The University of Michigan, as an equal opportunity/affirmative action employer, complies with all applicable federal and state laws regarding nondiscrimination and affirmative action, including Title IX of the Education Amendments of 1972 and Section 504 of the Rehabilitation Act of 1973. The University of Michigan is committed to a policy of nondiscrimination and equal opportunity for all persons regardless of race, sex, color, religion, creed, national origin or ancestry, age, marital status, sexual orientation, gender identity, gender expression, disability, or Vietnam-era veteran status in employment, educational programs and activities, and admissions. Inquiries or complaints may be addressed to the Senior Director for Institutional Equity and Title IX/Section 504 Coordinator, Office for Institutional Equity, 2072 Administrative Services Building, Ann Arbor, Michigan 48109-1432, 734-647-1388. For other University of Michigan information call 734-764-1817. University of Michigan-Dearborn inquiries may be addressed to the Dearborn Affirmative Action Coordinator, Office of Human Resources/Affirmative Action, 1020 Administration Building, 4901 Evergreen Road, Dearborn, MI 48128-1491, 313-593-5320/5190, TTY 313-593-5430, Fax 313-593-3568.

This Catalog of UM-D is a fundamental source of information concerning academic opportunities, policies, regulations, and procedures. It is each student's responsibility to become familiar with the information contained herein.

Information in this Graduate Catalog is as of June 2007. Every care has been taken to insure its accuracy; however, the University cannot be responsible for errors and reserves the right to change programs, requirements and policies at any time after the publication of this Catalog. Current information is available through Unit and Departmental Offices.
GRADUATE INFORMATION

Graduate Studies Office (General Information)*
 ................................................... ................................................... .......... (313) 593-1494

College of Arts, Sciences, and Letters

Master of Arts in Liberal Studies ................................................... ................................................... .......... (313) 593-1183
Master of Public Policy ................................................... ................................................... .......... (313) 593-1183
Master of Science in Applied and Computational Mathematics ................................................... ................................................... .......... (313) 593-1183
Master of Science in Environmental Science ................................................... ................................................... .......... (313) 593-1183
Master of Science in Psychology with Specializations in Health Psychology and Clinical Health Psychology .......... (313) 593-1183

College of Engineering and Computer Science

Master of Science in Engineering, Automotive Systems Engineering ................................................... ................................................... .......... (313) 593-5582
Master of Science in Engineering, Computer Engineering ................................................... ................................................... .......... (313) 593-5420
Master of Science in Engineering, Electrical Engineering ................................................... ................................................... .......... (313) 593-5420
Master of Science in Engineering, Industrial and Systems Engineering ................................................... ................................................... .......... (313) 593-5361
Master of Science in Engineering, Manufacturing Systems Engineering ................................................... ................................................... .......... (313) 593-5582
Master of Science in Engineering, Mechanical Engineering ................................................... ................................................... .......... (313) 593-5241
Master of Science, Computer and Information Science ................................................... ................................................... .......... (313) 436-9145
Master of Science, Engineering Management ................................................... ................................................... .......... (313) 593-5361
Master of Science, Information Systems and Technology ................................................... ................................................... .......... (313) 593-5361
Master of Science, Software Engineering ................................................... ................................................... .......... (313) 593-5361
Doctor of Engineering in Manufacturing (Ann Arbor Campus Program with participation by UM-D) ................................................... ................................................... .......... (313) 593-5582
Graduate Certificate Programs (various topics) ................................................... ................................................... .......... (313) 593-4000

School of Education

Master of Arts in Education ................................................... ................................................... .......... (313) 593-5091
Master of Arts in Teaching ................................................... ................................................... .......... (313) 593-5091
Master of Education in Special Education ................................................... ................................................... .......... (313) 436-9135
Master of Public Administration ................................................... ................................................... .......... (313) 593-5090
Master of Science in Science Education ................................................... ................................................... .......... (313) 593-5090

School of Management

Master of Science in Accounting ................................................... ................................................... .......... (313) 593-5460
Master of Business Administration (on-campus and webMBA) ................................................... ................................................... .......... (313) 593-5460
Master of Science in Finance ................................................... ................................................... .......... (313) 593-5460

Dual Degree Programs

Business Administration (MBA) and Finance (MS) ................................................... ................................................... .......... (313) 593-5460
Business Administration (MBA) and Health Services Administration (MHSA from Ann Arbor) ................................................... ................................................... .......... (313) 593-5460
Business Administration (MBA) and Industrial & Systems Engineering (MSE) ................................................... ................................................... .......... (313) 593-5361

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Regular Registration Begins* .................................. Thursday, July 12
Labor Day (Holiday) ................................................. Monday, September 3
Classes begin ..................................................... Wednesday, September 5
Thanksgiving recess ............................................ Thursday-Sunday, November 22-23
Classes resume ................................................... Monday, November 26
Study Day ............................................................ Tuesday, December 11
Examinations ...................................................... Thursday-Saturday, December 13-15
Classes end ......................................................... Tuesday, December 19
Commencement .................................................. Saturday, December 16

M=14, T=14, W=14, Th=13, F=13=68 Total

WINTER TERM 2008
Regular Registration Begins* .............................. Monday, December 10
Martin Luther King, Jr. Birthday-No Regular Classes Monday, January 21
Study Day ............................................................ Tuesday, January 22
Examinations ...................................................... Thursday-Saturday, January 24-26
Classes end ......................................................... Friday, January 27

M=14, T=14, W=14, Th=14, F=14=69 Total

SUMMER TERM 2009
Regular Registration Begins* .............................. Monday, April 27
Labor Day (Holiday) ............................................ Monday, September 7
Classes begin ...................................................... Wednesday, September 9
Memorial Day (Holiday) ...................................... Monday, May 11
Classes begin (7-week classes) ......................... Friday, June 26
Examinations ...................................................... Saturday, June 27
Summer Recess .................................................. Sunday-Sunday, June 28-July 1
Classes end ......................................................... Monday, July 6

M=13, T=14, W=14, Th=14, F=14=69 Total

FALL TERM 2008
Regular Registration Begins* .............................. Monday, April 28
Labor Day (Holiday) ............................................ Monday, September 1
Classes begin ...................................................... Wednesday, September 3
Thanksgiving recess ............................................ Thursday-Sunday, November 27-30
Classes resume ................................................... Monday, December 1
Classes end ......................................................... Tuesday, December 9
Examinations ...................................................... Thursday-Saturday, December 11-13
Commencement .................................................. Sunday, December 21

M=14, T=14, W=14, Th=13, F=13=68 Total

WINTER TERM 2009
Regular Registration Begins* .............................. Monday, December 8
Classes begin ...................................................... Monday, January 12

**Dates are subject to change at any time by the Board of Regents
CAMPUS MAP
UNIVERSITY OF MICHIGAN-DEARBORN

REGENTS OF THE UNIVERSITY

Julia Donovan Darlow
Laurence B. Deitch
Olivia P. Maynard
Rebecca McGowan
Andrea Fischer Newman
Andrew C. Richner
S. Martin Taylor
Katherine E. White
Mary Sue Coleman (ex officio)

EXECUTIVE OFFICERS OF THE UNIVERSITY

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Sally J. Churchill Vice President and Secretary of the University
Stephen R. Forrest Vice President for Research
Gloria A. Hage, Interim Vice President and General Counsel
E. Royster Harper, Vice President for Student Affairs
Jack Kay, Acting Chancellor, University of Michigan-Flint
Robert Kelch, Executive Vice President for Medical Affairs
David R. Lampe, Vice President for Communications
Daniel Little, Chancellor, University of Michigan-Dearborn
Jerry A. May, Vice President for Development
Timothy P. Slottow, Executive Vice President and Chief Financial Officer
Teresa A. Sullivan, Provost and Executive Vice President for Academic Affairs
Cynthia H. Wilbanks, Vice President for Government Relations;

UNIVERSITY OF MICHIGAN-DEARBORN
ADMINISTRATIVE OFFICERS

Daniel Little, PhD, Chancellor
Susan W. Martin, PhD, Provost & Vice Chancellor for Academic Affairs
Robert G. Behrens, MA, Vice Chancellor for Business Affairs
Stanley Henderson, PhD, Vice Chancellor Enrollment Management and Student Life
Edward Bagale, MBA, Vice Chancellor for Government Relations
Thomas A. Baird, Vice Chancellor for Institutional Advancement

DEANS OF ACADEMIC UNITS

Kathryn Anderson-Levitt, PhD, College of Arts, Sciences, and Letters
Paul Zions, PhD, School of Education
Subrata Sengupta, PhD, College of Engineering and Computer Science
Kim Schatzel, PhD, School of Management

DIRECTORS

Linda Ellis Brown, EdD, Assistant Vice Chancellor for Enrollment Management and Registrar
Monica Porter, Director of Women’s Resource Center
Drew Buchanan, PhD, Director of Research & Sponsored Programs
Steven Rotta, MA, Director of Athletics and Recreation
Robert K. Gassel, BBA, Director of Financial Services and Budget
Orin G. Gelderloos, PhD, Director of Natural Area
Richard F. Gordon, MPA, Director of Campus Safety
Roma Heaney, MA, Director of Institutional Research
Kathleen A. Herr, Director of University Center Operations
Larry G. Hicks, AS, Director of Facilities Management
William Keener, MA, Director of Academic Support and Outreach Services and Director of the Tutoring Center
Susan W. Martin, PhD., Director of Graduate Studies
Judy Tatum, Director of Financial Aid
Violetta Ogilvy, MA, Director for Information Technology Services and Chief Information Officer
Kathleen Pepin, BS, Director of Facilities Planning
Ray Metz, MA, Chief of Staff
Timothy F. Richards, MA, AMLS, Director of the Mardigian Library
Gary Rodgers, General Manager, Henry Ford Estate.
David A. Schroat, PhD, Director of Counseling Support Services
Jeanette G. Schumacher, BA, Director of Alumni Relations
Regina M. Storrs, MA, Director of Career Services
Kristine Day, MS, Director of Student Activities
Jeffrey Evans, BS, Director of Human Resources/Affirmative Action
How to use the
Graduate Catalog

This Catalog is divided into five sections:

- General Information
- College of Arts, Sciences, and Letters
- College of Engineering and Computer Science
- School of Education
- School of Management

This Catalog of UM-D is a fundamental source of information concerning academic opportunities, policies, regulations, and procedures. It is each student’s responsibility to become familiar with the information contained herein.

WHERE TO FIND INFORMATION

The College of Arts, Sciences, and Letters, College of Engineering and Computer Science, School of Education, and the School of Management sections contain: specific regulations and procedures which may be unique to that academic unit; information regarding programs, degrees and courses offered; and a plan for electing courses to fulfill undergraduate degree requirements.

KEY TO COURSE LISTINGS

The heading for each course listing contains the following information.

Discipline and Course Number

The discipline is indicated by a three or four letter abbreviation. Courses are numbered in accordance with a University-wide numbering system: courses numbered 500 and above are graduate level courses.

Course Title

The bold face course title follows the course number.

Credit Hours

Credit hours at the UM-D are based on semester hours. The number of credit hours for each course is listed below the title.

Prerequisite(s)

Prerequisites to the course normally appear below the title and credit hours, although they may sometimes be included in the course description. They should be completed before the course is elected.

Concurrent Courses

Courses listed with an asterisk (*) indicate those that may be taken concurrently with the course listed.

Frequency of Offering

The following abbreviations are used to denote the frequency of offering: (F) fall term; (W) winter term; (S) summer term; (F, W) fall and winter terms; (YR) once a year; (AY) alternating years; (OC) offered occasionally.
**The University of Michigan-Dearborn**

The University of Michigan-Dearborn (UM-D) is one of the three campuses of the University of Michigan operating under the policies of the Board of Regents.

The campus, located in the former estate of automotive pioneer Henry Ford, was founded in 1959 as a senior-level institution offering junior, senior, and graduate-level courses and degrees. In 1971, UM-D became a comprehensive university campus offering four-year degree programs in liberal arts and sciences and graduate programs at the master's degree level.

More than 8,500 highly selective students, representing a wide range of academic interests and diverse backgrounds, are currently enrolled at UM-D.

As part of the University of Michigan, UM-D enjoys the association with a large multi-university and the advantages of moderate size. Through expanded evening course offerings, professional development programs and cooperative education programs, UM-D continues to respond to the educational needs of commuting students from the Detroit metropolitan community.

**Mission and Values**

The UM-D is an interactive, student-centered institution committed to excellence in teaching and learning.

We offer undergraduate, graduate, and professional education to a diverse, highly motivated, and talented student body. Our programs are responsive to the challenging needs of society; relevant to the goals of our students and community partners; rich in opportunities for independent and collaborative study, research, and practical application; and reflective of the traditions of excellence, innovation, and leadership that distinguish the University of Michigan.

We accomplish this mission by:

- Providing a strong foundation in the liberal arts and sciences;
- Providing the knowledge and skills essential for career and personal success;
- Integrating teaching, research and service in ways that enhance the learning experience;
- Promoting internships and cooperative education;
- Providing a dynamic environment where innovation, openness, and creativity are fostered;
- Using advanced technologies to meet changing educational needs and establish links with the global community; and
- Forging partnerships with business, industry, educational institutions, and government agencies.

We strive to be the institution of choice in southeastern Michigan for individuals and organizations that value accessibility, flexibility, affordability, diversity, and preeminence in education.

