Selection will be based on grade point average (GPA) personal/professional resume, interview, application materials, and completion of equine skills through riding instructor certification awarded by NARHA. Selection will be completed by the hippotherapy faculty members. Admission materials may be obtained from the Office of Admissions and Orientation, Graduate Admissions.

Program Requirements

The graduate specialty program in Hippotherapy consists of five courses totaling 16 hours and is designed to provide graduate education in hippotherapy theory and treatment techniques; screening, selecting, and evaluating appropriate clients for hippotherapy; selecting and training horses for hippotherapy; developing a hippotherapy program and management plan. A supervised fieldwork experience will follow the on-campus academic courses. Western Michigan University facilities and staff will provide ten hours of the program (HT 602, HT 605, and HT 712). The Chief Center will provide three hours of the program (HT 603). The Hippotherapy faculty will provide facilities for three hours of the program (HT 603).

Occupational Therapy Courses (OT)

Open to Upperclass and Graduate Students

OT 530 Sensory Integration and the Child 3 hrs.
Study of theoretical principles and their application to evaluation and treatment of the child with sensory integrative dysfunction. Students will observe and participate in screening and evaluation of children, and they will design treatment plans for selected clients. Prerequisites: OT 335, 351, and 443; or ORT, RPT, or consent.

OT 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. Prerequisites: Advanced O.T. major or departmental permission.

Open to Graduate Students Only

OT 602 Function and Treatment of the Upper Extremity 3 hrs.
This lecture/lab course provides advanced study of function, dysfunction, and treatment of the upper extremities. Topics include the gross anatomy, neuroanatomy, neurophysiology, and kinesiology of the upper extremities; clinical conditions affecting upper extremity function; and current treatment methods and modalities used by occupational therapists.

OT 610 Professional Issues 3 hrs.
Current and emerging professional issues will be discussed. Students will take an active part in community, state, or national organizational and/or legislative processes related to the resolution of a specific issue. Students' potential for future professional leadership will be emphasized. Prerequisite: All required undergraduate course work except Fieldwork II (OT 453 may be taken concurrently).

OT 620 Introduction to Neurodevelopmental Treatment for Pediatrics 3 hrs.
Foundations of neurophysiology and motor development in neurodevelopmental treatment. Application of neurodevelopmental theory, treatment principles and techniques to occupational therapy. Special attention will be given to the occupational therapy management problems of children with neuromotor disorders. Prerequisite: OTR, RPT, or consent.

OT 621 Introduction to Neurodevelopmental Treatment for Adults 3 hrs.
Foundations of neurophysiology and motor development are discussed. Opportunity is provided for application of neurodevelopmental theory, treatment principles and techniques to occupational therapy. Special attention is given to management problems of adults with hemoglobin. Prerequisite: work except Fieldwork IV (OT 453, OTR, or RPT, or consent of instructor.

OT 622 Application of Biofeedback in Occupational Therapy 3 hrs.
Basic principles of biofeedback and their application in occupational therapy. Students will design biofeedback programs for selected client problems. Prerequisite: OT 443, OT 453, OTR or RPT, or consent of instructor.

OT 633 Administration of Occupational Therapy 3 hrs.
This course utilizes the basic skills of administration (planning, organizing, directing, coordinating, and controlling) in the development of a model of practice for occupational therapy services. These skills will be developed for an agency or institution that does not now offer occupational therapy services, or for an agency or institution whose occupational therapy services need to be expanded. In addition to the model of practice, the student will prepare a grant proposal that could be used to initiate funding for the model. Prerequisites: All required undergraduate course work except Fieldwork II (OT 453 may be taken concurrently).

OT 640 Theory in Occupational Therapy 3 hrs.
This course explores core concepts, models, and paradigms of the past, present, and future and their influence on education, research, administration, and practice in occupational therapy. Components of theory, formulation of theory, and the effect of theory development on occupational therapy will also be explored. Prerequisites: All required undergraduate course work except Fieldwork II (OT 453 may be taken concurrently).

OT 660 Research in Occupational Therapy 3 hrs.
The purpose of this course is to explore research in occupational therapy and related fields and develop each student’s research and writing skills as applied to occupational therapy. It will include review and critique of occupational therapy research, recognition and application of ethical practices, identification of researchable questions, principles of research design, participation in
This course will develop the leadership skills training as well as assess and videotape. Students will develop and conduct in-service 3 hrs.

HT 604; concurrent with HT 603.

Treatment sessions. Emphasis will also be on dressage theory and skills, lunging, long reining, and backriding. Prerequisites: HT 602 and HT 604; concurrent with HT 603.

This course will focus on integrating rehabilitative theories and equine assisted techniques in a practicum setting. Special attention will be directed toward coordination of a hippotherapy team and safety procedures. Prerequisites: HT 602 and HT 604; concurrent with HT 605.

HT 604 Advanced Equine Treatment Skills 3 hrs.

This course will provide students with a more advanced approach to the understanding and training of the hippotherapy horse. Emphasis will be on dressage theory and skills, lunging, long reining, and backriding. Prerequisites: Admission to Hippotherapy program; concurrent with HT 604.

HT 605 Education and Administration 3 hrs.

This course will develop the leadership skills necessary to direct a hippotherapy team. Students will develop and conduct in-service training as well as assess and videotape treatment sessions. Emphasis will also be on program administration including personnel, marketing, reimbursement, and record keeping systems. Prerequisites: HT 602 and HT 604; concurrent with HT 603.
Physician Assistant Courses (MDSC)

Open to Graduate Students Only

MDSC 601 Introduction to Medicine 4 hrs.
This course is designed to provide an introduction to the bio-psycho-social competencies required in PA practice. The material covered will focus on the knowledge, attitudes, and skills required for interviewing, medical history taking, and physical examination necessary for the formulation of differential diagnoses and development of therapeutic and patient education plans. Students will begin to learn counseling techniques with an emphasis on health promotion and wellness and how to identify and screen for populations at risk. Students will be introduced to pathophysiology, clinical anatomy, and pharmacokinetics, and pharmacodynamics. The basic principles of office laboratory procedures and interpretation will be examined. In this course students will also explore the role of the Physician Assistant, including the legal aspects of PA practice and the ethical and practice standards expected. Graded on a Credit/No Credit basis. Prerequisite: Enrollment in the Physician Assistant program.

MDSC 602 EENT and Allergy 5 hrs.
This course provides a foundation for the understanding, diagnosis, and treatment of allergic diseases and of diseases of the eye, ear, nose, and throat, throughout the life span. Students will examine the pathophysiology of diseases of this system, with an emphasis on the cellular mechanisms of disease and the body's response to them. The course is designed to develop the competencies required for patient counseling and focused medical history taking and physical examination, including system anatomy and complex regional relationships. The selection, utilization, and interpretation of clinical laboratory, imaging, and other diagnostic tests used to evaluate system function are examined along with concepts of pharmacotherapeutic principles necessary to provide a rational basis for clinical prescribing decisions. An integrative approach is used to encourage application of information through clinical problem solving in the formulation of differential diagnoses and development of therapeutic and patient education plans. Graded on a Credit/No Credit basis. Prerequisite: Enrollment in the Physician Assistant program and successful completion of previous MDSC courses.

MDSC 603 Cardiovascular and Pulmonary 7 hrs.
This course provides a foundation for the understanding, diagnosis, and treatment of cardiovascular and pulmonary systems, throughout the life span. Students will examine the pathophysiology of diseases of these systems, with an emphasis on the cellular mechanisms of disease and the body's response to them. The course is designed to develop the competencies required for patient counseling and focused medical history taking and physical examination, including system anatomy and complex regional relationships. The selection, utilization, and interpretation of clinical laboratory, imaging, and other diagnostic tests used to evaluate system function are examined along with concepts of pharmacotherapeutic principles necessary to provide a rational basis for clinical prescribing decisions. An integrative approach is used to encourage application of information through clinical problem solving in the formulation of differential diagnoses and development of therapeutic and patient education plans. Graded on a Credit/No Credit basis. Prerequisite: Enrollment in the Physician Assistant program or departmental permission.

MDSC 604 Renal, Musculoskeletal, and Dermatology 7 hrs.
This course provides a foundation for the understanding, diagnosis, and treatment of diseases of the renal, musculoskeletal, and dermatological systems, throughout the life span. Students will examine the pathophysiology of diseases of these systems, with an emphasis on the cellular mechanisms of disease and the body's response to them. The course is designed to develop the competencies required for patient counseling and focused medical history taking and physical examination, including system anatomy and complex regional relationships. The selection, utilization, and interpretation of clinical laboratory, imaging, and other diagnostic tests used to evaluate system function are examined along with concepts of pharmacotherapeutic principles necessary to provide a rational basis for clinical prescribing decisions. An integrative approach is used to encourage application of information through clinical problem solving in the formulation of differential diagnoses and development of therapeutic and patient education plans. Graded on a Credit/No Credit basis. Prerequisite: Enrollment in the Physician Assistant program and successful completion of previous MDSC courses.

MDSC 605 Neuropsychiatry and Endocrine 8 hrs.
This course provides a foundation for the understanding, diagnosis, and treatment of diseases of the neuropsychiatric and endocrine systems, throughout the life span. Students will examine the bio-psycho-social model, wellness, as well as pathophysiology of diseases of these systems, with an emphasis on the cellular mechanisms of disease and the body's response to them. The course is designed to develop the competencies required for patient counseling and focused medical history taking and physical examination, including system anatomy and complex regional relationships. The selection, utilization, and interpretation of clinical laboratory, imaging, and other diagnostic tests used to evaluate system function are examined along with concepts of pharmacotherapeutic principles necessary to provide a rational basis for clinical prescribing decisions. An integrative approach is used to encourage application of information through clinical problem solving in the formulation of differential diagnoses and development of therapeutic and patient education plans. Graded on a Credit/No Credit basis. Prerequisite: Admission to the Physician Assistant program and successful completion of previous MDSC courses.

MDSC 611 The Diagnostic Process I 2 hrs.
This is the first in a series of three courses designed to develop the knowledge, attitudes and skills requisite for medical history taking, physical examination, clinical problem solving, diagnostic assessment, treatment implementation, and for counseling and educating patients. Learning methods include lecture format, skills performance, clinical decision making, role playing, small group problem solving, practicum sessions. Student examination of patients, as well as written and performance evaluation of these modalities, are included among the learning methodologies. Emphasis is placed on interviewing and physical examination, but much also on information synthesis to accomplish problem oriented patient care. Students will refine skills in eliciting and recording a complete patient data base as a form of differential diagnoses. Prerequisite: Successful completion of prior semester P.A. course work or departmental permission.

MDSC 612 The Diagnostic Process II 2 hrs.
This is the second in a series of three courses presented sequentially through the pre-clinical year of training. This course provides opportunities for the systematic evaluation of patient problems through history and physical examination, problem exploration, critical thinking and creative problem solving, lectures, demonstrations, group problem solving, practicum sessions, student examination of patients, as well as written and performance evaluation of these modalities, are included among the learning methodologies. Emphasis is placed on interviewing and physical examination, but much also on information synthesis to accomplish problem oriented patient care. Students will refine skills in eliciting and recording a complete patient data base as a form of differential diagnoses. Prerequisite: Successful completion of prior semester P.A. course work or departmental permission.
MDSC 613 The Diagnostic Process III
2 hrs.
This is the summative offering in this series of three courses designed to develop competence in both the art and the science of patient evaluation. Students will continue to assess patients utilizing history taking and physical examination skills. Students will master special examinations such as for the pediatric patient, as well as the pregnant patient. Further emphasis will be placed on formulating diagnoses, therapeutic and patient education plans. Students will develop completion strategies, and recording and communicating information in a medical team model. Prerequisite: Successful completion of prior semester P.A. course work or departmental permission.

MDSC 621 Medical Pathophysiology I
1 hr.
This is the first in a three part sequence designed to provide the physician assistant student with a foundation for understanding human diseases. Students will review clinically relevant physiology and acquire a working knowledge of pathophysiology. Emphasis will be on the cellular mechanisms of disease and the body's reactions to them. Topics covered will parallel those in concurrent clinical science courses. Prerequisite: Successful completion of prior semester P.A. course work or departmental permission.

MDSC 622 Medical Pathophysiology II
1 hr.
This is the second in a three part sequence designed to provide the physician assistant student with a foundation for understanding human diseases. Students will review clinically relevant physiology and acquire a working knowledge of pathophysiology. Emphasis will be on the cellular mechanisms of disease and the body's reactions to them. Topics covered will parallel those in concurrent clinical science courses. Prerequisite: Successful completion of prior semester P.A. course work or departmental permission.

MDSC 623 Medical Pathophysiology III
1 hr.
This is the third in a three part sequence designed to provide the physician assistant student with a foundation for understanding human diseases. Students will review clinically relevant physiology and acquire a working knowledge of pathophysiology. Emphasis will be on the cellular mechanisms of disease and the body's reactions to them. Topics covered will parallel those in concurrent clinical science courses. Prerequisite: Successful completion of prior semester P.A. course work or departmental permission.