**The Campus**

The UM-D campus was established in 1956 through a gift from the Ford Motor Company. The gift included approximately 196 acres of land, the Henry Ford Estate, and funds for the construction of four buildings totaling 226,770 gross square feet. The campus has grown considerably over the past 38 years and now includes the following facilities:

<table>
<thead>
<tr>
<th>Building Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration Building</td>
<td>Offices, classrooms</td>
</tr>
<tr>
<td>Campus Support Services</td>
<td>Offices, support services</td>
</tr>
<tr>
<td>Engineering Complex</td>
<td>Offices, labs</td>
</tr>
<tr>
<td>Engineering Laboratory Building</td>
<td>Offices, classrooms and labs</td>
</tr>
<tr>
<td>Fairlane Center North and South</td>
<td>Offices, classrooms and food service</td>
</tr>
<tr>
<td>Fieldhouse/Ice Arena / Wellness Center</td>
<td>Ice rink, recreation</td>
</tr>
<tr>
<td>Grounds Building</td>
<td>Vehicle storage, offices</td>
</tr>
<tr>
<td>Henry Ford Estate</td>
<td>National historic landmark</td>
</tr>
<tr>
<td>Institute for Advanced Vehicle Systems</td>
<td>Offices, labs</td>
</tr>
<tr>
<td>Kindergarten Module</td>
<td>Classroom, offices</td>
</tr>
<tr>
<td>Manufacturing Systems</td>
<td>Labs, offices</td>
</tr>
<tr>
<td>Engineering Laboratory</td>
<td></td>
</tr>
<tr>
<td>Mardigian Library</td>
<td>Library, offices, classrooms</td>
</tr>
<tr>
<td>Monteith Parking Structure</td>
<td>Alfred Berkowitz Gallery</td>
</tr>
<tr>
<td>Professional Education Center</td>
<td>Parking, storage</td>
</tr>
<tr>
<td>Science Building/Computer Wing</td>
<td>Classrooms, labs, offices</td>
</tr>
<tr>
<td>Science Learning and Research Center</td>
<td>Classrooms, labs, offices</td>
</tr>
<tr>
<td>Social Sciences Building</td>
<td>Classrooms, labs, offices</td>
</tr>
<tr>
<td>Student Services Center</td>
<td>Offices, labs, classrooms</td>
</tr>
<tr>
<td>University Center</td>
<td>Classrooms, offices food service, copy center, bookstore</td>
</tr>
</tbody>
</table>

**Accreditation**

The UM-D is fully accredited by the Higher Learning Commission, a member of the North Central Association of Colleges and Schools. Additional accreditation has also been awarded to various UM-D programs and is noted within each school’s section.

For information regarding the accreditation status of the University, either of the following may be contacted:

The Higher Learning Commission  
North Central Association of Colleges and Schools  
30 North LaSalle Street, Suite 2400  
Chicago, IL 60602-2504  
800-621-7440  
www.ncahigherlearningcommission.org

or

University of Michigan-Dearborn  
Office of the Provost  
1080 Administration Building  
Dearborn, MI 48128-2406

**Graduate Programs Offered**

The UM-D offers 26 master's degree programs that are professional in their orientation and one non-professional master's program. Most programs are traditional master’s programs that require students to attend classes on campus. To support the learning opportunities for students who cannot
regularly attend classes on-campus due to family or job-related needs, UM-D offers a growing number of on-line or web-based degree programs.

Each graduate program of study provides further educational opportunities, especially for those who have already made a start in their respective careers. Graduate classes are offered in the late afternoon, evenings and Saturdays for the convenience of those who wish to pursue graduate work on a part-time basis while employed. These programs embody the academic standards of The University of Michigan, and where appropriate, are affiliated with the Horace H. Rackham School of Graduate Studies.

The College of Arts, Sciences, and Letters offers a Master of Arts (MA) degree in Liberal Studies and Master of Science (MS) degrees in Applied and Computational Mathematics, Environmental Science, Psychology with a Specialization in Health Psychology, Psychology with a Specialization in Clinical Health Psychology, and a Master of Public Policy. The College of Engineering and Computer Science offers Master of Science (MS) degrees in Computer and Information Science, Engineering Management, Information Systems and Technology and Software Engineering, as well as Master of Science in Engineering (MSE) degrees in Automotive Systems Engineering, Computer Engineering, Electrical Engineering, Industrial and Systems Engineering, Manufacturing Systems Engineering, and Mechanical Engineering. CECS also participates in the Doctor of Engineering (DEng) in Manufacturing offered by the Program in Manufacturing, College of Engineering, The University of Michigan at Ann Arbor. The School of Education offers Master of Arts (MA) degrees in Education and Teaching, as well as a Master of Education (MEd) in Special Education, a Master of Public Administration (MPA) and a Master of Science (MS) in Science Education. The School of Management offers a Master of Business Administration (MBA) and Master of Science (MS) degrees in Accounting and Finance. The Schools of Management and Engineering and Computer Science offer a dual degree in industrial and systems engineering and business administration (MSE in I&SE/MBA) and a joint program in Engineering Management (MS). The School of Management and the School of Public Health on the University of Michigan-Ann Arbor campus offer a jointly administered Dual Degree program leading to the Master of Health Services Administration (MHSA) and the Master of Business Administration (MBA).

The Graduate Studies Office provides general information on UM-D graduate programs, 313-593-1494 or www.umd.umich.edu/univ/grad. Please contact the office of the program(s) of interest for advising or an application.

Programs indicated with an * are also offered online.

**College of Arts, Sciences, and Letters**

- Applied and Computational Mathematics (MS) 313-593-1183
- Environmental Science (MS) 313-593-1183
- Health Psychology (MS) 313-593-1183
- Clinical Health Psychology (MS) 313-593-1183
- Liberal Studies (MA) 313-593-1183
- Public Policy (MA) 313-593-1183

**College of Engineering and Computer Science**

- Automotive Systems Engineering (MSE) * 313-593-5582
- Computer and Information Science (MS) 313-436-9145
- Computer Engineering (MSE) * 313-593-5420
- Electrical Engineering (MSE) 313-593-5420
- Engineering Management (MS) * 313-593-5361
- Industrial and Systems Engineering (MSE) * 313-593-5361
- Information Systems and Technology (MS) 313-593-5361
- Manufacturing Systems Engineering (MSE and DEng) 313-593-5582
- Mechanical Engineering (MSE) 313-593-5241
- Software Engineering (MS) * 313-436-9145

**School of Education**

- Education (MA) 313-593-5091
- Public Administration (MPA) 313-436-9135
- Science Education (MS) 313-583-6333
- Special Education (MEd) * 313-436-9135
- Teaching (MA) 313-593-5091

**School of Management**

- Accounting (MS) 313-593-5460
- Finance (MS)* 313-593-5460
- Business Administration (MBA) * 313-593-5460

**Dual Degree Programs**

- Industrial and Systems Engineering (MSE) 313-593-5361
- Master of Business Administration (MBA) 313-593-5460
- Master of Health Services Administration (MHSA) and Master of Business Administration (MBA) 313-593-5460

**Joint Degree Program**

- Engineering Management (MS) 313-593-5361
- College of Engineering and Computer Science and School of Management

**Capsule History of the University of Michigan-Dearborn**

The first movement toward what was to become The University of Michigan-Dearborn began with some studies in the middle 1950’s of manpower supply conducted by Archie Pearson, director of training for Ford Motor Company. Convinced that serious shortages were looming for the Company in qualified, college-trained engineers and junior administrators, he made discreet inquiries of educational institutions in the Detroit area concerning their willingness to adjust their programs to meet these needs.

Pearson was particularly interested in a program with a cooperative education component that would provide several periods of full-time work experience, alternating with regular terms of professional academic study. However, his inquiries and those of his associates did not strike the responsive chord they were looking for until they were put in touch with members of the top administration at the University of Michigan. Thus in late 1955 began the negotiations between Pearson, his associates, and the University of Michigan officials that led to the establishment of the Dearborn Center of the University of Michigan. During 1956, the details of the proposed campus were worked out by a
Special Committee involving top administrators at both Ford Motor Company and the University of Michigan. The announcement on December 17, 1956 of a gift of land and capital development money from the Company to the University made it obvious that the focus of the agreement between the two was the building of an upper-division and master’s level campus of the University which would adopt the cooperative work-study requirement as a part of its regular degree program in engineering and business administration. The University was to provide the regular professional and liberal arts courses necessary to a University of Michigan bachelor’s or master’s degree, with the co-op work assignments forming an integral addition to the regular academic requirements. UM-D opened as the Dearborn Center of the University of Michigan on September 28, 1959.

The upper-division cooperative education program was the first important educational emphasis of what is now UM-D. Cooperative education is still a vital part of the professional programs, and not only has it expanded to include liberal arts students, but other kinds of off-campus experience for credit have been added as well. There are now regular program-related internships in political science, economics, social work, humanities, health sciences, and public administration. Nevertheless, it became apparent in the early days that the campus could not afford to be limited to a single focus, and over the years it has gone through several stages of modifying its original purposes and structure.

From its inception in 1956 to about 1962, the cooperative education program was confidently set forth as a sufficient raison d’etre for the campus, in spite of growing evidence that this admittedly fine and educationally sound opportunity was not drawing a sufficient number of students for economical use of the facilities. In February 1962, William Stirton, the University of Michigan vice-president who was the first chief executive of UM-D, announced that cooperative education was being extended to the liberal arts areas on an optional basis, beginning in the fall term, 1962. In reality, however, very few liberal arts co-op work assignments were actually made before 1973, when the present liberal arts co-op program was officially established. Although this early abortive attempt to extend the co-op program to liberal arts was an apparently small episode in the history of the campus, it constituted the last major attempt to build the campus solely on the basis of the co-op programs and the upper-division/graduate structure. Moreover, it came at about the same time as the change in the name of the institution from “Center” to “Campus” (to make its objectives seem less limited). Both events seem to have marked the beginning of a period in the middle sixties characterized by growing uncertainty about the future of the institution. This period ended in 1969 with the recommendations of the Ross Committee (also referred to as the Balzhiser Committee, and officially called the Dearborn Campus Planning Study Committee), which radically changed the direction of the Campus.

The 1969 report of the Dearborn Campus Planning Study Committee, appointed by University Vice-President for State Relations and Planning Arthur Ross to consider the future of the campus, recommended the addition of the first two years to become a full four-year institution and the expansion of non-co-op programs; it recommended other changes as well, most of which were implemented in 1971 to give the campus its present structure. It became at that time a four-year undergraduate institution (newly designated “The University of Michigan-Dearborn”) with a continued commitment to some master’s level graduate programs, having a chancellor as its chief executive officer; two years later, the old divisions became schools and colleges, and the Division of Education (“Urban Education” for the first few years) was created, with each of the major academic units headed by a dean. The first Chancellor of UM-D, Dr. Leonard E. Goodall, was appointed in July, 1971.

After that watershed change in 1971, UM-D grew rapidly from just under 1,000 students to over 6,000 in 1979. During this period there was a scramble just to supply the courses and facilities needed to accommodate the soaring student population. New faculty were added at the rate of 10 to 20 per year, and the face of the campus changed as a new set of buildings (the former University Mall now remodeled as the University Center, the Fieldhouse, and the Library) was planned and constructed to the south of the original four buildings. By April 1981, when the new library building was jubilantly dedicated, the population center of the campus had shifted to this newly developed area. Ironically, however, these years of expansion also ushered in a period of severe retrenchment, when the debt burden of the new structures coincided with a recession and cuts in state aid to the campus. Dr. William Jenkins, appointed as UM-D’s second chancellor in 1980, took the helm at the beginning of what may be called the institution’s "Years of Consolidation.”

The early 1980’s at UM-D were, as in the State of Michigan as a whole, a period of severe financial crisis. From 1979 through 1982, over a million dollars of funds allocated to UM-D by the state had to be recalled. During that same time, faculty and staff salaries were cut and student tuition rose 44 percent in three years. Nevertheless, student enrollment, after a slight drop from 1982 to 1984, resumed its steady rise that has continued to the present. A new surge in capital fund-raising was instigated as a result of the campus’s fiscal problems, and it bore early fruit in 1984 when Ford Motor Company announced the biggest capital gift to UM-D since its founding: $800,000 to build a computer-aided engineering facility, now known as the Manufacturing Systems Engineering Laboratory (completed in 1988). By the end of the decade, capital funding from the state (delayed during the recession) was flowing again, resulting in one major new building (the Social Sciences Building, formerly the School of Management Building), an addition to the Science Building (Computer Wing) and extensive renovations to one of the original campus buildings to provide much-needed additional office space for both faculty and administrators.

Several developments in campus organization, administrative personnel, and academic offerings have highlighted what might be called the “Years of Redirection,” from about the time of the inauguration of Chancellor Blenda Wilson (1988) to the present. At the center of this “redirection” has been a program of strategic planning, initiated in the summer of 1990 and reinforced by planning retreats for the whole campus in the fall terms of 1990, 1991 and 1992. A new campus mission statement arose out of the first retreat which rearticulates UM-D’s commitment to providing an experience of academic excellence for a diverse body of students from the metropolitan Detroit area, encouraging full community attention to the traditions of free intellectual inquiry, critical thinking and ethical behavior through interactive teaching, research, creative and applied scholarship, and service. From the second retreat emerged the principal points of a set of learning goals for undergraduate students.

In consonance with these statements of institutional purpose, organizational changes were made to strengthen the funding base for the campus, to consolidate and streamline academic programs, and to coordinate and strengthen student services under a new vice chancellor for student affairs. In July 1991, Dr. Robert Simpson took office as provost and vice chancellor for academic affairs, succeeding Dr. Eugene Arden. Provost
Simpson has energetically promoted the identification and implementation of those measures of academic improvement that are most appropriate to the newly stated purposes of the campus. Under his leadership, a new statement of UM-D’s Goals for the Undergraduate Experience was completed in 1993; a new fiber optic cable was laid for a campus computer network, with the Director of the Mardigian Library being given oversight of Information Technology Services; and, after a self-study (1991-93) using the campus's strategic plan as the focus, UM-D was officially reaccredited by the North Central Association in March 1994.

After Chancellor Wilson resigned in the summer of 1992 to assume a new post in California, Dr. James C. Renick was appointed as the fourth chancellor of UM-D in January 1993. As one of his first responsibilities, he solidified the capital campaign and established a goal of $24 million over four years (1992-1997). Chancellor Renick emphasized the importance of making UM-D more fully an "interactive campus" with the southeastern Michigan community it serves.

Several important developments took place in 1993 and early 1994: 1) a new set of Campus Bylaws was instituted which provided for a Faculty Senate for the first time in the campus's history; 2) approval by the State Legislature of capital outlay for a new building to house faculty offices, general purpose classrooms, and a 350-seat multi-purpose auditorium; 3) institution of a new Engineering Management degree in 1993, administered jointly by the Schools of Engineering and Management; 4) implementation of a new, second-generation automated library system (WIIZARD) which substantially increases faculty and student access to local, regional and national bibliographic databases.