MDSC 631 Primary Care Medicine I
6 hrs.
This is the first of three primary care medicine courses. This series of courses introduces the P.A. student to the practice of medicine. The course will cover disease states using a systems approach. Within each system, a lifespan approach will be used to look at diseases from the pediatric patient through the geriatric patient. Each disease will be examined using the integration of epidemiology, lab tests/procedures, diagnosis, treatment, nutritional issues, and available alternative medicine options. The primary care medicine courses will form the basis for clinical evaluation, diagnosis, management, and appropriate referral, when necessary, of various health and wellness processes throughout a person's life. Prerequisite: Successful completion of prior semester P.A. course work or departmental permission.

MDSC 632 Primary Care Medicine II
6 hrs.
This is the second of three primary care medicine courses. This course is a continuation of the Primary Care Medicine I course. This series of courses introduces the P.A. student to the practice of medicine. The course will cover disease states using a systems approach. Within each system, a lifespan approach will be used to look at diseases from the pediatric patient through the geriatric patient. Each disease will be examined using the integration of epidemiology, lab tests/procedures, diagnosis, treatment, nutritional issues, and available alternative medicine options. The primary care medicine courses will form the basis for clinical evaluation, diagnosis, management, and appropriate referral, when necessary, of various health and wellness processes throughout a person's life. Prerequisite: Successful completion of prior semester P.A. course work or departmental permission.

MDSC 633 Primary Care Medicine III
5 hrs.
This is the third of three primary care medicine courses. This course is a continuation of the Primary Care Medicine II course. This series of courses introduces the P.A. student to the practice of medicine. The course will cover disease states and issues using a systems approach. Within each system, a lifespan approach will be used to look at diseases from the pediatric patient through the geriatric patient. Each disease will be examined using the integration of epidemiology, lab tests/procedures, diagnosis, treatment, nutritional issues, and available alternative medicine options. The primary care medicine courses will form the basis for clinical evaluation, diagnosis, management, and appropriate referral, when necessary, of various health and wellness processes throughout a person's life. Prerequisite: Successful completion of prior semester P.A. course work or departmental permission.

MDSC 641 Procedures and Diagnostic Testing I
1 hr.
This is the first in a three course series. The series presents a foundation for understanding the appropriate uses and interpretations of clinical diagnostic testing. Through exploration of each of the major body systems, this course presents instruction in medical procedures used in the diagnosis or treatment of the common disorders of each system. It also provides the basis for the selection, utilization and interpretation of clinical laboratory imaging and other diagnostic tests used to evaluate each system's principal functions. Prerequisite: Admission to the Physician Assistant Program or departmental permission.

MDSC 642 Procedures and Diagnostic Testing II
1 hr.
This is the second in a three course series. The series presents a foundation for understanding the appropriate uses and interpretations of clinical diagnostic testing. Through exploration of each of the major body systems, this course presents instruction in medical procedures used in the diagnosis or treatment of the common disorders of each system. It also provides the basis for the selection, utilization and interpretation of clinical laboratory imaging and other diagnostic tests used to evaluate each system's principal functions. Prerequisite: Successful completion of prior semester P.A. course work or departmental permission.

MDSC 643 Procedures and Diagnostic Testing III
1 hr.
This is the third in a three course series. The series presents a foundation for understanding the appropriate uses and interpretations of clinical diagnostic testing. Through exploration of each of the major body systems, this course presents instruction in medical procedures used in the diagnosis or treatment of the common disorders of each system. It also provides the basis for the selection, utilization and interpretation of clinical laboratory imaging and other diagnostic tests used to evaluate each system's principal functions. Prerequisite: Successful completion of prior semester P.A. course work or departmental permission.

MDSC 651 Health Promotion and Patient Counseling I
1 hr.
This is the first course in a three-semester series presented sequentially through the preclinical year of training. This course will focus on the knowledge, skills and attitudes requisite for counseling and educating patients. These courses will emphasize counseling techniques, with application to clinical problems such as crisis intervention, substance abuse, human sexuality, multiculturalism, and patient/practitioner transference/counter transference. Theories of personality and psychopathology will be investigated as they relate to patient and practitioner coping styles and effectiveness. Students will also develop expertise in educating patients in wellness and disease prevention. Students will investigate the caregiver role and become insightful regarding their own needs and limitations. Prerequisite: Successful completion of prior semester of P.A. course work or departmental permission.

MDSC 652 Health Promotion and Patient Counseling II
1 hr.
This is the second course in a three-semester series presented sequentially through the preclinical year of training. This course will focus on the knowledge, skills, and attitudes requisite for counseling and educating patients. These courses will emphasize counseling techniques with application to clinical problems such as crisis intervention, substance abuse, human sexuality, multiculturalism, and patient/practitioner transference/counter transference. Theories of personality and psychopathology will be investigated as they relate to patient and practitioner coping styles and effectiveness. Students will also develop expertise in educating patients in wellness and disease prevention. Students will investigate the caregiver role and become insightful regarding their own needs and limitations. Prerequisite: Successful completion of prior semester of P.A. course work or departmental permission.

MDSC 653 Health Promotion and Patient Counseling III
1 hr.
This is the third course in a three-semester series presented sequentially through the preclinical year of training. This course will focus on the knowledge, skills, and attitudes requisite for counseling and educating patients. These courses will emphasize counseling techniques with application to clinical problems such as crisis intervention, substance abuse, human sexuality, multiculturalism, and patient/practitioner transference/counter transference. Theories of personality and psychopathology will be investigated as they relate to patient and practitioner coping styles and effectiveness. Students will also develop expertise in educating patients in wellness and disease prevention.
prevention. Students will investigate the caregiver role and become insightful regarding their own needs and limitations. Prerequisite: Successful completion of prior semester of P.A. course work or departmental permission.

MDSC 655 Professional Issues for Physician Assistants 1 hr.
This course examines the role of the physician assistant and the place and relationships of the PA profession in society. It also examines the legal aspects of P.A. practice including licensing, malpractice, supervision, delegation, and prescribing. Finally it addresses the ethical and practice standards which society expects of a medical professional. Prerequisite: Admission to the Physician Assistant program or departmental permission.

MDSC 661 Pharmacotherapeutics I 2 hrs.
This is the first of a sequence of three courses that focus on the concepts of pharmacotherapeutic principles necessary to provide a rational basis for clinical prescribing decisions. This course sequence will present the pharmacology, pharmacokinetics, side-effects, complications, dosages, and contraindications using a systems approach. Prerequisite: Admission to the Physician Assistant program or departmental permission.

MDSC 662 Pharmacotherapeutics II 2 hrs.
This is the second of a sequence of three courses that focus on the concepts of pharmacotherapeutic principles necessary to provide a rational basis for clinical prescribing decisions. This course sequence will present the pharmacology, pharmacokinetics, side-effects, complications, dosages, and contraindications using a systems approach. Prerequisite: Successful completion of prior semester P.A. course work or departmental permission.

MDSC 663 Pharmacotherapeutics III 2 hrs.
This is the third of a sequence of three courses that focus on the concepts of pharmacotherapeutic principles necessary to provide a rational basis for clinical prescribing decisions. This course sequence will present the pharmacology, pharmacokinetics, side-effects, complications, dosages, and contraindications using a systems approach. Prerequisite: Successful completion of prior semester P.A. course work or departmental permission.

MDSC 671 Advanced Clinical Anatomy I 2 hrs.
This is the first course in a three-semester human anatomy sequence designed parallel and support clinical science courses in the Physician Assistant curriculum. Emphasis will be on understanding anatomical concepts as they pertain to clinical problem solving and physical diagnosis. A laboratory component involving the study of cadaveric sections is included. Prerequisite: Admission to the Physician Assistant graduate program.

MDSC 672 Advanced Clinical Anatomy II 1 hr.
This is the second course in a three-semester human anatomy sequence designed parallel and support clinical science courses in the Physician Assistant curriculum. Emphasis will be on understanding anatomical concepts as they pertain to clinical problem solving and physical diagnosis. A laboratory component involving the study of cadaveric sections is included. Prerequisite: Admission to the Physician Assistant graduate program.

MDSC 673 Advanced Clinical Anatomy III 1 hr.
This is the third course in a three-semester human anatomy sequence designed parallel and support clinical science courses in the Physician Assistant curriculum. Emphasis will be on achieving an understanding of anatomical concepts as they pertain to clinical problem solving and physical diagnosis. A laboratory component involving the study of cadaveric sections is included. Prerequisite: Admission to the Physician Assistant program or departmental permission.

MDSC 674 Professional Field Experience - Medical Psychiatry 4 hrs.
This course will place the student in a structured mental health clinical rotation under the direct supervision of a qualified preceptor. Students will be expected to become proficient with a variety of clinical presentations and procedures, subject to site limitations, and will develop competence in diagnosing, evaluating, monitoring, treating, educating and/or referring patients. Selected readings will also be assigned to the students. These readings will change frequently to reflect current medical literature. Prerequisite: Completion of the preclinical year of the Physician Assistant program or departmental permission.

MDSC 681 Professional Field Experience - Women's Health 4 hrs.
This course will place the student in a structured obstetrics/gynecology clinical rotation under the direct supervision of a qualified preceptor. Students will be expected to become proficient with a variety of clinical presentations and procedures, subject to site limitations, and will develop competence in diagnosing, evaluating, monitoring, treating, educating and/or referring patients. Selected readings will also be assigned to the students. These readings will change frequently to reflect current medical literature. Prerequisite: Completion of the preclinical year of the Physician Assistant program or departmental permission.

MDSC 682 Professional Field Experience - Pediatrics 4 hrs.
This course will place the student in a structured pediatrics medicine clinical rotation under the direct supervision of a qualified preceptor. Students will be expected to become proficient with a variety of clinical presentations and procedures, subject to site limitations, and will develop competence in diagnosing, evaluating, monitoring, treating, educating and/or referring patients. Selected readings will also be assigned to the students. These readings will change frequently to reflect current medical literature. Prerequisite: Completion of the preclinical year of the Physician Assistant program or departmental permission.

MDSC 683 Professional Field Experience - Surgery 4 hrs.
This course will place the student in a structured surgery medicine clinical rotation under the direct supervision of a qualified preceptor. Students will be expected to become proficient with a variety of clinical presentations and procedures, subject to site limitations, and will develop competence in diagnosing, evaluating, monitoring, treating, educating and/or referring patients. Selected readings will also be assigned to the students. These readings will change frequently to reflect current medical literature. Prerequisite: Completion of the preclinical year of the Physician Assistant program or departmental permission.

MDSC 684 Professional Field Experience - Family Medicine 8 hrs.
This course will place the student in a structured family medicine clinical rotation under the direct supervision of a qualified preceptor. Students will be expected to become proficient with a variety of clinical presentations and procedures, subject to site limitations, and will develop competence in diagnosing, evaluating, monitoring, treating, educating and/or referring patients. Selected readings will also be assigned to the students. These readings will change frequently to reflect current medical literature. Prerequisite: Completion of the preclinical year of the Physician Assistant program or departmental permission.

MDSC 685 Professional Field Experience - Internal Medicine 8 hrs.
This course will place the student in a structured clinical internal medicine rotation under the direct supervision of a qualified preceptor. Students will be expected to become proficient with a variety of clinical presentations and procedures, subject to site limitations, and will develop competence in diagnosing, evaluating, monitoring, treating, educating and/or referring patients. Selected readings will also be assigned to the students. These readings will change frequently to reflect current medical literature. Prerequisite: Completion of the preclinical year of the Physician Assistant program or departmental permission.

MDSC 686 Professional Field Experience - Emergency Medicine 4 hrs.
This course will place the student in a structured clinical emergency medicine rotation under the direct supervision of a qualified preceptor. Students will be expected to become proficient with a variety of clinical presentations and procedures, subject to site limitations, and will develop competence in diagnosing, evaluating, monitoring, treating, educating and/or referring patients. Selected readings will also be assigned to the students. These readings will change frequently to reflect current medical literature. Prerequisite: Completion of the preclinical year of the Physician Assistant program or departmental permission.

MDSC 687 Professional Field Experience - Primary Care 4 hrs.
This course will place the student in a structured primary care clinical rotation under the direct supervision of a qualified preceptor. Students will be expected to become proficient with a variety of clinical presentations and procedures, subject to site limitations, and will develop competence in diagnosing, evaluating, monitoring, treating, educating and/or referring patients. Selected readings will also be assigned to the students. These readings will change frequently to reflect current medical literature. Prerequisite: Completion of the preclinical year of the Physician Assistant program or departmental permission.

MDSC 691 Clinical Practice Issues I 1 hr.
This is the first course of a three-course seminar series designed to present and discuss various topics relevant to current clinical practice. Challenges will be presented by the students in the practice of medicine. The course will also address the evolutionary trends in the healthcare arena and will facilitate the student's transition to professional practice. Prerequisite: Completion of the preclinical year and concurrently enrolled in a professional
field experience course or departmental permission.
MDSC 692 Clinical Practice Issues II 1 hr.
This is the second course of a three-course seminar series designed to present and discuss various topics relevant to current clinical practice. The topics will be generated by the challenges the students will encounter in the practice of medicine. The course will also address the evolutionary trends in the healthcare arena and will facilitate the student’s transition to professional practice.
Prerequisite: Successfully completed MDSC 691 and concurrently enrolled in a professional field experience course or departmental permission.