The University purchased the facility now known as Fairlane Center North and South from Ford Motor Company. In January 2004, the Schools of Education and Management completed their move into Fairlane Center South. SOE and SOM courses were offered in this new location starting Winter 2004. The Computer and Information Science will occupy the space vacated by SOE and the Department of Social Sciences together with other administrative offices will move into the former School of Management building.

Under Chancellor Little, the strategic planning effort initiated by Renick was continued. The campus community reaffirmed its intention to pursue doctoral programming, to explore the possibility of on-campus housing, to review undergraduate programs and to focus attention on diversity. The most recent self-study for continuing accreditation by the Higher Learning Commission (formerly the North Central Association) focused on each of these areas and provided summaries of the current status of each of these ongoing efforts. UM-D was accredited for ten years in 2004 and was authorized to offer doctoral programming.

In 2006, UM-D welcomed its third Provost and Vice Chancellor for Academic Affairs, Dr. Susan W. Martin. Two new buildings, the Science Learning and Research Center (just west of the Science Building) and the Institute for Advanced Vehicle Studies became operational.

Source of information up to 1984: A Gift Renewed, written by Professor Elton D. Higgs.

**ADMISSION**

There are three types of admission to graduate degree programs at UM-D: admission to UM-D only programs,

**General Admission and Readmission Information**

Students, who have earned the bachelor's degree at an accredited college or university in the United States, or its equivalent in another country, will be considered for admission to any program without regard to race, sex, color, religion, creed, national origin or ancestry, age, marital status, sexual orientation, disability or Vietnam-era veteran status.

Those interested in graduate studies at the UM-D campus should contact the Graduate Program Advisor of the program of interest to request an application. Addresses and phone numbers for each program can be found in a preceding section and in each school/college section of this Catalog. General information about all graduate programs offered can be requested by contacting the Graduate Studies Office, University of Michigan-Dearborn, 4901 Evergreen Road, 1080 Administration Building, Dearborn, Michigan 48128-2406.

Application packages contain an application form for admission, instructions concerning admissions and general information about UM-D.

International students can obtain application information at: http://www.rackham.umich.edu/Admis/appadm.html#Minimum. Affidavits of Financial Support for International Students requesting an F-1 or J-1 visa status can be obtained at: http://www.rackham.umich.edu/Admis/rackhamalt.html.

**English Language Requirements for Admission**

All graduate students are required to have high competence in English for admission. For students whose native language is not English, competence may be demonstrated by 1) possession of a baccalaureate from an accredited institution of higher learning in the U.S. or other English-speaking countries where the majority of instruction is in English or 2) by successful completion of a test of English proficiency approved by the specific graduate program. Most graduate programs accept the Test of English as a Foreign Language (TOEFL) or the Michigan English Language Assessment Battery (MELAB). The minimum score generally required for admission is 560 on the paper-based TOEFL or 220 on the computer-based TOEFL or 80 on the MELAB. In addition, re-evaluation of English proficiency may be required once a student is admitted.

For testing information and registration materials, please contact:

**TOEFL**
PO Box 6151
Princeton, NJ 08541, U.S.A.
609-771-7600
Website: http://www.toefl.org
Email: toefl@ets.org

**MELAB**
English Language Institute, TCD
3020 North University Building
Types of Admission

Four types of admission are offered: Regular, Conditional, Probationary and Not a Candidate for Degree (NCFD). All four types apply to Rackham affiliated programs and combinations of these are offered in non-Rackham programs. Consult the specific graduate program for details.

Regular

Applicants who satisfy all admission requirements of Rackham and the department or program of specialization to which they have applied will be granted regular admission. They must have on file an official transcript (i.e., one bearing the official seal of the school and the Registrar’s signature) indicating award of the bachelor's degree or equivalent.

Conditional

Applicants whose admission status is contingent upon satisfaction of one or more of the following requirements will be granted conditional admission.

Students who have not submitted an official transcript with the undergraduate degree posted. Students in UM-D only programs must have an official copy of their transcript on file in their graduate program office. Students in Rackham affiliated programs must have an official copy of their transcript sent to the Graduate Admissions Office, 114 Rackham Building, Ann Arbor, MI 48109-1070. Failure to do so may affect a student’s ability to register.

Undergraduate students who have not completed requirements for a bachelor's degree at the time of admission. These students must submit an official transcript indicating satisfactory competition of all coursework and award of the bachelor's degree before enrollment. Exceptions are: 1) University of Michigan undergraduates within six credit hours of graduation. These students must submit a transcript upon completion of their first term; and 2) concurrent undergraduate/graduate students.

Students whose preparation is deficient. These students must complete prescribed courses with stated minimum grades in the number of terms specified by the graduate program admission officer.

Note: No degree milestones will be added to a student’s record for graduate work completed until all conditions have been removed.

Probationary

Applicants whose admission status is contingent upon earning a stated minimum grade average for the number of credit hours specified by the graduate program admission officer (which may include prescribed courses) will be granted probationary admission.

Not a Candidate for a Degree (NCFD)

NCFD admission may be granted to qualified students who wish to elect courses for graduate credit but who are not candidates for a degree. Examples are: professionals who seek to continue their development, students in good standing in another graduate school, people seeking to increase their knowledge or improve their professional skills, or those who wish to test their capabilities in a graduate setting.

There are two types of NCFD admissions, Departmental NCFD and Non-Rackham Guest. Applicants with NCFD status who have identified a field of interest should contact the appropriate department or program for review. Applicants for NCFD status who have not identified a field of interest will be referred to the Non-Rackham Guest program for review.

Courses elected by students in Departmental or Non-Rackham Guest NCFD status cannot be counted toward a degree unless the student receives regular admission and the graduate chair of the degree program determines that the courses are acceptable.

Departmental NCFD Admission. Applicants who are interested in NCFD status and who have identified a field of interest should contact the appropriate department or program. A Rackham application must be submitted for Rackham-affiliated programs and specific program applications for non-Rackham affiliated programs. The application will be forwarded to the department for review. If admitted, program advisers must approve course elections for these students. Continuing registration as a Departmental NCFD is subject to departmental policies and approval and subsequent consideration for admission to a degree program is contingent upon departmental policies and full review of credentials in competition with other degree applicants.

Non-Rackham Guest Admission. Minimum requirements for admission as a Non-Rackham Guest NCFD are a bachelor's degree and an undergraduate grade point average of at least a B (3.00). An application must be submitted for review by the Department or Program Chair. If admitted, written approval for each course elected must be obtained from the instructor. Applicants are limited to two courses in any one field during their status as a Non-Rackham Guest NCFD. For further registration, admission by a department or program is required.

Students continuing as Non-Rackham Guest NCFD may continue to register in that status provided the following conditions are met: they obtain approval to register from the department or program each term (registration in this status is unusual after two terms); they must maintain an average grade of at least a B (5.00); they do not register for a pattern of elections that indicates a field of specialization (usually not more than two course(s) in one field); and they obtain written approval of the instructor on an Election Authorization form for each course to be elected.

Program Admission for UM-D non-Rackham Programs

UM-D programs described in this section include: Master of Arts in Performance Improvement and Instructional Design, Master of Arts in Teaching, Master of Science in Science Education, Master of Science in Health Psychology, Master of Science in Clinical Health Psychology, Master of Public Policy, Master of Business Administration, Master of Science in Accounting and Master of Science in Finance.
Specific guidelines and requirements for admission to these programs are described in the following sections. Students should either consult the program descriptions for this information or contact the Graduate Studies Office 313-593-1494 or the program office.

In general, admission to UM-D non-Rackham programs requires a bachelor’s degree from an accredited institution. A completed application form together with the application fee and official transcripts from all universities attended. Programs frequently have additional requirements.

Program Admission for Rackham-Affiliated Programs


The application package contains an application form for admission, instructions concerning admissions, and general information about the University of Michigan campuses. International (non-U.S. citizen) students should request the special application package for International Students. Applications are also available by writing to the Mail Office, Horace H. Rackham School of Graduate Studies, University of Michigan, Ann Arbor, Michigan 48109-1070.

SPECIAL PROGRAM ADMISSION

Concurrent Undergraduate/Graduate Study (CUGS)

Students in the junior year of their undergraduate work whose academic accomplishments are exceptional may apply for admission to the Concurrent Undergraduate/Graduate Study (CUGS) program by contacting the appropriate graduate program advisor. This program provides students with the opportunity to work toward a graduate degree while fulfilling the remainder of the requirements for a bachelor’s degree. Information about the procedures to be followed for admission may be obtained from the graduate program office of the unit concerned. Note: not all graduate programs offer this program.

Michigan Intercollegiate Graduate Study

The Michigan Intercollegiate Graduate Study (MIGS) program creates exchange possibilities for graduate students currently enrolled in Michigan universities. Students in good standing at one institution (the home) may take advantage of course and research opportunities offered at another institution (the host), provided that such opportunities are not available on the home campus. Students in master’s or specialist degree programs may enroll for six hours at a host institution while doctoral students may enroll for up to nine hours. Inquiries regarding appropriate faculty contacts and administrative approval should be addressed to the Office of Registration and Records, 1169 University Center, 313-583-6500.

Visiting Scholar

Admission as a Visiting Scholar may be granted to qualified individuals who wish to study and conduct research at the University without earning academic credit. Visiting Scholar status may be granted to persons who have earned the degree Doctor of Philosophy or its equivalent or who hold the rank of Associate Professor or higher from an accredited university. Applicants for Visiting Scholar status are required to provide certification of at least one of these qualifications at the time of application. Special application forms are available at the graduate program office of the unit concerned.

Visiting Scholars may sit in on courses with the permission of the instructor, but no official records will be kept. The University requires that all Visiting Scholars have health insurance for themselves and their families. Health Service benefits and insurance are not an included privilege. International visiting/research scholars may purchase health insurance, or check on the adequacy of existing insurance at the International Center on the University of Michigan-Ann Arbor Campus upon arrival.

SPECIAL CASES

Second Master’s Degree

Admission to a master’s degree program in the same field of specialization and at the same level as one previously completed is possible only if the previous degree program was of substantially different character or was not accredited. Pursuit of a second master’s degree program in a new field of specialization is governed by the regulations for dual degree programs.

University Faculty Ineligible for Admission

Members of the faculty of the University of Michigan of professorial rank may not be admitted for graduate work for credit or receive a higher degree from the Rackham School of Graduate Studies. Exceptions to this rule will be granted only in unusual cases in which such enrollment is essential to the professional development of a faculty member. In such cases, faculty who enroll for graduate degrees or credit must do so with the knowledge and approval of their department or schools and of the Graduate Dean. Often it will be appropriate for the faculty who consider seeking degrees to enroll initially as NCFD students (Not a Candidate for a Degree) rather than as degree candidates. Exceptions to the rule will not be granted to faculty who wish to enroll in degree programs offered by their own department (or schools, if these are the equivalent units).

Change of Field

A change from one department or interdepartmental program to another requires full consideration by the new program’s admissions committee. The student must complete the Application for Modification of Status Form for Rackham-
affiliated programs or contact the appropriate program director for applicable policies for non-Rackham affiliated programs and submit the required forms to the graduate program office of the unit concerned. (An international student must supply documentation of additional funding if a change of field will result in an extension of the expected study period.) The student must also contact the new program directly for additional information about program content and supporting materials needed for the application (such as transcripts, GRE scores, letters of recommendation, portfolio, etc.). The deadline for submitting the required forms is the same as for new program applications. Students who have not enrolled in courses in the Graduate School or in Detached Study for 12 consecutive months before the term of proposed enrollment must apply for readmission to the graduate program of the unit concerned.

Change of Degree Level within a Field

To change from non-degree status (NCFD) to degree status within the same field of specialization, the student must submit a formal request using the Change of Degree Status Authorization form for Rackham-affiliated programs or individual program forms (contact the graduate program director of the applicable program for requirements). The student should also contact the program office directly for information about program content and supporting materials needed. An international student must supply documentation of additional funding if a change of degree status will result in an extension of the expected study period.

Post-Degree Program Admission

Both the School of Education and the College of Engineering and Computer Science offer post-baccalaureate programs. Prospective students should contact the school or college for application packages.

Programs Offered by The School Of Education

The School of Education offers degrees or certifications in the following three areas. For information regarding these programs and admission, refer to the School of Education section in this Catalog or telephone 313-593-5090 or write to the School of Education Student Services Office, 262 Fairlane Center, University of Michigan-Dearborn, 19000 Hubbard Drive, Dearborn, Michigan 48126-2638.

Certification Only (Elementary or Secondary)

This program is for those holding a bachelor's degree from an accredited college or university wishing to earn a Michigan Elementary or Secondary Provisional Teaching Certificate.

Professional Education Certification (Elementary or Secondary)

This program is for persons with an elementary or secondary provisional teaching certificate wishing to earn a Professional Education Certificate in a planned program.

Enhancement Program (Elementary or Secondary)

This program is for persons wishing to add a major, minor or an endorsement to their certificate.

Programs Offered by The College of Engineering and Computer Science

For information and admission to the programs below, contact the Engineering Professional Development (EPD) program coordinator at 313-593-4000.

Engineering Professional Development (EPD)

EPD, a component of the College of Engineering and Computer Science, offers an extensive range of non-credit, review, undergraduate and graduate course offerings for professionals who want to take useful, topical courses in order to update or enhance their engineering skills.

Non-Credit Opportunities

Primarily designed for the practicing engineer who is not interested in pursuing a post-baccalaureate professional or academic degree, the courses in this program do not carry academic credit. Instead, Continuing Educational Units (CEUs), which are nationally recognized units of measure, are awarded to students who successfully complete non-credit coursework. In addition to offering courses that have already been developed, training can be designed and customized to meet an organization's particular needs. Programming can be scheduled at the corporate site or on the UM-D campus.

Credit Opportunities

Providing there is sufficient interest, undergraduate and graduate engineering programs can be offered at the corporate location. These programs include: Electrical and Computer Engineering, Mechanical Engineering, Industrial and Systems Engineering, Computer and Information Science, Engineering Management, Manufacturing Systems Engineering, Information Systems Technology, Automotive Engineering and a dual MBA/Industrial Systems Engineering degree.