MDSC 693 Clinical Practice Issues III 1 hr.
This is the third course of a three-course seminar series designed to present and discuss various topics relevant to current clinical practice. The topics will be generated by the challenges the students will encounter in the practice of medicine. The course will also address the evolutionary trends in the healthcare arena and will facilitate the student’s transition to professional practice.
Prerequisite: Successful completion of MDSC 692 and concurrently enrolled in a professional field experience course or departmental permission.

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

MDSC 710 Research Project/Professional Experience 2–6 hrs. (8 hrs. required in program)
This course will ensure that students are qualified in applying the lessons learned in MDSC 680 in a practical clinical manner. This is the culmination course of the master’s curriculum, and requires a paper of publishable quality and presentation of the same. Several permutations are possible, including research under faculty supervision, clinical elective field experience focus on a research topic, clinical case investigation, and others. Course is repeatable for credit.
Prerequisite: Completion of the preclinical year and at least one MDSC 712 or departmental permission.

SOCIAL WORK
Dr. Tracey Mabrey, Interim Director
Main Office: 421 Moore Hall
Telephone: 387-3171
FAX: 387-3183
Donald Cooney
James Henry
Peter Judge
Tracey Mabrey
Frederick MacDonald
Gary Mathews
John Nielsen
Linda Reesser
Kenneth E. Reid
Soshana Shonfeld-Ringel
Karen VanDeusen
Ineke Way
Susan Weinger
Robert Wertkin
Celia Williamson

Master of Social Work
Director of Admissions and Student Services
Room 402, Moore Hall
The Master of Social Work program in professional social work is designed to prepare students for direct service and leadership positions in the field of social welfare. The program is accredited by the Council on Social Work Education. The curriculum is structured as an integrated and sequential set of conceptual and practicum educational experiences. In preparing students for practice, the School of Social Work recognizes a variety of theoretical paradigms and values and welcomes the challenge and benefits of intellectual and philosophical diversity. It supports students in their personal synthesis of these paradigms and values. In addition, the School stresses development and dissemination of social work knowledge and practice skills.
The graduate program prepares students for specialized and advanced levels of practice. It also incorporates a foundation curriculum, built on a liberal arts base. The foundation has two goals: to provide students with the knowledge, values, and skills leading to an informed perspective on the profession of social work and its service delivery systems, and to prepare students for entry into the concentrations.
There are two methods concentrations in the graduate program: 1. Interpersonal Practice and 2. Policy, Planning, and Administration. These concentrations build on the foundation curriculum and are the vehicles through which students learn the specific advanced skills of their chosen area of concentration.
The Interpersonal Practice concentration prepares students to become informed practitioners and leaders in working with individuals, families, and groups. Practice courses in the concentration are designed to provide expert competencies in social treatment. Such competencies include the ability to assess situations, carry out appropriate interventions, and evaluate one’s own practice framework, strategies, and results when working with clients.
The Policy, Planning, and Administration concentration has four essential components: Organizational leadership and management, program planning, analytic tools and technology, and policy practice. The desired outcome of the Policy Planning and Administration concentration is the empowerment of practitioners to facilitate changes in organizations, community, and societal structures and processes that contribute to a just distribution of opportunities and resources.

In addition, the College of Health and Human Services offers opportunity for participation in social work-related specialty programs. Included are Alcohol and Drug Abuse (SPADA), Gerontology, and Holistic Health Care.

Admission Requirements
Applicants for graduate study in social work must complete two applications—one for the Office of Admissions and Orientation (the Graduate Self-Managed Application) and one for the School of Social Work. Both applications can be obtained either from the Office of Admissions and Orientation or the School of Social Work. Admission is granted for the spring session only for applicants to the advanced standing program; admission is granted for the fall semester only for applicants to the full-time or extended-study programs. The deadline for filing applications is January 15th for the advanced standing program; admission is granted for the fall semester only.

Program Requirements
1. The successful completion of sixty hours of credit is required for the conventional master’s degree in social work. The degree program includes the following course credits:
   • Required Foundation Courses in the School of Social Work (21 hours)
   • Required Core Courses in the School of Social Work (15 hours)
   • Elective Courses in Social Work or in other University departments (6 to 9 hours)
   • Field Education (12 hours — 6 in the Foundation, and 6 in the Concentration)
   • Advanced Social Work Research (SWRK 642—3 hours or SWRK 686—6 hours)

   2. Proficiency exams are available in SWRK 610, 630, 631, and 640. Students have the option of receiving full credit for those
Social Work Courses (SWRK)

Open to Upperclass and Graduate Students

SWRK 512 Social Policy and Service Delivery in Selected Problem Areas
3 hrs.

Intensive study in selected field of service specialization and social problem areas. Attention is focused on learning about the major social policy issues associated with the service or problem area. Specific topics will be announced each semester. Prerequisite: Open only to senior undergraduates and graduate students.

SWRK 560 Social Work with Communities
3 hrs.

This course involves an examination of major theoretical and conceptual tenets of community practice from a social work perspective. It also involves a practical integration of theoretical and conceptual knowledge of community practice through assignments which will focus on communities that are served through field placements or other arrangements. Students will examine the contributions communities make to the functioning of communities, families, groups, and organizations, as well as how individuals, families, groups, and organizations contribute to the functioning of communities. Students will integrate into an understanding of community practice social work's historical and contemporary emphasis on "empowerment" and the person-environment interface (i.e., interaction among biological, cultural, social, psychological, political, and economic aspects of human development and functioning).

Prerequisite: Undergraduate senior status.

SWRK 561 Social Workers and Social Movements
3 hrs.

This course aims at helping social workers understand how social movements operate and how they can effectively and uniquely contribute to the just goals of social movements. The course addresses the rich heritage of social movements' accomplishments in American history; the theories exploring how social movements begin, endure, and, effectively influence society; and how social movements have impacted critical issues in social welfare history. Students will learn elements of strategy to mobilize successful nonviolent social movements. The unique and specific contributions social workers make to social movements are explored.

SWRK 562 Community Organization in Urban Areas
3 hrs.

Social welfare planning and social action methodologies 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.

SWRK 564 Special Studies in Social Welfare Practice
1-4 hrs.

Study of selected topics related to the theory and practice of social welfare activities and endeavors. Focus will be on roles of human service workers and the methodologies utilized in these roles in a range of social welfare areas. Specific topics will be announced. Prerequisite: Consent of instructor.

SWRK 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 interventive means are explored. Prerequisite: Consent of instructor.

SWRK 597 Teaching Apprenticeship in Selected Social Work Curriculum Areas
1-4 hrs.

The course focuses on the development of educational skills for social workers through faculty-directed participation in teaching activities in a selected social work course. Specific learning objectives and expectations for apprentices are arranged with participating faculty. The 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. Prerequisite: Consent of instructor.

SWRK 598 Readings in Social Work
1-4 hrs.

Offers advanced students with good scholastic records an independent program of study, arranged in consultation with the instructor. One to four hours credit per semester. Open to Graduate Students Only

SWRK 610 Foundations of Social Welfare Policy
3 hrs.

This is the first course in the graduate program offered in the social welfare policy sequence of courses. Its general purpose is to introduce the subject area of social welfare policy as a central concern of social work. The goals of the course are to identify evolving socio-cultural bases of social welfare in America, to gain understanding of the substance of particular social policy areas, and to learn to approach the study of social welfare policy within the conceptual frameworks. While SWRK 610 places primary focus on the content of social welfare policy, other policy courses focus on specific subject areas or on the development of policy practice skills. Prerequisite: Consent of instructor.

SWRK 623 Leadership in Nonprofit Organizations
2 hrs.

This course addresses knowledge, skills, and attitudes building leadership. Emphasis is placed on roles of leadership, power, motivation and conflict, task-group dynamics, skills, supervision, women and other minorities in management, and ethics and values in leading nonprofit organizations.

SWRK 627 Planning in Nonprofit Organizations
2 hrs.

The course focuses on planning program changes and new programs in nonprofit organizations. Program planning is viewed as a creative, dynamic process carried out by a team. The stages and tasks of program planning are studied from analytical, technical, and interactional perspectives.

SWRK 630 Social Change and Community Analysis
3 hrs.

Social workers have a responsibility to promote social justice and to strive to abolish injustice. The course identifies and explores historical, theoretical, and ideological perspectives on social change issues. Social change is studied by analyzing the community at the local, national and international level and by exploring strategies for change at each level. Emphasis is placed on racism, sexism, and classism and on social movements to alleviate these problems. Prerequisite: Consent of instructor.

SWRK 631 Human Behavior and the Social Environment
3 hrs.

This course provides students with a conceptual and theoretical framework for understanding human behavior as influenced by the social environment across the life span. Human development and behavior are approached as part of historical and contemporary sociocultural processes acting independently with psychology, biology, economics, geography, and politics. Diversity issues such as race, ethnicity, gender, sexual orientation, and social class are taken into consideration as critical elements in these processes and their relationships. The role of social welfare policy issues relevant to this course is also explored. Prerequisite: Consent of instructor.

SWRK 632 Organizations, Communities, Societies: A Change Perspective
3 hrs.

The course reviews frameworks for analyzing organizations, communities, and societies as a means of preparing students to engage in planned change. Students learn strategies and tactics to influence change in organizational, communal, and societal structures and processes. The course
focus is on the interaction between functioning and cultural labeling. Primary for social work practice. In order to relate more effectively to individuals and groups of different ethnic, cultural, and philosophical backgrounds is essential to: 1) gain knowledge about those differences; 2) understand our individual and collective reactions to those differences; and 3) discover ways in which those differences can be bridged within the context of social work practice. Prerequisite: Consent of instructor.

SWRK 636 Social Work Practice with Groups 3 hrs.
Focus of the seminar is on the theory and practice of social group work in clinical settings. Consideration is given to such issues as group dynamics, therapeutic factors, leadership, composition, direct and indirect intervention, and activities in social treatment. Prerequisite: SWRK 662.

SWRK 638 Psychopathology for Social Work Practice 3 hrs.
This course provides students with knowledge of psychopathology as an aspect of human functioning and cultural labeling. Primary focus is on the interaction between physiological, developmental, emotional, and social aspects of adult and child psychopathology from both descriptive and psychodynamic points of view. General implications for social work intervention, ethical and value issues, and relevant research will receive some consideration. Emphasis of course sections may be adults, children, or adolescents. Prerequisite: SWRK 631 or consent of instructor.

This course is designed to increase student knowledge of research and evaluation as a tool for social work practice. Students will acquire the basic skills and knowledge to utilize existing research and evaluation for practice-related decision making as well as the capacity to carry out systematic methods of inquiry in practice. Basic statistical methods are also covered. Prerequisite: Consent of instructor.

SWRK 642 Evaluation of Social Work Practice 3 hrs.
This course focuses on the knowledge and skill to understand and carry out research on social work practice. The components of the course consist of program evaluation, designs appropriate for the evaluation of clinical practice, and studies of empirical research that address the features and effectiveness of interventions in relation to the conditions that are targeted for amelioration. The course is designed to help practitioners make informed judgments about the utility of different treatment modalities, and their impact for service delivery. Prerequisite: SWRK 640.

SWRK 643 Leadership and Management in Human Services 3 hrs.
This course addresses knowledge, skills, and attitudes essential in building leadership for developing, supporting, and maintaining effective service delivery in human service agencies. The course focuses on leadership styles; power, motivation, and conflict; task group skills; supervision; women and minority in management; and values and ethics in leading human service organizations. Prerequisite: Enrollment in School of Social Work or consent of instructor.

SWRK 645 Administration in Human Service Organizations 3 hrs.
The course introduces students to elements of administration in human service organizations. It focuses on project management, budgeting, fund development and marketing, and the role of governing boards in nonprofit organizations. Prerequisite: SWRK 671 or consent of instructor.

SWRK 660 Seminar on Social Work Practice with Individuals, Families, and Groups 3 hrs.
This course provides a conceptual framework for understanding, analyzing, and implementing social work practice with individuals, families, and groups from various theoretical perspectives within a "systems" frame of reference. The ultimate goal is for students to initiate the development of a practice model that is logically sound and consistent with their convictions and style and congruent with professional social work values. The course also focuses on the concrete relationship building, maintenance skills, and knowledge necessary for working with diverse human systems. Such diversity should include gender, race, religion, sexual orientation, age, physical capabilities, socio-economic status, and political orientations. Prerequisite: Admission to the Advanced Standing Program.

SWRK 661 Social Work Practice: Individuals and Families 3 hrs.
This course focuses on foundational knowledge and skills necessary to help individuals and families. This includes engagement, assessment, contracting, problem-solving, and evaluation with attention to social work values, theoretical knowledge and practice conditions. Problem-solving in a bio-psycho-social framework and facilitation of client coping, competency and empowerment are covered. Prerequisite: SWRK 671 or consent of instructor.

SWRK 662 Social Work Practice with Groups and Organizations 3 hrs.
The course focuses on knowledge and skills related to social work practice with groups and organizations. Attention is paid to interpersonal, intrapersonal, and organizational levels of intervention. Practice skills in working with groups and organizations are developed. Prerequisite: SWRK 661.

Concurrent enrollment in SWRK 672 is required.