For further information, telephone the Engineering Professional Development program coordinator at 313-593-4000.

Certificate Programs

Several certificate programs are available for individuals wanting to develop expertise in a particular subject area by completing a series of advanced courses. These courses award graduate-level credit and provide students with the opportunity to complement an already acquired graduate degree, or apply the credits to one of the College of Engineering and Computer Science’s graduate degree programs. The program’s highly flexible structure allows the student to personalize a particular area of interest by selecting courses from several elective options. Current certificate program topics are: Software Engineering, Computer Aided Design and Manufacturing, Internal Combustion Engines, Structural Analysis and Design, Plastic and Composite Materials, Engineering Management, Quality Engineering, Intelligent Control, Vehicle Electronics, Control Systems, and Digital Signal Processing. In addition, other topic
areas will be developed as specified by the needs of the school’s corporate customers.

Organizational Learning Programs

Much of EPD’s organizational learning curricula has been created in association with research affiliates from MIT’s Society for Organizational Learning (SOL), other industry leaders and consultants, and EPD’s corporate partners. Programs are designed to help participants understand, practice, and apply the tools and concepts of organizational learning to the strategic and other work-related dilemmas that commonly plague individuals, work groups, and entire organizations. EPD currently has a non-credit program and a credit course on the topic of organizational learning. Other organizational learning topics will be developed and offered periodically to complement existing programs.

International Programs

In response to an increased demand for global educational programs and services, EPD supports the International Programs Office. The program assists non-U.S. engineers, scientists and business leaders with American methods of engineering, manufacturing, innovation, research, product development and management. Please contact the EPD office at 313-593-4000 for additional details.

Distance Learning

Several graduate programs, graduate certificate programs and many individual courses are now available via asynchronous distance learning technologies. All distance learning course instruction is provided by the same instructor as the face-to-face course using recordings of current lectures, and MS PowerPoint with audio synchronization. CECS uses Virtual Learning Tool (VLT) as the course management system for all distance learning courses. VLT provides opportunities for threaded discussions; virtual office hours with instructors through live chat and team project coordination. To preserve academic integrity, all examinations must be proctored.

Visit http://dln.engin.umd.umich.edu or call 313-593-4000 to find out more about this flexible and convenient course option.

Readmission

Most students who have not been enrolled in a master’s program for one year (12 months) must apply for readmission. Readmission is dependent upon program approval and availability of space and facilities for the term in which readmission is requested. Before readmission can be finalized for international students, proof of adequate funding is required in order to obtain the appropriate visa documents.

If a student withdrew for health reasons, readmission may be subject to satisfactory evidence that the condition has been remedied. If a student was on Probationary Admission, Academic Probation, or Extended Probation, that standing will continue in effect if he or she is readmitted, unless approval to remove or modify the status is granted by the program and the Graduate School. If a student was Required to Withdraw, readmission may be granted only following approval by the program and/or the Rackham School of Graduate Studies for programs affiliated with Rackham.

FINANCIAL AID

The goal of UM-D is that no qualified student shall be denied an education due to lack of the necessary funds. Students who believe that their resources are inadequate to meet reasonable educational expenses should request financial aid consideration and seek the advice of the Office of Financial Aid counseling staff in 1183 University Center or 313-593-5300.

Financial Assistance Available

Financial aid for graduate students consists of the following types of assistance: gift aid (scholarships, fellowships and other grants-in-aid from private sources), loans, and employment. With the exception of some scholarships, most financial assistance through the Office of Financial Aid is awarded on the basis of financial need and may include a combination of various types of aid mentioned above. Financial need is the difference between the amount of money the student and/or the student's family is expected to provide for an education and the cost of that education as determined by a uniformly applied analysis. Graduate students should contact their departments for possible stipends or fellowships.

Determining Eligibility

Most financial assistance awarded by the Office of Financial Aid is based upon financial need as determined by a careful review of the resources of the student and of the student's family. All students applying for financial assistance through the Office of Financial Aid must submit the Free Application for Federal Student Aid (FAFSA). The results of the FAFSA assist the staff in determining what the student and the student's family can reasonably be expected to contribute toward educational expenses. Financial need is determined by subtracting those resources, as determined by the Office of Financial Aid, from the appropriate student budget or estimated cost of attending the University.

Financial aid applicants must submit a FAFSA containing parental information unless the student meets the independent student guidelines as defined by federal regulation. Following is a definition of an independent student (any part of this definition is subject to change):

An independent student is an individual who meets one of the following criteria:

1) A student who is 24 years of age by December 31 of the first calendar year of the award year.
2) A student who is under age 24 will be considered dependent for financial aid purposes unless he or she:
   a) is an orphan or ward of the court;
   b) is currently serving on active duty (for other than training purposes) or an honorably discharged veteran of the U.S. Armed Forces;
   c) is a graduate or professional student;
   d) is a married student;
   e) is a student with legal dependents other than a spouse; and/or
   f) presents documentation to the Office of Financial Aid of other unusual circumstances demonstrating independence.
Application for Financial Aid

Most assistance is committed at a certain time of the year, so note carefully the dates below. These dates assume entrance for the fall semester.

1) Apply for admission. Students should contact their academic unit adviser or the Office of Graduate Studies, 313-593-1494 to ascertain application deadlines. Students may request admission materials by writing the University of Michigan-Dearborn, Office of Graduate Studies, 1121 Administration Building, Dearborn, Michigan 48128-2406.

2) Request a Personal Identification Number (PIN) from the U.S. Department of Education. PINs may be obtained at http://www.pin.ed.gov. This PIN will be used as the “electronic signature” when the Free Application for Federal Student Aid (FAFSA) is submitted online. The PIN may also be used to access the Student Aid Report (SAR), to make application corrections, to complete a renewal FAFSA in future years, to access Direct Loan account information online and to “electronically sign” a master promissory note.

3) Complete the FAFSA using the University of Michigan-Dearborn’s federal school code number: 002326. Students are encouraged to submit the FAFSA online at http://www.fafsa.ed.gov (using the PIN indicated in step 2 above). It is recommended that you print your application and Confirmation Page for your records. Alternately, a paper application may be used. Paper applications must be mailed to the Federal Processor. Submit either the online OR paper FAFSA, but not both.

To complete the FAFSA, students will need to use the appropriate Federal Income Tax Return (Form 1040, 1040A or 1040EZ). FAFSAs including authorized release to UM-D (via code 002326) and received in the office by April 1 will receive first priority consideration for funds (it is suggested that FAFSAs be filed by February 14 in order to be received in the office by April 1). Please note that applicants possessing a bachelor’s degree are not eligible for Pell Grant or other need-based gift aid funds.

4) Applications must be received prior to or while the student is enrolled at-least-1/2-time to allow processing time.

5) Students must enroll at least half time to be eligible for disbursement of financial aid funds (for the term). (Graduate: eight or more credit hours = full time; six to seven credit hours = three-fourths time and four to five credit hours = half-time.)

6) All correspondence and documents must include the student’s name and University of Michigan Identification number (UMID).

Priority Dates for Fall/Winter

April 1
Initial or Continuing Graduate Students and Transfer Graduate Students

April 2
Late applicants (consideration will be given depending on the availability of funds). Awards may not be made until after the term begins.

Scholarships and Gift-Aid for Graduate Students

There are three basic categories of financial aid: gift aid (scholarships, fellowships or other grants-in-aid), loans and work-study through the Office of Financial Aid. Scholarships, fellowships and other grants-in-aid as well as financial assistance through departmental employment, are often available to qualified graduate students. Such assistance may be available through the unit or academic department.

Graduate School Fellowship, Teaching or Research Assistantship Support

Recipients of these awards must be appointed or nominated by a member of the academic department in which the applicant is enrolled. The number of awards varies annually, as do the award amounts. The application, entitled “Application for Graduate School Fellowship, Teaching or Research Assistantship”, may be obtained from the academic unit. This application serves as the vehicle for obtaining consideration for all awards, fellowships, etc., administered by the unit or academic department.

Graduate Student Scholarships

The number of awards available each year is variable as is the amount of the stipend. Recipients are appointed by, or upon the nomination of, the departments in which the applicants are enrolled. Application forms for students who will be registered at the UM-D can be obtained from the academic unit.

UM-D Upperclass Scholarship Program (for Graduate Students)

Qualified graduate students who have completed a minimum of 6 credits in residence can apply for several university
scholarships at one time, using the University of Michigan- Dearborn Upperclass Scholarship Program application. This application becomes available each October at the Office of Financial Aid and the deadline is February 1, for the following academic year. The application is available each year between October 1 and January 31 at the Office of Financial Aid (1183 UC) or online at: http://www.umd.umich.edu/fa_scholarships_grad_students_um/

Please note: Additional opportunities for scholarship funding may be available from other sources and would require a separate application. See also the following list and/or check with your academic unit for additional scholarship information.

Center for the Education of Women Scholarships

Approximately 38 scholarships are awarded among the three University of Michigan campuses annually to qualified students who have had at least a 48-month interruption in their education and who are now enrolled in a degree program.

Hartmann Family Entrepreneurship Scholarship

This renewable scholarship is available to graduate and undergraduate students with an interest in entrepreneurial studies and business ownership. Graduate applicants must be Michigan residents and in good academic standing with a GPA of 5.0 or better. Please contact the School of Management at 313-593-5460 for additional information.

King/Chavez/Parks Future Faculty Program

This fellowship program is available to underrepresented minority students pursing a career in teaching. Qualified candidates may receive up to $15,000 over a two and one half-year period. It is imperative that recipients pursue teaching after receipt of funds.

This and other information regarding graduate level funding options may be obtained at http://www.umd.umich.edu/fa_grad_student_scholar.

Federal Loans

The following are programs offering loan assistance. Recipients of the loans must maintain at-least-1/2-time enrollment and make satisfactory academic progress toward their degree. An "Entrance Interview" may be required prior to disbursement of funds. An "Exit Interview" is required prior to leaving school.

Federal Perkins Loan

The Federal Perkins Loan is a low-interest (five percent) loan with preference given to students with exceptional need. The principle plus interest to new borrowers are repayable beginning nine months after graduation, leaving school, or failure to attend at least half-time. At the end of the nine-month grace period, the student must begin repaying the loan. (If he/she is not a new borrower, the grace period is six months.) Repayment may extend to a maximum of ten years depending on the amount borrowed. This loan program also has provisions for deferment or cancellation of loan payments.


Federal Direct Stafford Loan Program (FDSLBP)

There are two types of Direct Loans available to graduate students: the Federal Direct Stafford Loan (which is subsidized) and the Federal Direct Unsubsidized Stafford Loan. Both Direct Stafford Loans have the same deferment options and interest rates. The two differ in that the unsubsidized borrower is responsible for the interest payments at all times, while the subsidized borrower is not.

FDSLBP loans are available to graduate and professional students who meet federal eligibility criteria. All applicants are evaluated on the basis of financial need as determined by formal need analysis conducted by the Office of Financial Aid. The analysis considers educational costs and student resources including family contribution and other financial assistance. Borrowers must maintain at least half-time enrollment throughout the loan period.

The annual maximum amount a graduate student may borrow is $18,500 per academic year. The aggregate amount allowed for graduate or professional study is $138,500 (which includes any loans at the undergraduate level). The interest rate is set at a fixed rate of 6.8%. In addition, there is a small Origination Fee, which is deducted from the gross proceeds of the loan. Interested borrowers must submit a "complete" application for financial aid. The Office of Financial Aid will process the request. (A separate application is not required.)

For additional information, contact the Office of Financial Aid or visit the following website: http://studentaid.ed.gov/PORTALWebApp/students/english/index.jsp.

PLUS Loan for Graduate and Professional Degree Students

Graduate and professional students are now eligible to borrow under the Graduate PLUS Loan Program. Graduate and professional students may borrow up to the Cost of Attendance (minus all other estimated financial assistance). Conditions for the Graduate PLUS Loan differ from the Sub/Unsub Federal Direct Loans and most closely mirror the conditions of the Parent PLUS Loan. Graduate PLUS Loan borrowers: may not have an adverse credit history; initiate repayment on the date of the last disbursement; have a fixed interest rate of 8.5%; and must have applied for their maximum eligibility via the Federal Direct Loans (Sub- and Unsub-). For additional information, contact the Office of Financial Aid or visit the following website:
Alternative Loans

Alternative loans are non-federal educational loans normally provided by private lenders who require a credit evaluation before approval. Alternative loans are funded strictly through private sources and receive no funding from the Federal government.

While alternative loans are considered educational loans, they are not eligible for loan consolidation with Federal Stafford or Federal Perkins Loans. The student who borrows from both the Federal Stafford and alternative loans will have at least two monthly payments upon entering repayment.

Students who borrow from alternative loans do not need to complete a Free Application for Federal Student Aid (FAFSA) and loan limits are not tied to academic status attained (e.g., freshman, sophomore, junior or senior). Their own creditworthiness, the creditworthiness of their co-signers/borrowers, and generally the institutional Cost of Attendance define the borrowing limits.

The Office of Financial Aid encourages students who are eligible, to apply for the Federal Stafford Loan Program by completing a FAFSA before considering alternative loans. If an individual has concerns about whether or not he/she is eligible for a Federal Direct Loan, please contact the Office of Financial Aid at 313-593-5300.

Alternative loans can provide important supplemental or even primary funding for students. However, it is also important to remember that an informed consumer may be able to reduce the amount of interest and fees paid through a careful matching of loan product and student needs.

Student Employment

Eligibility for the following Federal and State funds is determined according to demonstration of need (based on the outcome of the FAFSA) and availability of funds. Unless otherwise stated, at minimum, eligibility requires adherence to Federal fund criteria, enrollment on an at-least-1/2-time basis and maintenance of the University’s Satisfactory Academic Progress (SAP) guidelines. Requirements are subject to change.

The following provide work experience while earning money for college expenses.

Federal Work-Study Program

Funded by the federal government, the Federal Work-Study Program is designed to provide employment opportunities for eligible students to help finance their college expenses. Preference for work-study is given to those who show financial need. The federal government may pay up to, but no more than, 75 percent of the student's wages and the employing department pays the remaining percentage. Students may work a maximum of 25 hours a week while in school. Job application should generally be made after completion of registration since class schedules are necessary to determine the hours students will be available to work. The Office of Career Services, 2149 University Center, facilitates the job placement effort.

Michigan Work-Study Program

The Michigan Work-Study Program is funded by the State of Michigan. It operates under the same format as the Federal Work-Study Program.

On-Campus Employment

Funded by UM-D. There are many part-time and temporary jobs available in the academic departments and in the support offices. Eligibility for Federal and/or State financial aid funds is not a factor for University employment. Students may contact the Office of Career Services to inquire about job availability.

Other Sources of Financial Aid

Other sources of financial assistance are available through governmental agencies such as Vocational Rehabilitation, Veterans Assistance, and Social Security. Students needing information on these programs should contact the nearest appropriate agency.

For additional information about financial aid programs or financial aid counseling, contact the Office of Financial Aid at 313-593-5300.

Satisfactory Academic Progress Policy for Graduate Students

All of the graduate programs at UM-D require enrolled students to maintain the highest academic standards. As a result, the Office of Financial Aid monitors graduate department postings of probation and suspension, and utilizes grade point average standards to assess a graduate student’s satisfactory academic progress through his/her program of study.

Qualitative measure of grade point average, while important, is not the only component of the standards of academic progress. The Office of Financial Aid reviews quantitative progress for graduate students to insure that they are completing a minimum of 67% of all classes attempted. For example, a student may enroll in four classes, complete only one class and earn an “A” in the one completed class. This student is not making adequate progress towards the degree.

The 67% completion rate insures the program of study will be completed in a timely manner. Reviews occur at the end of Fall and Winter terms. If a student fails to complete 67% of all residual graduate credits at the end of each term, s/he will be placed on probation for one term. During the probationary term, the student is eligible to receive financial aid. After the completion of the probationary term, if a minimum course completion rate of 67% has not been reached, the student will be suspended from financial aid eligibility.

All students who are suspended from financial aid eligibility are eligible to complete an appeal for reinstatement based on special or mitigating circumstances.
RESIDENCY REGULATIONS

Authority

The governing board at each university in Michigan has the authority to determine residency classification guidelines for admission and tuition purposes. Therefore, residency guidelines may vary from school to school and are independent of guidelines used by other state authorities to determine residency for purposes such as income and property tax liability, driving and voting. The following guidelines were approved by the University of Michigan’s Board of Regents to take effect Spring Term 1998 and to apply to students at all campuses of the University of Michigan. The guidelines are administered by the Residency Classification Office in the Office of the Registrar at the Ann Arbor campus, 1514 LSA Building, University of Michigan, 500 S. State Street, Ann Arbor, MI 48109-1382, telephone 734-764-1400.

Student’s Responsibilities and the Residency Application Process

It is the student’s responsibility to read the University Residency Classification Guidelines contained in this document and to apply for admission and register under the proper residency classification. It is also the student’s responsibility to file an Application for Resident Classification for an official determination of status. Students are encouraged to consult with staff in the Residency Classification Office if they have questions or need assistance.

The admissions offices at the various schools and colleges within the University perform the initial screening for residency classification. If a student indicates Michigan resident status on the admissions application and the admissions office questions that status, the student will be classified as a nonresident and notified of the need to file an application for Resident Classification with the Residency Classification Office. The fact that a student’s claim to residency for University purposes is questioned does not necessarily mean that he or she will be ineligible; it simply means that the student’s circumstances must be documented and reviewed by the Residency Classification Office. Failure on the part of admissions staff to question a student’s claim to resident eligibility does not relieve the student of the responsibility to apply and register under the proper residency classification. Furthermore, the University reserves the right to audit enrolled or prospective students at any time with regard to eligibility for resident classification and to reclassify students who are registered under an improper residency classification.

Until an Application for Resident Classification is filed and approved, a student who previously attended any campus of the University of Michigan as a nonresident will continue to be classified as a nonresident at all campuses.

Upon application for admission to any campus of the University, an individual who claims eligibility for resident classification must file an Application for Resident Classification for an official determination of status if any of the following circumstances apply:

- either parent is living out of state (applies if the individual is 24 years of age or younger)
- the individual has attended or graduated from an out-of-state high school (applies if the individual is 24 years of age or younger)
- the individual has attended or graduated from an out-of-state high school and has been involved in educational pursuits for the majority of time since graduation from high school
- the individual has had out of state employment or domicile with the last 3 years

The above list is not exhaustive. An individual is responsible for filing an Application for Resident Classification in any situation where the individual’s eligibility for residency under these Guidelines could be reasonably questioned.

Filing Deadlines

Students may apply for resident classification for any term in which they are enrolled or intend to enroll. The deadline dates for filing the Application for Resident Classification are the same for all University of Michigan schools, colleges and campuses. (For the On Job/On Campus program, filing deadlines are 30 calendar days after the first scheduled day of classes.) The following dates apply to the term for which residency is sought. If the deadline falls on a weekend, it will be extended to the next business day.

September 30 for Fall Term
January 31 for Winter Term
July 31 for Spring, Spring/Summer and Summer Terms

Applications must be received in the Residency Classification Office by 5 p.m. on the deadline date. Applicants who do not file by the deadline will be responsible for paying tuition at the nonresident rate. Exceptions will not be granted.

Documents Which Must be Included When Filing for Resident Classification

When filing an Application for Resident Classification, the following documentation must be included with the Application form:

- for all applicants: a copy of the driver's license of the applicant and of the person or persons upon whom the applicant is basing the claim to resident eligibility.
- for all applicants: copies of the front and signature pages of the most recent year's federal and state income tax returns and W2 forms for the applicant and the person or persons upon whom the applicant is basing the claim to resident eligibility.
- for applicants born outside the U.S.: verification of U.S. citizenship or visa status.
- for applicants who are dependents: (see Residency Classification Guideline B-1 below) copies of the front and signature pages of the parents' most recent year's federal and state income tax returns
- for applicants whose claim to eligibility for resident classification is based on permanent full-time employment for themselves, a parent, spouse or domestic
partner; a letter from the employer, written on letterhead (including phone number), stating the position, status and dates of employment. The letter should be accompanied by a copy of the most recent pay stub showing Michigan taxes being withheld.

Applicants are also responsible for providing any other documentation necessary to support their claim to resident eligibility. Additional documentation may be requested by the Residency Classification Office. All information will be kept confidential to the extent permitted by law.

Appeal Process

If an Application for Resident Classification is denied by the Residency Classification Office, the student may request that his or her file be reviewed by the University’s Residency Appeal Committee. The appeal request must be made in writing and must be received in the Residency Classification Office within 30 calendar days of the date on the denial letter. If the deadline falls on a weekend or University holiday, it will be extended to the next business day.

All contact with the Residency Appeal Committee must be in writing. Personal contact with a member of the Committee prior to the meeting could disqualify the member from participating in the decision. A student who wishes the Committee to consider additional information must submit the information to the Residency Classification Office, in writing, with the appeal request. The information will then be forwarded to the Residency Appeal Committee with the student’s file.

The student will receive a written decision from the Committee when the review is complete. Once the Residency Appeal Committee issues its decision there are no further appeals for the term covered by the application.

Misrepresentation and Falsification of Information

Applicants who provide false or misleading information or who intentionally omit relevant information in an application for admission, an application for resident classification or any other document relevant to residency eligibility may be subject to legal or disciplinary measures. Students improperly classified as residents based on this type of information will have their residency classification changed and may be retroactively charged nonresident tuition for the period of time they were improperly classified.

Residency Classification Guidelines

For University purposes, “domicile” is defined as the place where an individual intends his/her true, fixed and permanent home and principal establishment to be, and to which the individual intends to return whenever he or she is absent. These Guidelines are designed to explain how a student may demonstrate the required intent and establishment of a domicile in Michigan. An individual whose activities and circumstances, as documented to the University, demonstrate that he or she intends to be domiciled in Michigan and has, in fact, established a domicile in Michigan will be eligible for classification as a resident. An individual who presence in the state is based on activities or circumstances that are indeterminate or temporary, such as (but not limited to) educational pursuits, will be presumed not to be domiciled in Michigan and will be classified as a nonresident. The burden of proof is on the applicant to demonstrate with clear and convincing evidence that he or she is eligible for resident classification under these Guidelines.

These Guidelines describe situations that create presumptions of resident and nonresident status. The fact that a presumption of resident status may apply to a student does not mean that the student will automatically be classified as a resident or that the student is relieved of the responsibility for filing an Application for Resident Classification. (See the Student’s Responsibilities and the Residency Application Process at the beginning of this section.) To overcome a presumption of nonresident status, a student must file a residency application and document with clear and convincing evidence that a Michigan domicile has been established.

A. General Guidelines

1) Circumstances which may demonstrate permanent domicile

The following circumstances and activities, although not conclusive or exhaustive, may lend support to a claim to eligibility for resident classification:

- both parents (in the case of divorce, one parent) permanently domiciled in Michigan as demonstrated by permanent employment, establishment of a household and severance of out of state ties.
- applicant employed in Michigan in a full-time, permanent position provided that the applicant’s employment is the primary purpose for his or her presence in Michigan
- spouse or domestic partner employed in the state in a full-time permanent position provided that the employment of the spouse or partner is the primary purpose for the student’s presence in Michigan.

2) Circumstances which do not demonstrate permanent domicile

The circumstances and activities listed below are temporary or indeterminate and do not demonstrate permanent domicile:

- enrollment in high school, community college or university;
- participation in a medical residency program, fellowship or internship;
- employment that is temporary or short-term;
- military assignment;
- employment in a position normally held by a student;
- ownership of property
- presence of relatives (other than parents);
- possession of a Michigan driver’s license or voter’s registration;
- payment of Michigan income or property taxes;
- the applicant’s statement of intent to be domiciled in Michigan.

3) One Year Continuous Physical Presence

In cases where it is determined that an applicant has not demonstrated establishment of a domicile in Michigan as defined by these Guidelines, the University will require the applicant to document one year of continuous physical presence in the state as one of the criteria for determining eligibility for resident classification in any subsequent Application for Resident Classification. The year to be documented will be the one year immediately preceding the first day of classes of the term in question. The year of
continuous presence is never the only criterion used for determining resident eligibility, and in itself, will not qualify a student for resident status. If substantial and new information arises which changes the circumstances of a student’s presence in Michigan and which clearly demonstrates the establishment of a Michigan domicile, the student may be immediately eligible for resident classification prior to the passage of one year.

In documenting the year of continuous physical presence in Michigan, the applicant will be expected to show actual physical presence by means of enrollment, employment, in-person financial transactions, health care appointments, etc. Having a lease or permanent address in the state does not, in itself, qualify as physical presence. Short-term absences (summer vacation of 21 days or less, spring break and break between fall and winter term), in and of themselves, will not jeopardize compliance with the one-year requirement. In determining the effect of a short-term absence the nature of the absence will be assessed to determine whether it is contrary to an intent to be domiciled in Michigan. Absences from the state in excess or the time mentioned above or failure to document physical presence at the beginning and end of the year will be considered as noncompliance with the one-year continuous presence requirement.

B. Residency Presumptions in Particular Circumstances

The fact that a presumption of resident status may apply to a student does not mean that the student will automatically be classified as a resident or that the student is relieved of the responsibility for filing an Application for Resident Classification. (See The Student’s Responsibilities and the Residency Application Process.)

1. Dependent Students

For University residency classification purposes, a student is presumed to be a dependent of his or her parents if the student is 24 years of age or younger and (1) has been primarily involved in educational pursuits, or (2) has not been entirely financially self-supporting through employment.

a. Residents

i. Dependent Student — Parents in Michigan. A dependent student whose parents are, according to University Residency Classification Guidelines, domiciled in Michigan is presumed to be eligible for resident classification for University purposes as long as the student has not taken steps to establish a domicile outside of Michigan or any other action inconsistent with maintaining a domicile in Michigan.

ii. Dependent Student of Divorced Parents — One Parent in Michigan. A dependent student, whose parents are divorced, is presumed to be eligible for resident classification for University purposes if one parent is, according to University Residency Classification Guidelines, domiciled in Michigan. The student must not have taken steps to establish an independent domicile outside of Michigan or any other action inconsistent with maintaining a domicile in Michigan.

iii. Dependent Resident Student Whose Parents Leave Michigan. A student who is living in Michigan and who is, according to University Residency Classification Guidelines, permanently domiciled in Michigan does not lose resident status if the parents leave Michigan, provided: (1) that the student has completed at least the junior year of high school prior to the parents’ departure, (2) that the student remains in Michigan, enrolled full-time in high school or an institution of higher education, and (3) that the student has not taken steps to establish a domicile outside Michigan or any other action inconsistent with maintaining a domicile in Michigan.

b. Nonresidents

Dependent Student—Parents not in Michigan

A dependent student whose parents are domiciled outside the state of Michigan is presumed to be a nonresident for University purposes.

2. Michigan Residents and Absences from the State

Individuals who have been domiciled in Michigan according to University Residency Classification Guidelines immediately preceding certain types of absences from the state may retain their eligibility for resident classification under the conditions listed below.

a. One Year Absence

An individual who has been domiciled in Michigan immediately preceding an absence from the state of less than one year, may return to the University as a resident for admission and tuition purposes provided: (1) that the individual has maintained significant ties to the state during his or her absence and (2) that the individual severs out of state ties upon returning to Michigan.

b. Absence for Active Duty Military Service (Army, Navy, Air Force, Marines, Coast Guard), Missionary Work, Peace Corps, or Similar Philanthropic Work

An individual who is domiciled in Michigan at the time of entry into active military duty, missionary work, Peace Corps, or similar philanthropic work, does not lose eligibility for resident classification as long as he or she is on continuous active duty or in continuous service and continuously claims Michigan as the state of legal residence for income tax purposes. Dependent children of such an individual are also eligible for resident classification provided: 1) that they are coming to the University directly from high school or they have been continuously enrolled in college since graduating from high school, and 2) that they have not claimed residency for tuition purposes elsewhere.

c. Absence for Education or Training

An individual who is domiciled in Michigan immediately preceding an absence from the state for full-time enrollment in school of for a medical residency program, internship or fellowship, does not lose eligibility for resident classification provided: (1) that the individual has maintained significant ties to the state during his or her absence (e.g., parents still in the state, payment of state taxes, active business), and (2) that the individual has not claimed residency for tuition purposes elsewhere.