SWRK 663 Seminar in Substance Abuse I 3 hrs.
An interdisciplinary seminar designed to reflect broadly conceived intervention strategies ranging from primary prevention to rehabilitation in the public. The basic training in the principles of intervention and clinical practice will continue to be taught within the student's basic professional discipline. 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 ADA 631 and CECP 631.

Open to SPADA students only.

SWRK 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 practitioner in assessment, goal establishment, and intervention in the use of various social work methods in different arenas 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.

SWRK 665 Seminar in Substance Abuse II 3 hrs.
Continuation of SWRK 663. This course is cross-listed with ADA 652 and CECP 652.

SWRK 666 Social Work Practice with Individuals 3 hrs.
This course will introduce the student to social work practice with individuals. Social, psychological, economic, and biological stresses are considered as they impact on the individual's efforts to grow and survive. The ego developmental and crisis intervention approaches are the major orientations presented, augmented by concepts from cognitive theory. Particular attention will be paid to client's coping capacities. Prerequisite: SWRK 661.

SWRK 667 Program Planning 3 hrs.
The course addresses the models, stages, and tasks of program planning in the human services. Students will learn how to work with a team in planning a program. The course focuses on the tasks that are essential in carrying out a problem analysis and needs assessment, formulating program goals and objectives, designing service programs, and writing program proposals. Prerequisite: Concurrent enrollment in SWRK 677 or consent of instructor.

SWRK 668 Social Work Practice with Families 3 hrs.
This course provides knowledge and skills in clinical social work practice with families. Family systems theory and principles and techniques of structural family therapy are the central foci of the course. Concepts from communications theory and related interventions are also covered. Aspects of human diversity are discussed in relation to their impact on family functioning. Prerequisite: SWRK 666 or consent of instructor.

SWRK 669 Advanced Seminar in Planning and Administration 3 hrs.
The course addresses the recruitment, selection, development, supervision, and evaluation of program staff. Selected aspects of personnel law, affirmative action, and sexual harassment are examined. Students have opportunities to develop skill in the analysis and management of critical incidents in staff relationships. SWRK 669 is also used as the structure for assisting students in writing a program proposal that builds on content learned in PPAA courses and in the practicum.

Prerequisites: SWRK 667 and concurrent enrollment in SWRK 679, or consent of instructor.

SWRK 670 Seminar in Social Policy Practice 3 hrs.
This course is an integrative seminar in the Policy, Planning, and Administrative concentration that focuses on the skills needed for participation in the development and implementation of social policy in program planning and executive positions in the human services environment. The course focuses on technical and interactive aspects of practice, theoretical and ethical frameworks, and skills in the application of selected techniques of social policy practice. Prerequisite: SWRK 610.
SWRK 671 Field Education and Social Work Practice I
3 hrs.
This is the first of two field practice courses that entails 200 hours in a human service agency. Students apply knowledge and develop skills in conducting interviews, problem identification, data collection, problem assessment, and goal formulation with client systems in the context of social work values. Students integrate self-awareness and appreciation of diversity into professional practice. Students develop a working knowledge of the agency's functions, structure, processes, and service provider roles within the community. Graded on a Credit/No Credit basis. Prerequisite: Concurrent enrollment in SWRK 661 is required.

SWRK 672 Field Education and Social Work Practice II
3 hrs.
This is the second of two field practice courses that entails 228 hours in a human service agency. Students further integrate and apply social work knowledge, skills, and values in their field practicums, including the problem-solving process, interviewing, use of self and understanding of diversity. Graded on a Credit/No Credit basis. Prerequisites: Completion of SWRK 661 and SWRK 671, and concurrent enrollment in SWRK 662.

SWRK 676 Field Education in Interpersonal Practice
3 hrs.
Placement will be in an agency unit offering direct service experiences with some combination of individuals, families, and groups and additional experiences consistent with the student's learning needs. Campus- or field-based seminars may supplement the field experiences. Prerequisites: SWRK 666, 672, and concurrent enrollment in SWRK 636, and/or SWRK 668, or consent of the instructor. Graded on a Credit/No Credit basis.

SWRK 677 Field Education in Social Policy, Planning, and Administration
3 hrs.
Field education in the Social Policy, Planning, and Administration concentration is intended to provide students with opportunities to develop and exercise practice skills for designing, maintaining, and changing social systems. Field placements in social welfare organizations and special programs are arranged in accordance with student interests and abilities. Graded on a Credit/No Credit basis. Prerequisite: SWRK 672 and concurrent enrollment in SWRK 667, or consent of instructor.

SWRK 678 Advanced Field Education in Interpersonal Practice
3 hrs.
Continuation of SWRK 676. Students remain in field placement; direct service experiences and other activities continue. Campus- or field-based seminars may supplement the field experience. Graded on a Credit/No Credit basis. Prerequisite: SWRK 676 and concurrent enrollment in a course from the 690 series, or consent of instructor.

SWRK 679 Advanced Field Education in Social Policy, Planning, and Administration
3 hrs.
The advanced field education experience for students concentrating in social policy, planning, and administration builds on the work which the student began in SWRK 677 during the fall semester. Students remain in the same field work setting and work under the direction of the same field instructor. During the winter semester, the emphasis will be upon the development of skills in the implementation of change and administration activities. It is expected that students will be assigned increased responsibilities in accordance with their professional growth. Graded on a Credit/No Credit basis. Prerequisite: SWRK 677, concurrent with SWRK 669.

SWRK 686 Applied Social Work Research
3-6 hrs.
This course involves working as a member of a faculty-led research team. Students will be involved in the conceptualization of a research problem, the design of a methodology, the collection and analysis of data, and the development of a report of the findings. This course is offered occasionally, depending on the existence of an appropriate research project. SWRK 686 may replace SWRK 642 and one elective in the student's plan of study. Graded on a Credit/No Credit basis.

SWRK 691 Advanced Social Work Practice with Individuals
3 hrs.
This course provides students in interpersonal practice with an opportunity to deepen their knowledge and application of advanced clinical social work practice theory to work with at-risk individuals. Special attention is paid to interventions which promote optimal psychosocial functioning and development. This course builds on SWRK 666 and SWRK 638, and meets requirements for the advanced practice course in interpersonal practice. Prerequisites: SWRK 640, 672.

SWRK 692 Advanced Social Work Practice with Children
3 hrs.
This course provides students in interpersonal practice with an opportunity to deepen their knowledge of advanced clinical social work practice with children and their families in a variety of practice settings; e.g., child guidance, mental health, child welfare, school, corrections, and medical settings. This course builds on the content of SWRK 666, SWRK 668, and SWRK 638, and meets the requirement for the advanced practice course in interpersonal practice. Prerequisites: SWRK 638, 666, 688.

SWRK 693 Advanced Social Work Practice with Groups
3 hrs.
This is an advanced course for social work students that prepares them for therapeutic intervention in group treatment. The course will examine interpersonal relations, transference, counter-transference, communication, group processes, problem-solving, authority and leadership in groups, and group development from both an affective and cognitive perspective. The course will be experiential in nature with the student participating as a member of a small, face-to-face group. The course builds on the content of SWRK 636, Theory and Practice of Group Treatment, and meets the requirement for advanced practice course in social work practice. Prerequisites: SWRK 636, 666.

SWRK 694 Advanced Social Work Practice in Industry
3 hrs.
Study of advanced treatment strategies and interventions to help individuals with vulnerabilities in self-esteem development, early structure formation, and ego development as manifested in the work context. Clinical strategies directed to client internal organization and identity formation are examined. Meets requirement for advanced practice course in social work practice. Prerequisites: SWRK 631, 666.

SWRK 695 Advanced Social Work Practice in Supervision
3 hrs.
This course explores processes, strategies, and problems in supervision. It prepares students for supervisory roles in social work agencies, highlighting the importance of this role in maintaining professional expertise, in developing professional social work practice models, and in linking organizational goals to service delivery. Direct supervisory skills are covered in detail. Student participation is essential. Meets requirement for advanced practice course in social work practice. Prerequisite: SWRK 661 or consent of instructor.

SWRK 696 Advanced Social Work Practice with Families
3 hrs.
This course provides students with the opportunity to broaden and deepen their knowledge of advanced clinical social work with families. Building on SWRK 668, it provides theoretical content on structural strategic family therapy and may provide additional consideration of other perspectives such as communications and intergenerational approaches. Application of theoretical content is made to practice with families often encountered in social work practice, and seen as being at risk for problems in social and emotional functioning. The course meets the requirements for an advanced practice course in interpersonal practice. Prerequisites: SWRK 638, 668.

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

SWRK 710 Independent Research
2-6 hrs.
SPEECH PATHOLOGY AND AU迪OLOGY

Dr. John Hanley, Chair
Main Office: 235 Speech and Hearing Center
Telephone: 387-8045
FAX: 387-8044

Harold L. Bate
Jan Bedrossian
Susan K. Boersma
Michael J. Clark
Sandra Glista
John M. Hanley
James M. Hillenbrand
Yvette Hyter
Bharti Katbamna
Gary D. Lawson
Nikolaos W. Nelson
Karen S. Seelig

Master of Arts in Speech Pathology and Audiology

Advisors:
Harold L. Bate, Room 203, Speech and Hearing Center
Michael J. Clark, Room 202, Speech and Hearing Center
John M. Hanley, Room 235, Speech and Hearing Center
Gary D. Lawson, Room 224, Speech and Hearing Center

The Master of Arts in Speech Pathology and Audiology, which is accredited by the Council on Academic Accreditation in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association (ASHA), provides academic and practicum experiences basic to the development of clinical competence in the evaluation and treatment of language, speech, and hearing disorders. Students may emphasize Speech-Language Pathology or Audiology or both during graduate study and, in any case, are generally expected to meet the standards for certification of clinical competence by ASHA. The master’s degree program consists of a minimum of fifty (speech-language pathology) or fifty-seven (audiology) credit hours. Supervised clinical practice is required during every term of full-time registration and includes at least two assignments to off-campus practicum sites, in addition to regular evaluation and therapy responsibilities in the Charles Van Riper Language, Speech, and Hearing Clinic.

Admission Requirements

Students are admitted for full-time study beginning only in the Fall semester. Admission decisions are announced on March 15, April 30, and July 15; applicants are advised to complete the application process as early as possible. Not every applicant who meets minimum admission requirements can be admitted; the department reserves discretion in admission of the most highly qualified applicants. Specific admission requirements are outlined below:

1. A grade point average of at least 3.0 in the last sixty credit hours of undergraduate study.
2. Completion of an undergraduate major, or equivalent undergraduate course sequence, in Speech-Language Pathology and Audiology. The student who has not completed these requirements as an undergraduate will need to do so before enrolling in departmental graduate courses.

Program Requirements

Specific program requirements are as follows:

1. Completion of a core of required graduate courses specified by the department. The usual sequence of courses takes one calendar year plus two semesters (six terms of enrollment).
2. ASHA certification requirements are normally a part of the master’s degree program. The student must complete at least 350 hours of supervised clinical practicum, at least 250 of them at the graduate level. (The student who enters the graduate program with very few undergraduate clinical hours may anticipate some extension in program duration.) Under certain circumstances a student may have reason to seek the master’s degree without qualifying for ASHA clinical certification; students interested in such an arrangement must consult with their graduate advisors.
3. The student must manifest emotional and behavioral characteristics which, in the judgment of the departmental faculty, will support development of his/her professional competence. Behavior to the contrary may lead to dismissal from the program.
4. As an option, a Master’s thesis (six hours) or one or more independent research registrations may be applied toward degree requirements by students who demonstrate research aptitude and interest. Students anticipating study toward a doctoral degree are expected to evidence the ability to conduct a research project.
5. As an option, speech-language pathology students may wish to qualify for Michigan Teaching Certification in order to work as a Teacher of the Speech and Language Impaired (TSLI) in Michigan schools. Students desiring this credential should consult with departmental advisors and/or contact the Certification Office of the WMU College of Education.

Speech Pathology and Audiology Courses (SPPA)

Open to Upperclass and Graduate Students

SPPA 552 Communication Problems of the Aged
3 hrs.
This course acquaints the student with receptive and expressive communication problems common to older adults. Emphasis is on the clinical management of organic speech disorders and impaired auditory functions associated with aging.

SPPA 554 Speech and Hearing Therapy in the Schools
2 hrs.
Study of clinical work with speech and hearing handicapped children in the school setting. Prerequisite: SPPA 351, 353, 354, 358.

SPPA 556 Rehabilitative Audiology
3 hrs.
Orientation to the clinical management of communication problems associated with auditory impairment.

SPPA 595 Oral Language Development and Dysfunction
2 hrs.
The course provides the student preparing to be a classroom teacher with information about the nature of oral language, its development, conditions associated with dysfunction, and the principles and methods of treatment for children with specific speech or language disorders. Not applicable toward the master’s degree in Speech Pathology and Audiology.

SPPA 597 Topics in Speech Pathology and Audiology
1–4 hrs.
Selected topics in speech pathology and audiology are systematically explored through lectures, laboratory experiences, and student projects. Possible areas of study are instrumentation in audiology, manual communication, electrophysiologic audiometry, computer applications to speech pathology and audiology, augmentative communication, and contemporary professional issues.

a. Autism
b. American Sign Language
Prerequisite: SPPA 596 or equivalent.
3 hrs.
3 hrs.
c. American Sign Language II

SPPA 598 Readings in Speech Pathology and Audiology
1–4 hrs.
Arranged on an individual basis to provide students the opportunity to pursue independently the study of special areas of interest in depth.

Open to Graduate Students Only

SPPA 601 Advanced Speech Science
3 hrs.
Overview of the anatomy, physics, biology, physiology, and psychology of human speech production and speech perception. This course is intended to focus not only on well-established concepts in speech science, but also on the many research areas in which our understanding is incomplete. Prerequisite: Department approval.

SPPA 602 Advanced Hearing Science
2 hrs.
This course acquaints the student with principles, theories, and methods of hearing measurement which provide the basis for clinical audiometric procedures. Prerequisite: Department approval.

Speech Pathology and Audiology Courses (SPPA)

Open to Upperclass and Graduate Students

SPPA 552 Communication Problems of the Aged
3 hrs.
This course acquaints the student with receptive and expressive communication problems common to older adults. Emphasis is on the clinical management of organic speech disorders and impaired auditory functions associated with aging.

SPPA 554 Speech and Hearing Therapy in the Schools
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Study of clinical work with speech and hearing handicapped children in the school setting. Prerequisite: SPPA 351, 353, 354, 358.

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Overview of the anatomy, physics, biology, physiology, and psychology of human speech production and speech perception. This course is intended to focus not only on well-established concepts in speech science, but also on the many research areas in which our understanding is incomplete. Prerequisite: Department approval.

SPPA 602 Advanced Hearing Science
2 hrs.
This course acquaints the student with principles, theories, and methods of hearing measurement which provide the basis for clinical audiometric procedures. Prerequisite: Department approval.
SPPA 615 Research Methods in Speech-Language Pathology and Audiology 3 hrs.
This course deals with methods and procedures for gathering, reducing and analyzing data and drawing conclusions concerning communication disorders and processes. **Prerequisite:** Department approval.

SPPA 616 Instrumentation in Audiology 3 hrs.
This course introduces the basic principles and applications of electronic and electronic instruments as they pertain to audiology. The first section of the course will be an introduction to the basic principles of DC and AC electronics, with a particular focus on the concept of electrical impedance. The second section of the course will consist of a survey of the principles of operation and use of a variety of instruments that are used to generate, record, reproduce, control, calibrate, and measure electrical signals. **Prerequisite:** Department approval.

SPPA 619 Seminar in Speech and Hearing Science 1-4 hrs.
Selected topics in speech and hearing science are systematically explored through individual study projects, instrumentation, procedures, and techniques employed in perceptual, physical and physiological analyses of normal speech and hearing and are among the areas considered. Topics vary from semester to semester and are announced in advance. May be repeated. **Prerequisite:** Department approval.

SPPA 621 Diagnostic Audiology I 4 hrs.
This course, which is one of two courses devoted to diagnostic audiology, deals with the application of techniques for assessing peripheral hearing disorders to determine rehabilitative needs. **Prerequisite:** Department approval.

SPPA 622 Hearing Aids 3 hrs.
Components, characteristics, evaluation, selection, use and maintenance of hearing aids are studied in detail. **Prerequisite:** Department approval.

SPPA 623 Pediatric Audiology 3 hrs.
This course deals with the identification, measurement, and management of hearing impairment in infants and young children. **Prerequisite:** Department approval.

SPPA 624 Educational Audiology 3 hrs.
This course deals with educational psychological, and vocational needs of the hearing impaired child and the parameters of educational programming. **Prerequisite:** Department approval.

SPPA 625 Industrial and Public Health Audiology 2 hrs.
A study of hearing conservation programs in industry, including noise measurement, damage-risk criteria, hearing measurement, and medical-legal problems; noise as a public health hazard, and hearing screening and deafness prevention programs. **Prerequisite:** Department approval.

SPPA 631 Diagnostic Audiology II 4 hrs.
A course dealing with electrophysiological and other advanced audiological and medical techniques for assessing peripheral and central auditory and vestibular disorders to determine rehabilitative needs. **Prerequisite:** SPPA 621.

SPPA 639 Seminar in Audiology 1-4 hrs.
Selected topics in audiology are systematically explored through critical analyses of literature and through individual study projects. Pediatric audiology, geriatric audiology, hearing aids, residual hearing, and aural rehabilitation are among the possible areas of study. Topics vary from semester to semester and are announced in advance. May be repeated. **Prerequisite:** Department approval.

SPPA 640 Voice Disorders 3 hrs.
Organic and functional disorders of laryngeal and resonator origin are studied in depth. **Prerequisite:** Department approval.

SPPA 641 Articulation Disorders 3 hrs.
This course considers in detail the nature and treatment of functional misarticulations and of misarticulation associated with various organic disorders. **Prerequisite:** Department approval.

SPPA 642 Stuttering 3 hrs.
Theories and therapies applicable to the understanding and clinical management of stuttering are studied in depth. **Prerequisite:** Department approval.

SPPA 643 Aphasia in Adults 3 hrs.
This course deals comprehensively with the identification and treatment of communication problems in the adult aphasic individual. **Prerequisite:** Department approval.

SPPA 644 Motor Speech Disorders 3 hrs.
This course examines dysarthrias and apraxia as manifested in children and adults. **Prerequisite:** Department approval.

SPPA 645 Augmentative and Alternative Communication 3 hrs.
This course deals with alternative augmentative and assistive technologies (AAC) for individuals with severe communicative disorders. Strategies and technologies for establishing or restoring functional communication are investigated. Communication disorders of various etiologies are surveyed in relation to intervention needs. Assessment, intervention, and advocacy are discussed in detail. Practical and simulated experiences with low- and high-technology AAC are included. Overall communication needs are highlighted in reference to educational, vocational, and social interaction purposes. **Prerequisite:** Department approval.

SPPA 649 Seminar in Speech-Language Pathology 1-4 hrs.
Selected topics in speech pathology are systematically explored through critical analysis of literature and through individual study projects. Voice disorders, articulation disorders, language disorders, cleft palate, and stuttering are among the possible areas of study. Topics vary from semester to semester and are announced in advance. May be repeated. **Prerequisite:** Department approval.

SPPA 653 Diagnosis and Appraisal 3 hrs.
The student is instructed in methods and procedures for evaluation of speech and language disorders. **Prerequisite:** Department approval.

SPPA 657 Disordered Language Development 3 hrs.
Procedures and techniques for the identification, diagnosis, and clinical management of developmental disorders of language are explored intensively in this course. **Prerequisite:** Department approval.

SPPA 658 Theoretical Bases for Therapy 3 hrs.
In this course disorders of communication are examined in terms of servosystem, learning theory, and personality theory. **Prerequisite:** Department approval.

SPPA 669 Principles of Professional Practice 2 hrs.
Current professional and philosophical questions are studied with reference to the history of the profession of speech pathology and audiology. **Prerequisite:** Department approval.

SPPA 670 Clinical Practicum 1-6 hrs.
Supervised clinical experience in the evaluation and/or management of speech, language and/or hearing disorders. **Prerequisite:** Department approval.

SPPA 671 School Internship in Speech-Language Pathology 6 hrs.
This is a 10 week intensive speech-language pathology practicum in the school setting for students seeking endorsement as Teachers of Speech-Language Impaired in the state of Michigan or teacher certification in other states requiring school speech-language therapy internships. **Prerequisite:** Department approval.

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

SPPA 700 Master's Thesis 6 hrs.

SPPA 710 Independent Research 2-6 hrs.

SPPA 712 Professional Field Experience 2-12 hrs.
Graduate Studies Courses (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 Studies (GRAD) course.

Please Note: Students conducting research in any 700-level course that involves human or animal subjects, biohazards, genetic materials, or nuclear materials/radiation must have prior approval of the research proposal by the appropriate University board, thus assuring compliance with the regulations for the protection of such subjects. For more information, call the Office of the Vice President for Research, 387-8296.

All 700-level courses are graded on a Credit/No Credit basis.

GRAD 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. Prior to the first registration in 700, Master's Thesis, a Permission to Elect form (available in all departments) must be completed and the student must meet with the Dissertation Assistant in The Graduate College so that the student is informed about the regulations pertaining to the preparation and publication of the manuscript and to the requirements for research involving regulated subjects and hazardous materials.

Master's theses involving research with protected or regulated subjects must include documentation indicating compliance with federal, state, and University requirements for the protection of human/animal subjects or appropriate use of genetic or radioactive materials and chemical hazards. Written approval from the board/committee/official must be included as an appendix to the thesis. The use of Guidelines for the Preparation of Theses, Projects, and Dissertations is required. A revision of this publication will be available Fall 2000 for purchase in Western's Campus Bookstore, or for free downloading at [http://www.wmich.edu/grad/guidelines.PM.pdf].

A master's thesis is six credit hours. It may be registered for in increments of one (1) to six (6) hours. Following a student's first enrollment in 700, the student will enroll in 700 in each semester/session continuously until all thesis requirements are completed satisfactorily and approved by the appropriate bodies. A student unable to complete the thesis within the first six hours of registration will be required to continue to enroll in 700; however, only six hours of 700 will count toward meeting the program requirements for the degree. The thesis is graded on a Credit/No Credit basis. In case a student wishes to appeal a negative decision by the student's master's thesis committee, the student shall first take the appeal to this same committee, which shall hear the appeal and render a decision. In case a master's thesis committee cannot reach unanimous agreement and the student wishes to appeal further a negative decision, a Review Committee shall be established consisting of the Dean of The Graduate College, the appropriate academic dean, and the chairperson or director of the unit. The Review Committee shall seek to resolve the controversy without passing on the thesis. The Review Committee handling such a case is limited to procedural actions, such as reconstituting the thesis committee if the case merits it.

GRAD 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. A Permission to Elect form, signed by the student's graduate adviser and the faculty supervisor, must be submitted to the Records Office prior to registration. Graded on a Credit/No Credit basis.

GRAD 711 Readings in Doctoral Specialization
3 hrs.
In consultation with a faculty member, the doctoral student will design a reading list of 20 to 30 books in a specialized area; students wishing additional guided reading may register a second time. The student will master these works independently and, in consultation with faculty members, select a representation list of approximately 20 works on which to be evaluated in a two-hour oral examination, conducted by a committee of at least two faculty members. May be repeated up to a total of six hours. Graded on a Credit/No Credit basis. Prerequisite: Doctoral Candidacy.

GRAD 712 Professional Field Experience
2-12 hrs.
Designed for graduate students nearing completion of their degree who wish to pursue internships or apprenticeships. Effective internships relate to the student's professional goals, require the student to function within the standard procedures of the setting, and require the student to assume increased specified professional activities. Because the work for a 712 is ordinarily a culminating experience, students may enroll for 712 only when the departmental graduate advisor or director deems that they have completed all appropriate course work and any other requirements that should precede the field experience. Permission to elect 712 can be granted only when the student's graduate advisor or committee deems that the project is integral to the student's program of study and approves a prospectus outlining goals, rationale, activities, and methods of evaluation of the proposed field experience. 712 should not supplant required or expected courses in the graduate program. If a graduate program has a required internship or field experience, approved by the
GRAD 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 is required. Graded on a Credit/No Credit basis.

GRAD 730 Doctoral Dissertation
12-24 hrs.
The Doctoral Dissertation is required in all doctoral programs and is completed under the supervision of a dissertation committee. Prior to the first registration in 730, Doctoral Dissertation, a Permission to Elect form (available in all departments) must be completed and the student must meet with the Dissertation Assistant in The Graduate College so that the student is informed about the regulations pertaining to the preparation and publication of the manuscript and to the requirements for research involving regulated subjects and hazardous materials.

Doctoral dissertations involving research with protected or regulated subjects must include documentation indicating compliance with federal, state, and University requirements for the protection of human/animal subjects or appropriate use of genetic or radioactive materials and chemical hazards. Written approval from the board/committee/officer must be included as an appendix to the dissertation.

The use of Guidelines for the Preparation of Theses, Projects, and Dissertations is required. A revision of this publication will be available Fall 2000 for purchase in Western's Campus Bookstore, or for free downloading at [http://www.wmich.edu/grad/guidelines.PM.pdf].

A doctoral dissertation varies in credit from a minimum of 12 credit hours to a maximum of 24 credit hours. The hours required in a program of study are determined by the student's department. GRAD 730 may be registered for in increments of one (1) or more hours. Following a student's first enrollment in 730, the student will enroll in 730 in each semester/session continuously until all dissertation requirements are completed satisfactorily and approved by the appropriate bodies. A student unable to complete the dissertation within the number of hours stipulated in the student's approved program of study will be required to continue to enroll in 730; however, only those hours stipulated in the student's approved program of study will count toward meeting the program requirements for the degree. The dissertation is graded on a Credit/No Credit basis.

In case a student wishes to appeal a negative decision by the student's doctoral dissertation committee, the student shall first take the appeal to this same committee, which shall hear the appeal and render a decision. In case a doctoral dissertation committee cannot reach unanimous agreement and the student wishes to appeal further a negative decision, a Review Committee shall be established consisting of the Dean of The Graduate College, the appropriate academic dean, and the chairperson or director of the unit. The Review Committee shall seek to resolve the controversy without passing on the dissertation. The Review Committee handling such a case is limited to procedural actions, such as reconstituting the doctoral dissertation committee if the case merits it.