3. Resident Status of Immigrants and Aliens

Only persons who are entitled to reside permanently in the United States may be eligible for resident classification at the University. These individuals, like U.S. citizens, must still prove that they have established a Michigan domicile as defined in these Guidelines. Having the privilege of
remaining permanently in the United States, in itself, does not entitle a person to resident classification for University purposes. The Residency Classification Office will review the circumstances of the following classes if immigrants:

- Permanent Resident Aliens (must be fully processed and possess Permanent Resident Alien card or stamp in a passport verifying final approval by filing deadline for applicable term);
- Refugees (I-94 card must designate “Refugee”);
- A, E (primary), G and I visa holders* (*Based upon current law, these nonimmigrant visa classifications are the only ones that permit the visa holder to establish a domicile in the United States. The University Registrar shall update this list as changes occur in applicable law.)

**COST OF ATTENDANCE**

Each year, the Office of Financial Aid provides an estimated cost of attending UM-D for students interested in full-time enrollment. The estimated costs reflect a modest but adequate standard of living for the academic year. While there is some allowance for discretionary expenditures, there is no provision for costs not directly related to school attendance. Individuals should consult the following website for current information on estimated costs of living: http://www.umd.umich.edu/univ/finaid/.

Tuition and fees are subject to change without notice by action of the Board of Regents. For current tuition and fees, individuals should consult http://www.umd.umich.edu/dept/registration/.

**Student Fees and Fee Regulations**

These fees are subject to change at any time by the Regents of the University.

**Policies Governing Student Fees**

The Board of Regents shall determine the level of student fees (registration and tuition) and a schedule of such fees shall be published. All other student fees shall be fixed by the Campus Fee Committee. All fees are subject to change at any time by the Regents of the University.

**Time of Payment of Fees**

All fees are payable in accordance with regulations established by the university providing only that said regulations may not defer payment of these fees beyond the end of the term for which they are assessed.

**Exemption from Payment of Fees**

No exemption from the payment of fees shall be granted unless specifically approved in advance by a representative of the Fee Committee. Failure to fulfill financial obligations to the University may result in disciplinary action, including the withholding of degrees and transcripts.

**Application Fees**

A non-refundable fee will be required of each applicant for a degree or certificate program at UM-D. Please refer to the application packet available in each school’s office. Students who have paid the appropriate graduate application fee at another campus of the University will not be assessed a second fee.

**Dual Status Fees: Graduate and Undergraduate**

Seniors who are within six hours of completing the requirements for graduation with a bachelor’s degree and who have been admitted to a UM-D graduate program may, with both undergraduate and graduate advisers’ approval, register simultaneously in a UM-D undergraduate program and in a graduate program. The tuition fee of the graduate program will be assessed in such cases.

**Dual Enrollment Fees: On Two Campuses of The University**

A student electing courses at UM-D and at another campus of the University, by means of a Guest Admission, will pay the appropriate fees at each campus. The only exception is that the student will not be assessed fees totaling more than a full program fee at whichever campus may have the higher full program fee.

**Laboratory and/or Course Fees**

Students will be assessed a laboratory or course fee if they enroll in any of the courses so designated in the Schedule of Classes (e.g., “Lab fee $30.00”). Payment for these fees may be made in full at the Cashier’s Office after registration according to the deferred payment schedule (see Fee Payment Policy). The laboratory or course fee is refundable if the course is dropped prior to the beginning of the third week of classes in a full term, and prior to the beginning of the second week of classes in a half term. The procedure for obtaining a refund is described in the section “Change of Fees and Refunds.”

**Late Registration Fee**

A late registration fee of up to $45 will be assessed for anyone registering after the official add/drop period. It should be noted that students are not ordinarily permitted to register after the first two weeks of a full term and the first week of a half term.

In exceptional cases, however, a student might be permitted to enroll even after the first two weeks (and be charged a late fee) if the student has obtained the written approval of the dean (or a designated representative) of the college or school. Late registrants not pursuing a degree must have the approval of the Registrar as well as the approval of any instructors involved.

**Fees Included Within Tuition**

The fees listed in the “Tuition” section of this Catalog (registration and tuition) include a nominal charge for parking and other transportation-related services, the health referral
service to the Henry Ford Hospital-Fairlane Clinic, facilities debt service, and support for student activities and organizations. Fees are subject to approval by the Regents of the University and may be changed at any time.

**Fees for Graduate Proficiency Examination**

Fees for graduate proficiency examination will be assessed at 30% of the current graduate per credit hour tuition rate.

If the student cancels his/her exam registration at least 24 hours prior to the scheduled exam date, the examination fee, minus a $20.00 administrative charge, will be refunded to the student who registers but does not take the examination. For information, contact the appropriate graduate department.

**Tuition**

**Graduate and Professional Assessments**

Graduate students should obtain current tuition and fee information from the current Schedule of Classes or http://www.umd.umich.edu/dept/registration/tuition_fees.htm.

**Additional Assessments**

Course levels 500 and above in the College of Engineering and Computer Science and School of Management are assessed an additional amount per credit hour. For current fees, students should consult http://www.umd.umich.edu/dept/registration/tuition_fees.htm or the current Schedule of Classes.

**Technology Assessment**

Students are assessed a fee for technology. This fee varies by academic unit. For current fees, students should consult http://www.umd.umich.edu/dept/registration/tuition_fees.htm or the current Schedule of Classes.

**Change of Fees and Refunds**

When appropriate, a change of fee will be processed by the Office of the Registrar when a student submits a "Change of Course Elections Form" or "Withdrawal Form" which affects the fee previously assessed. Individuals are also advised to see "Change in Course Elections" in this Catalog.

**Adding**

A student who increases the number of hours elected will have a new fee assessment prepared by the Office of the Registrar that will indicate the appropriate fee to be paid.

**Dropping (for less than One-Month Mini Courses)**

A student may drop from a less than one-month mini-course on or before the first class meeting of such a course without financial penalty. Thereafter, full tuition will be assessed and academic record will reflect the symbol for withdrawal (W).

**Withdrawing (for Full, Half, and Four-Week Mini Courses)**

A student who withdraws from the UM-D is assessed as follows:

1) Students who withdraw prior to the first day of classes will be assessed the non-refundable registration fee.

2) Students who withdraw during the first week of a half term or mini-term, or during the first two weeks of a full term, will be assessed a $25 withdrawal fee as well as the non-refundable registration fee.

3) Students, who withdraw during the second week in a half term or mini-term or in the third through fourth week of a full term, will be charged 50% of the tuition assessed as well as the non-refundable registration fee. In addition, there is no reduction in lab/course fees or computer use fees.

4) Students who withdraw during the third through fourth week of a half term or the third week of a mini-term, or in the fifth through the eighth week of a full term, will be charged 75% of the tuition assessed as well as the non-refundable registration fee. In addition, there will be no reduction in lab/course fees or computer use fees.

5) Students withdrawing after the time periods indicated in 4) will be assessed full tuition and fees.

**Withdrawing (for less than One-Month Mini Courses)**

1) Students who withdraw from a less than one-month mini course before the first class meeting of such a course will be assessed the non-refundable registration fee.

2) Students who withdraw from a less than one-month mini course on the first day of class will be assessed a $25 withdrawal fee as well as the non-refundable registration fee.

3) Students who withdraw from a less than one-month mini course on the second day of class will be assessed 75% of the tuition assessed as well as the non-refundable registration fee.

4) Students who withdraw from a less than one-month mini course on the third day of class will be assessed full tuition and fees.

5) Students who withdraw from a less than one-month mini course on the fourth day of class will be assessed full tuition and fees.

**Special Fee Adjustments**

The Registrar and the Provost for Academic Affairs are authorized to make adjustments in the application of the policy stated above when, in their judgment, unusual circumstances
warrant such action. Circumstances that may warrant special consideration include the death or serious illness of the student. Fee Adjustment petitions, and supporting documentation must be submitted to the Office of the Registrar, 1169 University Center, either in person or by mail. It is the responsibility of the student to make sure that required documents be submitted.

Except in rare and unusual circumstances, petitions will not be accepted after the last day of classes for the term concerned. Petitions will not be accepted once an account has been turned over for collection.

REGISTRATION

Registration Information

The Office of Registration and Records is responsible for coordinating, conducting and evaluating the registration of students; establishing, monitoring and maintaining student academic folders and records; preparing, distributing, collecting and handling Class Lists and Instructor Grade Reports; preparing and providing student transcript copies and enrollment certifications; and accepting, reviewing and verifying Degrees, Honors and Certificates granted. The office also has the responsibility for preparing and verifying enrollment data and reports for local, state, and federal agencies and organizations. In addition, the Office of Registration and Records is responsible for Veterans Affairs and other on-campus and off-campus programs.

For current registration information, students should consult the Schedule of Classes for the term they are enrolling or they should visit the following website: http://www.umd.umich.edu/dept/registration/registration_information.htm.

Academic Policies and Procedures

Absence from Final Examinations

A student who is unavoidably absent from a final examination may be granted the privilege of making up the examination within five weeks after the closing date of the term involved. If granted this privilege, a grade of X will be recorded. Failure to take the examination within the specified time, or the denial of this privilege by the instructor, will result in a grade of E for the final grade. In extenuating circumstances an extension beyond the stated period may be requested by means of a petition which has been endorsed by the instructor. However, such arrangements for completing the work must be made within the above five-week period. The grade of X will automatically be treated as XF in computing the student's grade point average if the Supplementary Grade Report is not submitted by the end of the five-week period.

Attendance (Instructor-Initiated Drops)

A student who is absent for all of the class meetings of a course during the first week of any term and does not inform the instructor or the instructor's department of his/her intention to continue as a class member may be required, by the instructor, to drop the course. The student is responsible for processing all paperwork to officially drop this or any course. Please consult section "Changes in Course Elections" for procedures on how to drop courses.

Changes in Course Elections: Adding, Dropping, and Withdrawing

Changes in course elections include 1) dropping a course, 2) adding a course, 3) substituting another course for one already elected, 4) withdrawing (discontinuing) all courses. Students enrolled in the ALL* academic units will process their drop/add slips and withdrawal forms, with appropriate signatures, ONLINE at the Office of the Registrar. Individuals should also consult “Change of Fees and Refunds” in this Catalog. Students should consult the Schedule of Classes for the term of registration to learn the deadline dates for these changes.

Adding a Course

A student may add courses during the first two weeks of a full term or the first week of a half term or mini-term via Web or at the Office of the Registrar. No signatures are required to add open courses. Forms for the purpose of adding a course that is filled may be picked up from the unit office in which the student is enrolled or the Office of the Registrar and must be returned to the Office of the Registrar. Any exceptions for adding courses must be approved by the Dean (or his or her designee) of the unit in which the student is enrolled.

Dropping a Course

A student may drop courses during the first two weeks of a full term or the first week of a half term or mini-term without the signature(s) of the instructor(s) involved except in the College of Engineering and Computer Science and the School of Management. Students in the College of Engineering and Computer Science must have their advisor's signature. Students in the School of Management must have the signature(s) of the instructor(s) involved. Students may drop via Web or at the Office of the Registrar.

Courses may be dropped during the third through the ninth week of classes in a full term, and during the second through the fourth week of classes in a half term, with the approval and signature(s) of the instructor(s) involved except in the College of Engineering and Computer Science. Students in the College of Engineering and Computer Science must also have the signature of their advisor. Forms for the purpose of dropping a course may be picked up from the unit office in which the student is enrolled or the Office of the Registrar and must be returned to the Office of the Registrar. The effective date of the drop is the date the drop form is received and signed in the Office of the Registrar. Approval to drop courses under circumstances other than stated above will require the approval of the Academic Standards Committee of the unit in which the student is enrolled.

Withdrawing from Courses

A student may discontinue all of his/her courses (for the term) through the last day of classes (for the term) by withdrawing from the term. This process is initiated at the unit office or the Office of the Registrar (1169 University Center). The completed form must be presented to the Office of the Registrar for processing along with the I.D. card. The effective date of the withdrawal is the date the withdrawal form is received and signed in the Office of the Registrar.

If a student drops a course or withdraws entirely during the first two weeks of classes in a full term or the first week of classes in a half term or mini-term, no academic record of the
student's brief enrollment will be recorded. Beyond these deadlines, the grade of W will appear on the transcript.

A student enrolled in the College of Engineering and Computer Science must have the signature of the unit recorder from the first day of classes to the last day of classes.

Permission to withdraw under circumstances other than stated above will require the approval of the Academic Standards Committee of the unit in which the student is enrolled.

Grading System

The method of grading graduate students is the letter grade system (A, B, C, D, E). Courses in which grades of D or E are earned cannot be used in fulfillment of degree requirements.

Grades of + and - may be given to graduate students whenever such fineness of discrimination is possible. These letter grades are translated into honor points for each hour of credit in a course as follows:

- \( A+ = 9 \)
- \( B+ = 6 \)
- \( D = 2 \)
- \( E = 0 \)

The honor points earned for a course are calculated by multiplying the number of credit hours for which the course was elected by the number of honor points earned on the above grading scale (e.g., if a grade of B+ is earned for a 3 credit hour course, the total number of honor points for the course is 3 credit hours times 6, or 18 honor points).

Additional symbols used in the grade reporting system are: F, failed (pass-fail option election); I, incomplete; NR, grade not reported; P, passed (pass-fail option election); S, satisfactory (courses graded S/E only); NC, No Credit; VI, audit; UE, unearned fail (for student who never attended, or stopped attending and did not officially drop); W, withdrawal; X, absent from final examination; Y, indicates the course extends beyond the term.

For more information, refer to the individual unit section in this Catalog.