All doctoral dissertations will be microfilmed by Bell & Howell (formerly UMI). The student is also required to prepare an abstract of the dissertation for publication in Dissertation Abstracts International.
The Division of Continuing Education offers educational opportunities to qualified persons who wish to pursue their education on a part-time basis. Increasing numbers of men and women are interested and involved in improving their educational backgrounds for a variety of reasons—to improve career opportunities, to supplement past educational experience, to meet certification and licensure requirements, and to satisfy personal learning needs.

In response to the needs of these adult learners, Western's continuing education activities have been expanded to include courses for both undergraduate and graduate credit; distance learning via compressed video television, correspondence, Internet, and other types of self-instructional courses; conferences, seminars, and workshops; and non-credit short courses for the health care community, educational leaders, and other interested adults. Course and program offerings in west Michigan counties served by Western Michigan University's Division of Continuing Education are planned collaboratively with representatives from academic units and continuing education professionals who continuously analyze student's needs and interests. Inservice educational programs are planned with civic, educational, and professional groups. Western Michigan University's on-campus adult, part-time, and evening students are served by the Division's central offices located in Ellsworth Hall. The Division's central office and the Office of Admissions and Orientation will provide admission and registration assistance.

Kalamazoo and Statewide Programs
Kalamazoo and Statewide Programs provide undergraduate and graduate courses in a variety of formats, including weekends and workshops in support of the General University Studies program and several graduate certificate programs. Courses may be applied to degrees or certificates or can be taken for personal or professional development. For more information, call (616) 387-4127.

Distance Education
The Department of Distance Education within the Division of Continuing Education offers an increasingly broad spectrum of courses and programs via multiple distance learning methods and techniques. WMU utilizes synchronous and asynchronous methodologies with courses delivered by compressed video television, videotape, Internet, and correspondence instruction. Students may enroll in courses from the School of Public Affairs and Administration, the College of Engineering and Applied Sciences, the College of Education, and other selected programs. Courses are offered during the evening or on the weekend to many key sites around Michigan. The department is continually developing new programming to deliver courses to students at a distance using the latest technologies. For more information, call (616) 387-4195.

Conferences and Seminars
The Office of Conferences and Seminars develops and manages conferences, seminars, and non-credit professional development and training programs in cooperation with university departments, professional groups, and community organizations. For more information, call (616) 387-4174.

Graduate Programs and Courses Offered in Regional Centers and Sites
A listing of the University's graduate degree programs and courses offered in each of the Regional Centers is available in the current Schedule of Classes, which may be obtained at any Regional Center office, the main office of the Division of Continuing Education in Kalamazoo (616-387-4160), the Registrar's Office in the Seibert Administration Building in Kalamazoo, or on the World Wide Web at the following address (http://www.wmich.edu/conted). Admission and registration information is also contained in the Schedule of Classes. The Schedule of Classes is published for each semester and session and is available well in advance of the registration period.
Academic advisor
A faculty or professional staff member trained to help students select courses and plan programs of study for degree or program completion.

Academic dismissal
Dismissal from an academic unit or program for not maintaining the required grade point average. Dismissal indicates that a student is no longer admitted to the University and may not register.

Academic standing
The status of a student determined by the student’s grade point average (GPA). Graduate students must have a 3.0 or better grade point average (3.25 for specialist and doctoral students) to maintain “good standing.” A “warning” will be issued to a student whose GPA falls below a 3.0 (or 3.25) in any semester or session even though the overall GPA is 3.0 (or 3.25) or better. A student will be placed on “probation” if the overall GPA falls below 3.0 (or 3.25), and will receive a “dismissal” notice if the overall GPA is not raised to or above 3.0 (or 3.25) at the end of a semester or session on “probation.”

Active admission status
An applicant admitted to a graduate degree or graduate certificate program or to Permission to Take Graduate Classes (PTG) status retains active admission status for two years from the time of admission, as well as for one year from the date of the last enrollment as a graduate student at Western Michigan University. If a student never enrolls during the two years following the effective admission date, the student’s admission status is canceled and thereafter the student must submit an entirely new application and be formally admitted again before registration may occur. An enrolled student who has not registered for more than one year must complete and have approved a Readmission Application before registration may occur.

Assistantship
A University-administered salary (payment for service) and stipend (gift) awarded by an academic or service unit to an appointed graduate student. Assistants are apprentices in the profession and assist in doing part of the work of the department, teaching or research service.

Associateship
A specially designated assistantship awarded to an appointed doctoral student.

Audit
A registration category in which a student registers for and attends class(es) regularly without being held responsible for the work required for credit. A student who registers for a course in this way is not eligible to sit for examinations, earns no credit hours for the registration, and pays full tuition. The designation “AU” appears on the transcript if the auditor attends at least three-fourths of the class or laboratory sessions and gives evidence to the course instructor that the role as auditor has been satisfactory. See also Graduation audit below.

Bell & Howell
All doctoral dissertations written at Western Michigan University are required to be published and available to a public audience. The common method of publication is to have Bell & Howell (formerly named University Microfilms, Inc. (UMI)) microfilm the dissertation and have it available for dissemination to scholars and researchers around the world.

Capstone course or experience
A culminating holistic experience (e.g., thesis, dissertation, comprehensive examination) designed to help students more deeply understand the major issues, themes, theories, and research findings of the student’s discipline, often to enable the student to examine the relationship of the discipline to other areas.

Center
An organizational unit formed for purposes of linkage and visibility, focused on a theme, issue, or set of skills. A Center will frequently be interdisciplinary in nature. A Center does not offer degree programs but may, on rare occasions, offer a course or courses.

CELS
The Career English Language Center for International Students (CELSICS) 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. Classes at various levels include: Speaking and Listening Comprehension, Grammar, Reading and Vocabulary, Writing, Research Paper Writing, and work in the Language Laboratory. For further information and application forms, contact the Center by telephone, (616) 387-4800, or by Fax, (616) 387-4808.

Certificate program
A graduate certificate is awarded for the satisfactory completion of a nondegree graduate program designed around a narrow, applied, and coordinated curriculum which has a professional focus. A graduate certificate program may be either multidisciplinary or unidisciplinary in organization and may be taken separately or in conjunction with a graduate degree program. The graduate certificate is not an award of licenses, accreditation, or certification to render professional services; rather, it signifies that a student has satisfactorily completed an approved graduate certificate program curriculum.

Class or credit hour load
For all graduate students taking courses for a stated degree or certificate program, six hours constitutes full-time status, and three hours constitutes half-time status in fall and winter semesters. In spring and summer sessions, three hours in either session constitutes full-time status for that session and two hours constitutes half-time status.

Students who have completed all of the course work for their master’s or doctoral level program and who have only the thesis or dissertation to complete are required by Western Michigan University to enroll for a minimum of one-hour in thesis or dissertation credits. An enrollment of one-hour for thesis or dissertation will satisfy WMU’s continuous enrollment requirement. However, students must be aware that FICA regulations and some federal loan deferment regulations require at least half-time enrollment, which at WMU is now at least three hours of enrollment. Graduate students, even those enrolled for thesis or dissertation hours, must be enrolled for at least half-time (3 hours at WMU) in order to qualify for FICA tax exemption or to be eligible for loan deferments.

Since enrollment fees are determined by hours enrolled, and not by full- or part-time status, student (whether graduate or undergraduate) who enroll for six or fewer hours are charged a lesser enrollment fee than those who enroll for seven or more hours, and consequently they will be required to pay an additional fee for unlimited use of the recreation center. Students enrolling for six or fewer hours will have access to the recreation center for 10 visits without extra fee charges.

Closed class
A term used during the registration process to indicate that a course has reached its maximum enrollment limit and is therefore “closed” to further registrations.

Cognate
A course, or courses, related in some way to the major area of study for the master’s, specialist, or doctoral degree. Cognates may be, and often are, courses outside the department of the degree program.

Concentration
A concentration (or option or emphasis) is a thematically coherent block of courses that are more similar to one another than to others in the degree program. A concentration has a title and constitutes a significant percentage (e.g., 10%) of courses in the degree program. Concentrations (or options or emphases) may be recorded on the student transcript.

Concurrent study
A specially approved program which allows students to pursue simultaneously an undergraduate and a graduate degree. In most cases, the student would be permitted to take two or three graduate courses during the senior year, which would count toward completion of both the baccalaureate and master’s degree. All such programs are approved through the regular curriculum review process and appear in this catalog.
when approved, under the appropriate department program listing.

Continuing education courses and programs
Graduate courses and programs offered through the Division of Continuing Education in the Regional Centers of Battle Creek, Benton Harbor/St. Joseph, Grand Rapids, Lansing, and Muskegon, or elsewhere away from the Kalamazoo campus.

Continuing education unit (CEU)
Recognition for participation in a non-credit program or workshop.

Continuous enrollment
Following a student's first enrollment in 700 (Master's Thesis) or 720 (Specialist Project) or 730 (Dissertation), the student will enroll in that same course in each subsequent semester in which they are seeking academic credit. The student's file for CEU or project or dissertation requirements are completed satisfactorily and approved by the appropriate bodies.

Corequisite
A course that must be taken at the same time as another course. See also Prerequisite below.

Course numbering system
Undergraduate courses are numbered from 100 through 499. Courses numbered 500 through 599 are for upperclass and graduate students. (Graduate students register for undergraduate courses as another course. See also Courses for graduate students only are approved by the Graduate Studies Council.

Continuing education unit (CEU) an undergraduate course in a related area. Graduate credit may not be earned in a graduate credit course which will count as credit toward a student's doctoral dissertation committee shall serve as chairperson of the committee. At least one member shall be from outside the student's department (this person may be from a related cognate discipline, from outside the student's college, or from outside WMU) who shall serve as a bona fide, fully participating member of the committee. The committee shall be approved and recommended by the unit, approved by the office of the appropriate academic dean, and approved and appointed by the graduate dean. Each member of the committee must be either a member or an associate member of the graduate faculty.

Credit
A unit of academic credit. One credit hour usually represents one hour of class time per week, fulfills one unit of academic work, and is equivalent to one semester hour. A unit of academic credit is a fraction of a semester hour.

Credit/No Credit
A method used to evaluate performance in courses which is separate from the letter grade system. "Credit" is earned for grades of "B" or better; grades of "C" or below earn "No Credit." Credit/No Credit courses are not computed into the student's overall grade point average.

Credit hour
A unit of academic credit. One credit hour usually represents one hour of class time per week. See also semester hour and quarter hour below.

Credit load
See Class or credit hour load above.

Deadline
The date by which certain forms or information or payment must be received by an office or unit.

Degree student
A student formally admitted to a master's, specialist, or doctoral degree program and pursuing a planned program of study to earn that degree. See also Program of study below.

Dissertation committee
For each degree candidate, a doctoral dissertation committee shall be appointed to review the dissertation proposal, procedures, and results; to make suggestions relative to these concerns to the student; and to decide whether to approve the dissertation and the oral defense as fulfilling these requirements for the doctoral degree. All members of this committee must approve the dissertation and its oral defense, and the dissertation must be in a form acceptable to the unit and to the Graduate College before the student may be awarded the doctoral degree. Each doctoral dissertation committee shall consist of at least three members. The student's major dissertation advisor shall serve as chairperson of the committee. At least one member shall be from outside the student's department (this person may be from a related cognate discipline, from outside the student's college, or from outside WMU) who shall serve as a bona fide, fully participating member of the committee. The committee shall be approved and recommended by the unit, approved by the office of the appropriate academic dean, and approved and appointed by the graduate dean. Each member of the committee must be either a member or an associate member of the graduate faculty.

Elective
A course which will count as credit toward a degree, if approved by the advisor, but is not specified to the program's course requirements.

Emphasis
See Concentration above.

Fellowship
A University-administered stipend (gift) awarded by an academic or service unit within the University or by another donor to an appointed graduate student who is enrolled in a program leading to a graduate degree. The fellowship stipend is a gift to help the Fellow achieve an educational goal, rather than a payment for services.

Field experience, practicum, work experience, co-op
Field experience: actual practice, often away from the college campus, in a practical or service situation. In a teacher education program, it is usually conducted in schools. Practicum: 1) a course of instruction aimed at closely relating the study of theory and practical experience, both usually carried on simultaneously; 2) an academic exercise consisting of study and practical work; and 3) supervised experience in counseling or a similar activity through such procedures as role-playing, recorded interviews, abstraction analysis, and supervisory evaluation with interviewing techniques. Work experience, co-op, or internship: a sponsored learning experience in an occupational area for persons preparing for full-time employment, conducted in connection with a course of study, where the students spend a part of their time on an actual job in a school, business, or industry.

Full-time student
See Class or credit hour load above.

Gate course
A course in fundamentals in which a student must achieve a specified grade or "Credit" in order to qualify for enrollment in more advanced courses.

Good standing
See Academic standing above.

Grade point
The numerical value given to letter grades. "A" is equivalent to 4 points; "BA" to 3.5 points; "B" to 3 points; "CB" to 2.5 points; "C" to 2 points; "DC" to 1.5 points; and "D" to 1.0 point. An "E" or "X" is equivalent to zero points.

Grade point average (GPA)
A scholastic average computed by dividing total honor points by total credit hours attempted. See also Honor points below.

Graduate certificate program
See Certificate program above.

Graduate credit
See Credit above.

Graduate faculty
Faculty who are approved to perform the functions of graduate education, to include teaching graduate courses, advising graduate students, and serving on graduate student committees. Only members of the graduate faculty may serve on thesis, specialist project, and dissertation committees.

Graduate Research and Creative Scholars Award
The Graduate Studies Council and The Graduate College annually present two categories of recognition awards to graduate students: the Department Graduate Research and Creative Scholars Award and the University Graduate Research and Creative Scholars Award. These awards acknowledge graduate students' contributions to the scholarly and artistic productivity of Western Michigan University. Each department with a graduate program may nominate one graduate student for each level of degree offered by the department; by virtue of this nomination, the student will be designated as a Department Graduate Research and Creative Scholar. From among the Department awardees, a faculty committee will select those students whose research or creative activity has exceptional merit to be designated as University Graduate Research and Creative Scholars.

Graduate Student Advisory Committee
The Graduate Student Advisory Committee is a standing committee of the Graduate Studies Council. It reviews services and needs of graduate students; makes recommendations to appropriate officials and offices; recommends graduate students for appointments to University councils and committees; and serves as liaison between departmental graduate student organizations, the Graduate Studies Council, and the dean of The Graduate College.

Graduate Student Permanent Program of Study
A Graduate Student Permanent Program of Study is a document composed by a graduate student's program advisor, listing all course and other requirements necessary for completion of the degree program to which the student was admitted. The program of study is...
approved by the program advisor and the graduate dean, filed in the student's academic folder in the Records Office, and used to audit the student's eligibility for the degree at the time the student applies for graduation.

**Graduate Studies Council**
The Graduate Studies Council of the Faculty Senate reviews, develops, and recommends policy regarding graduate education at Western Michigan University.

**Graduation audit**
A formal, required evaluation of the student's academic record and program of study to determine the student's eligibility for graduation. The audit, initiated by a student's application for graduation, determines whether all University, degree, and program requirements have been met satisfactorily. See also **Audit** above.

**Deadlines for all degree recipients to apply for graduation** are August 1 for December graduation, December 1 for April graduation, February 1 for June graduation, and April 1 for August graduation.

**Students who change a graduation date need to complete a new application for graduation. No fee for the change is required.** The Records Office will not change a student's graduation date unless the student submits this new application for graduation.

**Grant**
Financial assistance awarded to a student who does not have to be repaid; usually based on need.

**Guest student**
A degree student from another college who is taking courses at Western Michigan University for one semester. The credits earned are usually transferred back to the student's home institution. See also **MIGS** below.

**Guidelines for the Preparation of Theses, Projects, and Dissertations**
The University's official formatting guide for master's theses, specialist projects, and doctoral dissertations, published by The Graduate College. A revision of this publication will be available Fall 2000 for purchase in Western's Campus Bookstore, or for free downloading at [http://www.wmich.edu/gradguidePM.pdf].

**Hold**
A restraint placed on a student's ability to register for classes as a result of an unfilled monetary obligation or other action by the University.

**Honor points**
A numerical value of the letter grade and credit earned in a course, determined by multiplying the grade point earned in the course by the number of credit hours for the course. See also **Grade point above**.

**Human Subjects Institutional Review Board of Western Michigan University (HSIRB)**
All research involving contact with human research subjects requires prior approval by the Human Subjects Institutional Review Board of Western Michigan University. No research involving human subjects is exempt from review by this board. For more information, telephone the Research Compliance Officer in the Office of the Vice President for Research, 387-8293.

**Incomplete**
A temporary course grade ("I") granted by an instructor when illness, necessary absence, or other reasons beyond the control of the student prevent completion of course requirements by the end of the semester or session. A student must be passing the course to be eligible for an "I." An "I" is not given as a substitute for a failing or low grade. Incomplete grades will convert to an "X" if not removed within one calendar year, or sooner if so stipulated by the instructor.

The instructor assigning the grade of "I" will complete an official Report of Incomplete Work form indicating the remaining requirement(s) for the student to complete and the time allowed for the completion of this work. The instructor will keep a copy of this form, and the student will receive another copy along with the grade report issued by the Registrar's Office.

**Independent study**
Enrollment in an appropriately designated, variable credit course for a specific plan of study, authorized and supervised by a designated, consenting faculty member. Normally, it is a project designed to allow students to investigate areas of interest not within the scope of a regular course or to obtain an educational experience outside that normally offered by a regular course. A contract is developed between a faculty member and a student to obtain the experience of completing the research on a specific topic. See also **Readings course** below.

**Institute**
An organizational unit similar in nature to a Center, as defined above, but which is degree-granting. Typically an Institute will be interdisciplinary. Course work for a degree offered through an Institute may include some offered by the Institute itself, but will be primarily comprised of courses in various disciplines/departments already in existence.

**Institutional Animal Care and Use Committee of Western Michigan University (IACUC)**
The use of any vertebrate animals in research, testing, or instructional projects requires prior notification or approval from the Institutional Animal Care and Use Committee of Western Michigan University. For more information, telephone the Research Compliance Officer in the Office of the Vice President for Research, 387-8293.

**Institutional Biosafety Committee of Western Michigan University (IBC)**
Any activity involving the construction or handling of recombinant DNA molecules or organisms and viruses containing recombinant DNA molecules requires prior notification or approval from the Institutional Biosafety Committee of Western Michigan University. For more information, telephone the Office of the Vice President for Research, 387-8298.

**Interdisciplinary**
Designating a combination of subject matter from two or more disciplines within a course or program.

**Internship**
Work in a firm or agency related to a student’s degree program and/or career plans. Usually involves earning college credit and may involve receiving payment. See also **Field experience, practicum, work experience, co-op** above.

**Michigan Intercollegiate Graduate Studies (MIGS) Program**
Admissions requirements for graduate students from all Michigan institutions offering graduate degree programs to take advantage of unique educational opportunities on the campuses of other institutions. Western Michigan University participates in this program. Information is available from The Graduate College.

**Michigan residence requirements**
The requirements for identifying or establishing permanent residence in Michigan for tuition assessment purposes.

**Multiple topic or umbrella course**
A variable topic, variable credit course that focuses on a current or a special interest in a specific field or academic area. The course may be repeated for credit with different topics.

**Nondegree student**
A student who has been admitted to a nondegree category (usually to a certificate program only or to PTG status) and is not otherwise seeking a master's, specialist, or doctoral degree.

**Part-time student**
A graduate student who takes fewer than nine hours during a semester (fall and winter) or fewer than five hours during a session (spring and summer). See also **Class or credit hour load above**.

**Permission to Take Graduate Classes (PTG)**
Permission to Take Classes (PTG status) is a limited admission status for a student with a baccalaureate degree to enable enrollment in graduate courses without pursuing a graduate degree. This status is also granted to a guest student from another university. Permission to Take Graduate Classes does not constitute admission to a graduate degree program, and departments may exclude students with this status from taking courses or may limit the transfer of PTG hours to a degree program should the student later be admitted to a degree program.

**Portfolio**
A collection of work (e.g., paintings, writings, etc.) which may be used to demonstrate competency in an academic area.

**Practicum**
See **Field experience, practicum, work experience, co-op** above.

**Prerequisite**
A requirement, often the completion of a prescribed course, which must be met before a student may register for a specific course. See also **Corequisite** above.

**Probation**
As a condition of admission: Probationary admission may be granted by a department to a student who does not meet all normal requirements for regular admission. The probationary student may then establish eligibility for regular admission by completing satisfactorily the specified departmental prerequisites declared in the letter of admission. See also the section entitled "Admission Types" in this catalog.

As a condition of academic standing: A student will be placed on probation if the student's overall grade point average falls below 3.0 (3.25 for specialist and doctoral students). See also **Academic standing above**.

**Program of study (Graduate Student Permanent Program)**
A document listing the course and other requirements necessary to earn a degree in a specific discipline. The program of study is composed by the advisor and the student, and approved by the graduate dean as meeting all University, program, and degree requirements. The **Graduate Student Permanent Program** is used to conduct the graduate audit and, therefore, must be filed well in advance of the student's application for graduation.
A specialist project committee shall be appointed for each student undertaking a project as partial fulfillment of the requirements for a specialist degree. The purpose of the project committee is twofold: a) to provide the range of expertise necessary to advise a student in the conduct of the specialist project, and b) to ensure that evaluation of the project represents a consensus of professionals in the student's chosen discipline.

The specialist project committee is charged with the supervision and evaluation of the specialist project, a task that includes but is not limited to the following responsibilities: a) advise the student on selection and/or development of project topic; b) review and approve a proposal for the specialist project; c) provide consultation regarding progress on the project; d) evaluate the final document; and e) in those departments requiring an oral defense, evaluate the oral defense of the project.

In addition to the previously described responsibilities that are generic to all project committee members, the chairperson of the committee assumes the following additional responsibilities: a) in those departments where this responsibility is not discharged through other mechanisms, advise the student regarding selection of project committee members; b) routinely monitor student progress on the project; c) call project committee meetings; d) evaluate the readiness of the project proposal and of the project for committee review and action; and e) inform the student of the need to adhere to the Guidelines for the Preparation of Theses, Projects, and Dissertations.

Each project committee shall consist of a minimum of three members or associate members of the graduate faculty of Western Michigan University. Two of the committee members must be from the department or academic program in which the student is pursuing the specialist degree. The appointment of a specialist committee is a three-stage process requiring, first, a mutual agreement between the specialist student and the prospective committee members; second, a formal appointment by the chairperson of the department (or the chairperson's designee); and third, notification of and approval by the office of the dean of the Graduate College regarding this appointment.

Each unit offering a specialist degree in which the project is either required or optional may approve and disseminate additional guidelines concerning specialist project committees, including the qualifications for committee membership, the procedures used to select and appoint committee members, and the specific functions and responsibilities that the members of these committees have. Additionally, each unit is encouraged to disseminate an updated list of faculty who qualify to serve on specialist project committees and their respective areas of expertise.

Quarter or term hour

A unit of academic credit, usually representing one hour of class time per week for one quarter or term. A "quarter" or "term" is a unit of time, usually 10 weeks long, in the academic calendar of an institution. Western Michigan University uses the semester calendar. See also Semester hour below.

Readings course

A form of independent study, designed to provide a graduate student with an opportunity to read intensively within an area in which further knowledge would be appropriate. Enrolment in the appropriately designated course (598, in most departments) requires a specific plan of study, authorized and supervised by the student's academic advisor, which includes the amount of reading, a description of the student's reporting method(s), and the number of credit hours to be earned by the completion of the plan of study. The maximum number of credits able to be earned and applied to a degree program is four, whether the readings course credits are all taken in one department or more than one, and the grade earned will be a letter grade.

Re-admission

An appeal procedure followed by a student who has been dismissed or who seeks to be continued on probation. Re-admission must be sought from the academic program's admission body in order for the student to register. See also Academic standards above.

Recombinant DNA Biosafety Committee (RDBC)

All research that involves recombinant DNA molecules must be reviewed and approved by the Recombinant DNA Biosafety Committee prior to initiation. For more information, telephone the Research Compliance Officer in the Office of the Vice President for Research, 387-8293.

Re-entry

An enrollment procedure followed by a student who was previously enrolled in good standing at Western Michigan University but who, for active admission status was canceled. See also Active admission status above.

Registration

The process of enrolling in and paying tuition and fees for courses each semester or session. For a full explanation of the registration procedures and regulations, consult the Schedule of Course Offerings available in the Registrar's Office.

Repeated course

Any course in which a student may have been enrolled more than once is considered a repeated course, with the exception of multiple topic or umbrella courses. A grade is presented in the transcript. A higher grade earned in a repeated course may count toward curricular or degree requirements at the time of graduation.

Research tool

An ability that serves in the manner of a tool that assists in one's research. Doctoral students are expected to acquire the ability to use two research tools, at minimum. Normally, the research tools would be selected from among foreign language, statistics, research methodology, and computer programming, although other tools are acceptable in some doctoral programs. Consult the program advisor for a full explanation.

Resideny requirement

In specialist and doctoral degree programs, the student will devote at least one academic year of two consecutive semesters to sustained, full-time study to meet the "residency" requirement. Full-time enrollment in consecutive spring and summer sessions may count for one semester. Some academic programs, however, have different residency requirements, and the student should consult with the appropriate program advisor for information about a specific program's requirement. See also Class or credit hour load above.

School

A single-discipline organizational unit which has an identification in the public mind beyond that of a department. Schools may have significant subdivisions such that students will apply for admission and take degrees through the subdivision rather than through the central unit as a whole.

Semester

A unit of time, 15 weeks long, in the academic calendar of Western Michigan University. The semesters occur in the fall and the winter. See also Session below.

Semester hour

A unit of academic credit, usually representing one hour of class time per week for one semester. A "semester" is a unit of time, usually 15 weeks long, in the academic calendar of an institution. Western Michigan University uses the semester calendar. See also Quarter or term hour above.

Senior citizen, SCOPE admission status

A special admission status for persons sixty-two years of age or older that provides senior citizens with special privileges and opportunities for study at Western Michigan University. The Schedule of Course Offerings should be consulted for eligibility and registration information.