Repeating Courses

Courses in which a grade of C+, C or C- has been received may be repeated by students in the graduate programs. Grades and honor points for the original course and the repeated course will both appear on the student's transcript and be used in computing the student's grade point average; however, additional credit toward program will not be awarded for the repeated course. Courses in which grades of B- or above have been received may not be repeated by students enrolled in the graduate programs.

Change of Grades

The grade that an instructor records on the final grade sheet and which appears on the student's subsequent transcript is assumed to be final; that is, the instructor's official evaluation of all of a student's performance and work completed by the official end of the term (the last day of the final examination week).

Recognizing that mistakes can be made, UM-D permits a student to ask an instructor for a review of a grade within the four-month period immediately following the end of the term involved. After a four-month period has passed, reviews cannot be initiated and grades cannot be changed. Such a review is entirely separate and distinct from the circumstances involving an I (Incomplete), X (for a missed final examination) or a Y (used only in a few special kinds of courses).

Incomplete Coursework

A student whose coursework for the term (other than final examination) is incomplete in a minor way may, upon completion and approval of the I Contract Form, be granted the privilege of completing the work within a five-week period for the College of Engineering and Computer Science or the School of Management, and a four-month period for the College of Arts, Sciences, and Letters and School of Education beginning on the first day of classes of the immediately following term. If granted this privilege, a grade of I will be recorded. Failure to complete the required work within the specified time, or the denial of this privilege by the instructor, will result in a grade of E for the final grade. In extenuating circumstances an extension beyond the stated period may be requested by means of a petition that has been endorsed by the instructor and approved by the Academic Standards Committee. However, such arrangements for completing the work must be made within the above stipulated time period. Failure to complete the required work within the specified time will result in a grade of I being automatically treated as an IE and counted in the student's grade point average. The I will remain on the transcript even after the official final grade is assigned.

Final Transcripts

Once the final transcript has been prepared and the diploma accepted by the student, his/her academic file is closed, and no changes can be made in it for any reason.

Students wishing more detailed information about final grades should make that request in the office of their instructional unit.

Credit by Examination

UM-D will acknowledge proficiencies gained by students outside the bounds of traditional courses if such proficiency is certified by recognized examinations. The School of Management provides an opportunity for its graduate students to demonstrate proficiency by examination. Students in the Master of Business Administration program may earn up to six hours of credit in required hours. For information and instructions, contact the School of Management, 19000 Hubbard Drive, Fairlane Center South, Dearborn, MI 48126-2638, telephone 313-593-5460.

Enrollment Certification

The following scale is used when verifying graduate enrollment status at UM-D:

- **Full-Time Student**: 8 or more hours
- **Three-Quarter Time**: 6 to 7 hours
- **Half-Time Student**: 4 to 5 hours
- **Part-Time Student**: 3 or fewer hours

Requests for Transcripts

Requests for copies of UM-D transcripts should be made at the Office of the Registration and Records or via letter by writing the University of Michigan-Dearborn, Transcripts, 1169 University Center, 4901 Evergreen Road, Dearborn, Michigan
48128-2406. Requests may also be faxed to 313-593-5697. For information on how to order transcripts, please call 313-583-6500.

A transcript order is a request for the student's complete UM-D record. If the student indicates that he/she has also taken work through the Extension Service or at other campuses of the University, the Office of the Registrar will forward the order to the appropriate offices that will send copies to the address indicated on the order. There is no charge for transcripts. Generally, up to five (5) working days are allowed for processing a UM-D transcript. Certain circumstances may necessitate an extended processing time.

Graduation, Application for Diploma

Each candidate for a degree must file an Application for Diploma in the student's unit office at the beginning of the term in which the student expects to complete the requirements for degree. The Schedule of Classes should be consulted for specific deadlines. Applications will not be accepted after the published deadlines. If an application for a diploma was filed for a previous deadlines. Applications will not be accepted after the published deadlines. If an application for a diploma was filed for a previous graduation period in which the student did not graduate, a new application is necessary. Degrees are granted at the end of the fall, winter, and summer terms, even though commencement exercises are held only in April/May and December.

Veterans Affairs

All students who are eligible for, and elect to receive, education and training benefits while attending the UM-D, may address inquiries for information to the Veterans Affairs Certification Coordinator, 1169 University Center, Dearborn, Michigan 48128-2406.

For information regarding the standards of academic performance and academic conduct, the grading system, and readmission, refer to the individual unit section for policies.

The UM-D Veterans Certification Coordinator will notify the Veterans Administration when: 1) a student fails to come off probation at the end of two semesters, 2) there is any change in student elections, or 3) enrollment is discontinued.

It is the responsibility of the student to notify the Office of the Registrar each semester of eligibility and inform the UM-D liaison of any changes that may affect benefits.

Academic Standing

(School of Management and non-Rackham program students should refer to the individual unit section in this Catalog.)

To maintain satisfactory academic standing, a student must have a minimum cumulative graduate grade point average (GPA) of B (5.0) for all graduate courses taken for credit and applied toward the degree program in which the student is enrolled.

A student whose cumulative grade point average falls below a B (5.0) in a given term or half term will be placed on probation for the following term or half term, or may be denied permission to re-register. A student whose cumulative grade point average falls below a B average for two successive terms or half terms may, upon the recommendation of his or her graduate chair and the consent of the Graduate School, be granted a final opportunity to correct the scholastic and/or academic deficiency. A student whose cumulative grade point average falls below a B average for three successive terms or half terms may not be permitted to enroll again, and may be required to withdraw from the University.

In addition to the minimum cumulative standards, degree programs may require that students achieve certain minimum grades in the overall program of study and/or in particular courses. A student who is not making satisfactory progress in his or her program, or who has failed to demonstrate an ability to succeed in his or her plan of studies, may be required to withdraw from the University.

A student whose cumulative grade point average is below a B (5.0) cannot be recommended for a degree or certificate, and may be limited in the transfer of credit hours.

Modification of the Conditions of Academic Standing or Discipline

University actions, in response to a student's academic deficiencies, that result in 1) admitting a student on probationary status, 2) placing a continuing student on probation, 3) requiring a student to withdraw from the University, or 4) not recommending a student for a degree or certificate are "conditions of academic standing or discipline" and affect the student's academic status. Under certain special circumstances the actions described above may be waived, by petition, to modify the conditions of academic standing or discipline as follows:

If a student who was not in good academic standing when last enrolled in the Graduate School wishes to be readmitted, or change field or degree level, he or she must petition the department or program and the Graduate School for modification of the conditions of academic standing or discipline. The petition should provide the reasons for previous poor performance, explain how those conditions have changed, and present specific plans for future study. The petition must be approved by the department or program and the Graduate School before modification of academic standing or discipline can be granted. Under such circumstances, approval of modification of academic standing or discipline is granted only in the most exceptional cases.

For additional information, refer to the individual unit section in this Catalog.

Satisfactory Academic Progress

The UM-D's satisfactory academic progress policy establishes standards of progress toward a degree. Recipients of Title IV funds must achieve and maintain these standards of progress in order to continue to receive funding from the Office of Financial Aid. These standards are consistent with University goals and philosophies, satisfy federal and state regulations, and at the same time are sensitive to the needs of all students. These standards are also imposed on all programs supported by the UM-D's General Fund and awarded through the Office of Financial Aid.

The standards of academic progress measure a student’s academic program both qualitatively and quantitatively. The qualitative measure assesses the student’s cumulative grade point average (GPA). Federal law specifies that students must, in general, have a B (5.0) graduate cumulative average or its equivalent or have an academic standing consistent with the requirements for graduation in their program of study. The UM-D generally requires a minimum of 5.0 graduate cumulative GPA for graduation (however, since the minimum GPA requirement varies from program to program, please consult the academic unit advisers for program-specific requirements).
Grade point average alone is not a sufficient measure of progress. To accurately measure a student’s progress in a program of study, standards of academic progress must use a quantitative measure as well as a qualitative measure. To quantify academic progress, education institution must set a maximum timeframe in which a student is expected to finish the program. To insure quantitative progress at the University, students are expected to complete a minimum of 67% of all attempted courses annually. Students fulfilling this minimum rate of course completion, and following departmental recommendations on course selection, will complete their degree within the maximum timeframe allowed.

Students at UM-D are not required to attend full time in order to achieve satisfactory academic progress or receive financial aid (however, a student must be enrolled at least half time, a minimum of four credit hours for graduate students, to qualify for financial aid disbursements). Academic records are reviewed at least annually to assess academic progress and may include terms when financial aid was not received. Students who are terminated from receiving financial aid may appeal the decision to the Director of Financial Aid. For additional information, please request a copy of the brochure Standards of Satisfactory Academic Progress from the Office of Financial Aid.

Maintaining Good Standing

All academic units are expected to review the student's academic progress at the end of each term. If a student does not meet the unit’s written standards, the student will not be allowed to register. However, the strict use of a 5.0 grade point average (GPA) as the sole criterion may not be appropriate in all situations, since certain cases may require that other criteria be used.

STUDENT SUPPORT SERVICES

Affirmative Action Coordinator

The Affirmative Action Coordinator helps to ensure that the campus promotes equal opportunity for all students, faculty and staff, including racial, ethnic and religious minorities, women, the handicapped, the elderly, Vietnam-era veterans, and gays and lesbians. The Coordinator oversees compliance with Regental by-laws, Presidential policy and legislation regarding nondiscrimination/equal opportunity/affirmative action and provides information and pre-grievance counseling to faculty, staff, and students with questions or complaints. The office of the Coordinator is located in 1020 Administration Building, telephone 313-593-5190.

Ombuds Services

Ombuds Services provides members of the campus community with individual, informal assistance in resolving concerns and addressing issues regarding students’ rights and responsibilities. Ombuds Services is an impartial resource for obtaining:

- Information about university policies;
- Guidance in following university procedures;
- Assistance in resolving concerns and critical situations;
- Help in cutting red tape and in obtaining appropriate and timely answers and information;
- Opportunities to discuss or question university actions;
- Active support for UM-D’s commitment to ensure that students are treated with fundamental fairness and personal dignity.

Ombuds Services is located in 1060 Administration Building, telephone 313-593-5440, email ombuds-office@umd.umich.edu.

Counseling and Support Services

The mission of Counseling and Support Services (C&SS) is to resolve barriers to the learning process and serve as a vital link in the UM-D “safety net”. CSS services advance the academic mission of the University by enhancing personal development, problem solving, and communication. Counseling and Support Services is located in 2157 University Center, telephone 313-593-5430.

Personal Counseling

C&SS provides short-term therapy (up to 12 sessions per academic year) to all registered UM-D students. There is no fee for counseling. Counseling is provided by licensed psychologists. Note: C&SS does not prescribe medication. Counseling begins with an assessment of the individual’s concerns and leads to a recommendation which may include individual, couples or group counseling, or referral to a specialist.

Scheduling an Appointment

Telephone or stop by the C&SS Office at 2157 University Center 313-593-5430. The first step in arranging an appointment will be to complete a questionnaire, and then an appointment will be scheduled. Please inform the receptionist if your concern is urgent.

Confidentiality

Use of counseling and personal information shared with C&SS counselors is confidential in accordance with Michigan Privileged Communication Statutes. There are limits or exceptions identified in these statues. No information is released without a client’s written permission and no information is entered into a student’s college record.

Consultation Services

Consultation Services include faculty and staff support in assisting students in distress, career assessment services and substance use assessment.

Career Assessment Services

This service is for students who are undecided or who want to change their majors and/or career plans and would like some assistance. After an initial interview, a series of personality and career tests may be used to provide students with feedback on work and career preferences that match their interests, values and personality type.
Outreach Programs

These programs emphasize personal development topics. Many are designed to respond to the diversity among students and reach students who are less likely to make use of traditional counseling services. To request a program, contact the C&SS Office at 313-593-5430 or email at: counseling@umd.umich.edu.

Training/Internship Program

Currently, the C&SS training program (clinical or counseling psychology and community counseling) is only available to graduate students. Please contact the Director, for more information.

Disability Resource Services (DRS)

C&SS offers aid to differently-abled individuals seeking the opportunity for further learning. Some of the services provided, as deemed appropriate after departmental review, are: 1) early registration; 2) course/classroom accommodations; 3) tutorial referral and mentoring services; 4) assistance while using the Computer Center; 5) note-taking; and 6) referral for auxiliary services such as interpreters for the deaf and the taping of texts for the blind. DRS staff train students to use the Adaptive Equipment Lab in the Mardigian Library. Please contact C&SS about any questions.

Student Health Insurance

A student group health insurance policy is available to any enrolled student. Information and application forms are available at C&SS. It is recommended that all students have health insurance coverage. All international students are required to have such coverage. Students applying for financial aid should be aware that the cost of health insurance could be included as a budget expense.

Housing and Medical Referral Service

Listings are provided and a telephone is made available to call local landlords. The Housing Coordinator provides individual assistance in locating housing in the area. For further information, contact C&SS. Medical Referral Service is also available to students. Students are referred to the Henry Ford-Fairlane facility for low-cost medical service.

Career Services

Career Services is a resource for students and alumni pursuing guidance and support in the areas of career exploration, career development, employment preparation and employment leads. A wide range of services are available; students and alumni are encouraged to schedule an appointment to discuss career plans or job search options.

Overall services include assistance with conducting a job search such as: individualized career counseling, 48-hour critique service for job search correspondence, developmental workshops, a career resource library, an online career guidance system, a Career Planner and Employment Guide, and video mock interview sessions.

Career Services has programs and events to assist in the job search process. Career Prep Week and Career Week are held annually on campus to link employers with graduates and alumni. There are additional career fairs throughout the academic year, which are promoted and coordinated by Career Services. Campus Recruiting provides opportunities to interview with recruiters from a variety of employers. Employer Information Sessions allow for a comprehensive overview of the employment opportunities, the application process and the corporate culture of individual companies. The Direct Referral program provides employers, with resumes of students and alumni, based on candidate credentials as outlined by the recruiter. Full-time, part-time and seasonal job listings are also available online to students.

Career Services is located in 2149 University Center, call 313-593-5020 or www.umd.umich.edu/careerservices/.