Session

A unit of time, 7 1/2 weeks long, in the academic calendar of Western Michigan University. The sessions occur in the spring and the summer. See also Semester above.

Time limit for completion of a degree

Master's and specialist students must elect and complete all work for the degree, including transfer work, within six years preceding the date on which the graduate degree is conferred; doctoral students, within seven years following admission to the doctoral program.

Thesis committee

A master's thesis committee shall be appointed for each student undertaking a thesis as partial fulfillment of the requirements for a master's degree. The purpose of the thesis committee is twofold: a) to provide the range of expertise necessary to advise a student in the conduct of the master's thesis, and b) to ensure that evaluation of the thesis represents a consensus of professionals in the student's chosen discipline.

The master's thesis committee is charged with the supervision and evaluation of the master's thesis, a task that includes but is not limited to the following responsibilities: a) advise the student on selection and/or development of thesis topic; b) review and approve a proposal for the master's thesis; c) provide consultation regarding progress on the thesis; d) evaluate the final document; and e) in those departments requiring an oral defense, evaluate the oral defense of the thesis.

In addition to the previously described responsibilities that are generic to all thesis committee members, the chairperson of the committee assumes the following additional responsibilities: a) in those departments where this responsibility is not discharged through other mechanisms, advise the student regarding selection of thesis committee members; b) routinely monitor student progress on the thesis; d) evaluate the final document; and e) in those departments requiring an oral defense, evaluate the oral defense of the thesis.

In the academic calendar of an institution, Western Michigan University uses the semester calendar. See also Semester above.

Thesis hour

A unit of time, 15 weeks long, in the academic calendar of Western Michigan University. The semesters occur in the fall and the winter. See also Session below.

Within seven years following admission to the doctoral program.
committee review and action; and e) inform the student of the need to adhere to the Guidelines for the Preparation of Theses, Projects, and Dissertations.

Each thesis committee shall consist of a minimum of three members or associate members of the graduate faculty of Western Michigan University. Two of the committee members must be from the department or academic program in which the student is pursuing the master’s degree. The appointment of a master’s thesis committee is a three-stage process requiring, first, a mutual agreement between the master’s student and the prospective committee members; second, a formal appointment by the chairperson of the department (or the chairperson’s designee); and third, notification of and approval by the office of the dean of The Graduate College regarding this appointment.

Each unit offering a master’s degree in which the thesis is either required or optional may approve and disseminate additional guidelines concerning master’s thesis committees, including the qualifications for committee membership, the procedures used to select and appoint committee members, and the specific functions and responsibilities that the members of these committees have. Additionally, each unit is encouraged to disseminate an updated list of faculty who qualify to serve on master’s thesis committees and their respective areas of expertise.

Transcript
A copy of a student’s permanent academic record at a particular institution. The transcript, at minimum, lists all courses taken and credit hours and grades earned.

Transfer credit
Credit that is earned at another accredited institution and accepted toward a Western Michigan University degree, if approved by the program advisor and if the earned grade in the course is "B" or better. The credit, moreover, must be earned within a six-year period prior to graduation from Western Michigan University. No grades nor honor points earned at another institution transfer to WMU and hence do not affect the WMU grade point average.

Transfer credit evaluation form
An official form which indicates approval of a request to transfer credit and which states the number and type of transfer credit awarded. Credit is not transferred nor applied to a program of study unless the transfer credit evaluation form is completed and approved by the program advisor and the credit evaluator in the Registrar’s Office.

Tuition
The amount of money which must be paid for courses based on the number of credits for which the student registers.

Umbrella course
See Multiple topic course above.

Unit definitions
Center: An organizational unit formed for purposes of linkage and visibility, focused on a theme, issue, or set of skills. A Center will frequently be interdisciplinary in nature. A Center does not offer degree programs but may, on rare occasions, offer a course or courses. Institute: An organizational unit similar in nature to a Center, as defined above, but which is degree-granting. Typically an Institute will be interdisciplinary. Course work for a degree offered through an Institute may include some offered by the Institute itself but will be primarily comprised of courses in various disciplines/departments already in existence. School: A single-discipline organizational unit which has an identification in the public mind beyond that of a department. Schools may have significant subdivisions such that students will apply for admission and take degrees through the subdivision rather than through the central unit as a whole.

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

University Microfilms, Inc. (UMI)
See Bell & Howell above.

Variable credit course
Some courses list a range of credit hours (e.g., 1–4 hrs.) for which the course may be elected, and as such are called “variable credit” courses. Students will determine, in prior consultation with the course instructor or the program advisor, the specific number of course credit hours to elect during the registration period.

Withdrawal
An official procedure for withdrawing from a course or from the University. Deadlines for withdrawing from a course without academic penalty are noted each semester or session in the Schedule of Course Offerings. Students who do not follow the official procedure or meet the appropriate deadlines when withdrawing from a course will earn the grade of “X” for that course; the “X” grade carries no honor points and affects the grade point average in the same manner as an “E” grade.

“X” grade
The symbol “X” on a student’s transcript indicates that the student has never attended the class or has discontinued attendance and does not qualify for any other grade, including an “I” grade. The “X” will be computed into the student’s grade point average as hours attempted with zero honor points.
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<th>Years</th>
<th>Institution and Degrees</th>
</tr>
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<tr>
<td>Wygant, Robert M.</td>
<td>Professor of Industrial and Manufacturing Engineering</td>
<td>1977</td>
<td>B.S., Ohio State; M.B.A., Western Michigan; M.S.I.E., Michigan; Ph.D., Houston; CME</td>
</tr>
<tr>
<td>Xiong, Victor C.</td>
<td>Associate Professor of History</td>
<td>1989</td>
<td>B.A., Beijing; M.S., Chinese Academy of Social Sciences; Ph.D., Australian National</td>
</tr>
<tr>
<td>Yaman, Devrim</td>
<td>Assistant Professor of Finance and Commercial Law</td>
<td>2000</td>
<td>B.S., Middle East Technical (Turkey); M.S., Lancaster; M.A., Ph.D., New Orleans</td>
</tr>
<tr>
<td>Zhang, Charles</td>
<td>Adjunct Assistant Professor of Finance and Commercial Law</td>
<td>1999</td>
<td>B.B.A., M.B.A., Shanghai; M.A., Western Michigan</td>
</tr>
<tr>
<td>Ziebarth, Steven</td>
<td>Assistant Professor of Mathematics and Statistics</td>
<td>1997</td>
<td>B.S., Nebraska; M.S., M.A., Lehig; Ph.D., Iowa</td>
</tr>
<tr>
<td>Zing, Lawrence</td>
<td>Professor of Political Science</td>
<td>1967</td>
<td>B.S., M.A., Ph.D., Columbia</td>
</tr>
<tr>
<td>Zhang, Ping</td>
<td>Assistant Professor of Mathematics and Statistics</td>
<td>1996</td>
<td>B.S., Wuhan; M.S., Jordan; Ph.D., Michigan State</td>
</tr>
<tr>
<td>Zhou, Huizhong</td>
<td>Associate Professor of Economics</td>
<td>1990</td>
<td>B.A., Fudan (China); M.S., Ph.D., Northwestern</td>
</tr>
<tr>
<td>Zhu, Qilu</td>
<td>Assistant Professor of Mathematics and Statistics</td>
<td>1994</td>
<td>B.E., Jin University of Technology (China); M.S., Zhejiang (China); Ph.D., Northeastern</td>
</tr>
<tr>
<td>Zietzmann, Aletta</td>
<td>Assistant Professor of Science Studies</td>
<td>1999</td>
<td>B.Sc., Stellenbosch; B.Ed., Rand Afrikaans; M.Ed., Witwatersrand; Ed.D., Massachusetts (Amherst)</td>
</tr>
<tr>
<td>Zieser, Richard W.</td>
<td>Assistant Professor of Family and Consumer Sciences</td>
<td>1996</td>
<td>B.A., M.A., Oakland; M.A., Ed.D., Western Michigan</td>
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Accountancy  M.S.A.
Anthropology  M.A.
Applied Economics  M.A., Ph.D.
Applied Mathematics  M.S.
Art  M.A. M.F.A.
Ceramics
Graphic Design
Painting/Watercolor
Photography
Printmaking
Sculpture
Biological Sciences  M.S. Ph.D.
Biostatistics  M.S.
Business Administration  M.B.A.
Computer Information Systems
Economics
Finance
General Business
International Business
Management
Marketing
Paper and Imaging Science
Career and Technical Education  M.A.
Chemistry  M.A. Ph.D.
Communication  M.A.
Interpersonal Communication
Organizational Communication
Telecommunications
Comparative Religion  M.A. Ph.D.
Computational Mathematics  M.S.
Computer Engineering  M.S.E.
Computer Science  M.S. Ph.D.
Construction Management
M.S.
Counseling Psychology  M.A. Ph.D.
Counselor Education
Community Counseling
Rehabilitation Counseling
School Counseling
Student Affairs in Higher Education
Counselor Education  Ph.D.
Development Administration  M.D.A.
Earth Science  M.S.
Earth Science (Teaching)
Education and Professional Development  M.A.
Early Childhood Education
Elementary School Learning and Teaching
Human Resources Development
Reading
Socio-Cultural Foundations and Ed.
Thought
Teaching in the Middle School
Educational Leadership  M.A.
Central Office Administrator
Chief School Business Official
Curriculum and Instructional Leadership
Educational Evaluation, Measurement, and Research Design
General Leadership
School Principal
Educational Leadership
Ed.S.
Educational Leadership  Ed.D.
Career and Technical Education
Central Office Administrator
General Leadership
Superintendent
Educational Leadership  Ph.D.
Educational Evaluation, Measurement, and Research Design
Electrical Engineering  M.S.E.
Engineering Management  M.S.
English  M.A.
Emphasis on Professional Writing
Emphasis on Teaching
Literature
English  Ph.D.
Creative Writing
English Language
Literature
Pedagogy
Family and Consumer Sciences
Dietetics and Human Nutrition
Family Life Education
Textile and Apparel Technology
Geography  M.A.
Geology
Environmental and Surficial Geology
Geophysics
Hydrogeology
Petroleum-Mineralogy
Sedimentary Geology-Paleontology
Structural Geology
Geology
Hydrogeology
History
General Option
History
Ph.D.
Industrial Engineering  M.S.E.
Manufacturing Engineering  M.S.
Materials Science and Engineering  M.A.
Mathematics
Algebra
Applied Mathematics
Combinatorics
Geometry
Number Theory
Real and Complex Analysis
Statistics (Theoretical)
Topology
Mathematics  Ph.D.
Algebra
Approximation Theory
Collegiate Mathematics Education
Complex Analysis
Differential Equations
Graph Theory
Group Theory
Optimization Theory
Topological Graph Theory
Mathematics Education  M.A. Ph.D.
Mechanical Engineering  M.S.E. Ph.D.
Medieval Studies  M.A.
Music
Composition
Conducting
Music Education
Music Therapy
Performance
Occupational Therapy
M.S.
Operations Research
M.S.
Orientation & Mobility
Gerontology
Low Vision
Standard Program
Paper and Imaging Science and Engineering  M.S. Ph.D.
Philosophy  M.A.
Physical Education
Administration
Athletic Training
Exercise Science
Pedagogy
Special Physical Education
Sports Studies
Physician Assistant  M.S.M.
Physics  M.A. Ph.D.
Theoretical
Experimental
Computer and Instrumentation
Political Science  M.A.
Political Science
Ph.D.
Citizen Politics
Democratization and Sustainability

Political Development
Public Policy and Policy Processes
Psychology  M.A.
Behavior Analysis
Industrial/Organizational Psychology
Psychology  Ph.D.
Applied Behavior Analysis
Clinical Psychology
Experimental Analysis of Behavior
School Psychology (See also School Psychology, below)
Public Administration  M.P.A.
Health Care Administration
Human Resources Administration
Local Government Administration
Nonprofit Leadership and Administration
Organization Behavior and Change
Regional Planning and Economic Development
State Agency Administration
Public Administration  Ph.D.
Rehabilitation Teaching
Gerontology
Low Vision
Standard Program
School Psychology  Ed.S.
Science Education  M.A. Ph.D.
Social Work  M.S.W.
Interpersonal Practice
Policy, Planning, and Administration
Sociology  M.A.
Applied Option
Disciplinary Option
Sociology  Ph.D.
Applied Sociology
Comparative Sociology
Criminology
Medical Sociology
Social Psychology
Spanish  M.A.
Special Education
Clinical Teacher
Master Teacher
Special Education Administration
Special Education Technology
Teaching Children Who are Visually Impaired
Special Education  Ed.D.
Speech Pathology and Audiology  M.A.
Statistics  M.S. Ph.D.
Teaching of Geography  M.A.
Teaching of Music  M.A.

DUAL MASTER'S PROGRAMS
Rehabilitation Counseling/Rehabilitation Teaching
M.A. M.A.
Teaching Children Who are Visually Impaired/Orientation and Mobility  M.A./M.A.

GRADUATE CERTIFICATE PROGRAMS
Alcohol and Drug Abuse
Educational Technology
Electron Microscopy
Gerontology
Health Care Administration
Hippotherapy
Holistic Health Care
Human Performance Technology
Nonprofit Leadership and Administration