International Office

The International Office provides the following services to students, scholars, and visiting professors:

- Pre-admissions assistance
- Pre-arrival assistance
- Issuance of DS-2019 or I-20
- Referral for housing and transportation needs
- Registration
- Cross-cultural and adjustment counseling and workshops
- Personal counseling referral
- Compliance advising
- Assistance in understanding federal laws and regulations regarding temporary visa holders
- Liaison with university services
- Advising for international students including employment and travel
- Referrals to community services and resources
- Assistance with emergency situations for international students
- Provision of accurate and timely information to the government database (SEVIS) to maintain university compliance
- Maintain files as dictated by USCIS (United States Customs and Immigration Services).

The International Office also provides assistance in international exchange programs and study abroad programs including Fulbright Student Programs.

The International Office is located at 2106 University Center. For more information contact the Office in person, by telephone 313-593-6600, by fax 313-593-5697 or email at international@umd.umich.edu.

Women's Resource Center

The Women's Resource Center, located in 2174 University Center, provides a lounge area for study, socializing and small meetings. Information about many of the programs and resources available in the Detroit metropolitan area can also be obtained here. The Center has an informative lending library of books, journals, articles and Fact Sheets on issues of interest to women.

The Center sponsors a variety of workshops, speakers and programs and provides support to student organizations that help women. Educational and career counseling, social services and help in organizing special interest groups are offered both directly and through referral. For more information about these services and
programs, contact the Women’s Resource Center, 313-583-6445 or visit http://www.umd.umich.edu/womenscenter/.

Mentoring

The student mentoring network provides peer support to students who would like to meet a fellow student already familiar with the campus. This program has proven especially beneficial to nontraditional students making the transition back to academia and to international students acclimating to a new culture.

GENERAL CAMPUS SERVICES

Bookstore

Located in the University Center, the Barnes & Noble Bookstore has a complete line of textbooks, trade and reference books, periodicals (newspapers, magazines), and hardcover and paperback books (including best sellers). The store also maintains a complete line of supplies and study aids as well as UM and UM-D souvenirs and sportswear. American Express, Discover, MasterCard and VISA are accepted. Normal bookstore hours: 8:30 am to 6:30 pm (Monday-Tuesday); 8:30 am to 6:00 pm (Wednesday-Thursday); 8:30 am to 4:00 pm on Friday.

NOTE: Special hours are in effect at the start of each semester and during term breaks and holiday periods.

For additional information, telephone 313-593-5551 or visit the website at http://umd.bncollege.com/.

Campus Safety and Security

The Campus Safety and Security Department, located in the Campus Support Services building, provides 24-hour emergency, safety and security services. Services offered include: crime prevention, emergency assistance, health/safety/crime reporting, escort service, patrol of buildings, grounds and parking lots, and administration of the Lost & Found Program, Occupational Safety and Environmental Health Programs and Services, Fire Prevention and Safety Programs.

For immediate response to any campus emergency, DIAL 911. There are 47 direct-dial emergency phones strategically placed around campus at the flagpoles, in the parking lots, and in each of the buildings. There are three phones in Fairlane Center South (near the information desk and two in the middle of the building).

For emergency medical assistance, DIAL 911. Transportation from campus to Henry Ford Hospital-Fairlane for minor injuries may be provided.

For additional information telephone 313-593-5333.

Copy Express

The UM-D Copy Express offers copy services which include color copying, laminating, document binding, resumé printing, paper purchase, transparencies, banner making and other services. A variety of special paper stock, envelopes and report covers are available for purchase. The Copy Express offers faxing services and provides computer access for printing color documents from 3.5” floppy disks, compact disks, or flash drives. Files can be sent via email for banners and documents. We offer a 20% discount on resumé printing for students, faculty and staff. We also have a convenient fax service available at a reasonable price. Hours of operation are Monday-Thursday from 8:00 am until 5:00 pm and Friday from 8:00 am until 4:00 pm. For additional information please call 313-593-5576.

Facsimile Service

Fax service is available in the Copy Express in the University Center. For a nominal charge, all faculty, staff and students may send and/or receive fax messages. The fax number is 313-593-5604. For additional information, telephone 313-593-5576.

Food Service

McKinley Café

McKinley Café is located in the University Center and features a variety of fast food services including: Bene Pizzeria (offering pizza), Express (sandwiches, salads), Grill Works (burgers, fries, chicken fingers, etc), Java City (hot beverages, bagels, muffins), Subway (hot and cold sandwiches), and desserts. Current information on food services and hours can be obtained by consulting 6.

Dining

The Pool restaurant, located in the Henry Ford Estate, serves moderately priced luncheons featuring homemade soups, quiche, a variety of hot and cold sandwiches, and daily specials. It is open Tuesday through Friday, from 11:00 am to 2:00 pm. Students, faculty, staff and the general public are welcome. For reservations and other information call 313-436-9196.

Refreshments

Vending machines provide snacks in various locations throughout the campus.

Information Technology Services

General Purpose Labs: 1140 CW 313-593-5073 and 1070 ML (Campus dialing only: x54992)

Help Desk: 313-593-HELP (4357) or helpdesk@umd.umich.edu

Internet Address: http://www.its.umd.umich.edu

Information Technology Services supports the computing needs of faculty, staff, and students. The department has responsibility for: 1) the campus network including Internet access; 2) the Banner student information system; 3) computer access accounts and passwords; 4) Help Desk support; and 5) computer labs in the CW and Library.

Facilities

The primary academic computing support facilities are two general purpose computer labs located in the Computing Wing (CW) of the Science Building and in the Mardigian Library (ML). Together, they contain over 150 PC’s running Windows 2000 that
are available for use by any UM-D student. Adjacent to the Library Lab is the Adaptive Learning Lab, with comparable equipment. In addition to the standard software products, it runs a voice synthesis package that allows visually impaired students to run standard application programs on the computer. Additional departmental computer labs are also operated by individual schools and colleges across campus.

Software

ITS offers a wide variety of software in the labs it supports, including Internet browsers, databases, word processing, spreadsheets, statistical and graphical packages. Specialized software is available, including Visual Studio, SPSS, SAS, ChemSketch, Minitab, and Mathematica. The lab also provides instructional software required by faculty for some classes.

In addition, a licensing agreement with Microsoft provides students with excellent discounts on some of their products. Sales are held every Friday in the Computing Wing, where individuals can purchase MS Windows XP and 2000, Office XP and 2000, Front Page 2002 and Visual Studio.

Computer Accounts

The ITS Accounts Office assigns user ID’s and passwords for all university network systems. Requests for several types of computer access are processed, and assistance with questions and problems regarding logins is provided. These include Uniqnames, Kerberos and LDAP passwords, Novell access, Unix access and dial-in accounts. The Accounts Office can also provide information on UM-D’s email and webmail services, which allows individuals to access mail from off campus. ITS administers the primary campus web server and provides space to students for personal web pages.

Assistance and Services

The ITS Help Desk is the primary point of contact for support. Please call or email the Help Desk when assistance, service, documentation and information regarding the campus network, hardware and services are needed. Many questions can be answered immediately on the phone. An automated ticket system is also used to keep track of each request that is received and the service that is provided. Both general purpose computer labs are staffed with student assistants who can provide answers to most questions or refer you to someone who can.

WWW - Internet Addresses

The following UM-D Internet addresses may be of interest to you. Please contact the ITS Help Desk at 313-593-HELP if you need assistance accessing the Internet.

University of Michigan-Dearborn:
http://www.umd.umich.edu
College of Arts, Sciences, and Letters
http://www.casl.umd.umich.edu/casladvising/
College of Engineering and Computer Science:
http://www.umd.umich.edu/dept/acad/engin/
School of Education:
http://www.soe.umd.umich.edu/716/
School of Management
http://www.som.umd.umich.edu/1594/

Hours

During the Fall and Winter semesters, the computing labs normally follow the schedule below. Holiday hours and other hour changes are posted on the ITS web site and in the computer labs. CW Lab hours are 8:00 am until 11:45 pm, Monday through Thursday; 8:00 am to 7:45 pm on Friday; 10:00 am until 5:45 pm on Saturday; and 12:00 noon until 11:45 pm on Sunday. ML Lab hours are 9:00 am until 10:45 pm, Monday through Thursday; 9:00 am to 7:45 pm on Friday; 10:00 am until 4:45 pm on Saturday; and 1:00 pm until 10:45 pm on Sunday.

Mardigian Library

The Mardigian Library offers a student-centered environment that fosters learning by providing access to authoritative sources of knowledge and information, and by helping students learn critical information literacy skills and concepts. The library provides web-based access (http://library.umd.umich.edu) to a multitude of research resources, including over 20,000 online journals, 200 online research databases, and over 9,000 online books. The four-story Mardigian Library houses a 365,000-volume collection and offers space for 1,200 students. Twenty-two public workstations located in the Library Research Center on the main floor provide access to all online resources, most of which are also accessible from off campus. Two floors are available for silent study and one floor is for group study. Librarians are available, either online or in person, to help students with their research needs.

Graduate students also have access to research materials from other libraries. Currently enrolled UM-D graduate students are eligible to borrow materials directly from UM-Ann Arbor, Wayne State University and Michigan State University libraries. Students can also request books from many other Michigan libraries through the MeLCat service; items are delivered to the Mardigian Library for your use. Articles and other items not available through these services can be requested through Interlibrary Loan.

Media Services

The Mardigian Library's TV Studio provides a variety of media services to support instruction and/or research. These services include studio and remote video production, video editing, audio production, graphics design, and equipment repair. The TV Studio also provides media production facilities and services for student projects. Production services that support course assignments are provided without charge to students. Production support for work that is not related to instruction may be provided for a fee. Costs vary depending on the nature of the production. All service requests should be made 24 hours in advance. Major productions require production proposals. Please call 313-593-5150 for more details.

The library operates a small media lab on the main floor of the library where students may review audiotapes and videotapes, compact disc recordings, DVD recordings and slide/tape programs that are part of course requirements.

Recreation and Athletics

Recreation and Athletics offers instruction, participation, and three levels of competition in a variety of sports and dance. Participants can learn new skills or improve current levels of skill in tennis, fencing, volleyball, ice skating, Tai Chi, Tae Kwon Do,
The gymnasium floor can accommodate eight volleyballs or five walking, ski conditioning, SCUBA and officiating. The athletic complex is located at the south end of the campus. UM-D athletes participate in men's and women's basketball and women's volleyball and are affiliated with the National Association of Intercollegiate Athletics (NAIA) Great Lakes Region. Admission to games is free with a student ID card.

The recreational sports program provides opportunities to compete in club sports and intramural leagues and to participate in a variety of special events, "pick-up" games, seminars, and other related activities. The club sport program sponsors teams in golf, fencing, soccer, cross-country running and ice hockey that compete against other college/university or local clubs and teams. Intramural competition includes flag football, co-ed volleyball, tennis, broomball, wallyball, basketball and ice hockey. Special events include the annual Turkey Trot, Family Day, Open House, National Fitness Day and the Flag Football Commuter Bowl. Instruction is given in a variety of activities such as yoga, walking, ski conditioning, SCUBA and officiating.

The athletic complex is located at the south end of the campus. The gymnastics floor can accommodate eight volleyball or five tennis matches or three basketball games. A 220-yard oval running area is marked on the perimeter of the floor. The ice arena has a seating capacity of 1,250 and is the home for the club and intramural teams, recreational skating, drop-in hockey and physical education classes. The swimming classes are taught at the Greenfield Village Education Center.

The outdoor facilities consist of two tennis courts and a low ropes course that is used for Operation Adventure activities.

Other facilities in the Fieldhouse/Arena include a weight room equipped with free weights, a 14-station variable resistance machine, exercisecycles, rowing machine and a treadmill, a classroom, a conference room, administrative offices, concession stand and locker rooms. Hours of operation, schedule of activities, team tryouts and other information can be obtained by calling 313-593-5540 or going to the Fieldhouse/Arena.

Internships or other student work experiences are available in sports information, exercise leadership, athletic training, coaching, officiating, marketing, communication, team manager/statistician and administration.

Football Ticket Distribution Policy

Season tickets to the University of Michigan-Ann Arbor football games are sold by the Ticket Office of the Ann Arbor campus Department of Athletics. UM-D students are handled by the Ticket Office on the Ann Arbor campus.

A student ticket information flyer outlining procedures to purchase tickets is mailed in March to students enrolled during Winter term. The deadline for purchase is mid-April. For more information, contact the ticket office at 734-764-0247.

STUDENT INFORMATION

Student Records and Student Rights

In carrying out their assigned responsibilities, many offices at the University of Michigan collect and maintain information about students. Although these records belong to the University, both University policy and federal law accord you a number of rights concerning these records. The following is designed to inform you concerning where records about you may be kept and maintained, what kinds of information are in those records, the conditions under which you or anyone else may have access to information in those records, and what action to take if you believe that the information in your record is inaccurate or that your rights have been compromised.

Because the University does not maintain all student records in one location, this document contains general information related to student records. By direction of the Regents, however, each office that maintains student records is required to develop a written statement of its policies and procedures for handling those records. For more information about FERPA, visit the University of Michigan Office of the General Counsel's web page at www.umich.edu/~vpge/faq_student.html.

Records Location

If you are in any school or college except Rackham, your dean's office or your academic advisor has information concerning your academic progress: admissions application, test scores, letters of recommendation, copy of academic record, notes (if any) made by academic counselors, information about honors awarded and/or academic discipline imposed, and similar items.

Only two offices have records on all students. The Registrar's Office maintains information pertaining to your enrollment (registration) and your official academic record. The Student Accounts Office maintains information about charges assessed and payments made to your account.

The offices listed under Student Records Location (section below) will usually have information about you only if you have had dealings with them or utilized their services.

Student Rights

Once you attend, you have the following rights concerning your student records:
1) The right to inspect and review all material in your file(s) except:
   a) Professional mental health treatment records to the extent necessary, in the judgment of the attending physician or professional counselor, to avoid detrimental effects to the mental health of the student or of others. These records may, however, be reviewed by a physician or other appropriate professional of your choice.
   b) Financial information furnished by your parents in support of an application for financial aid.
   c) Confidential letters of recommendation that were placed in your file prior to January 1, 1975.
   d) Confidential letters of recommendation concerning admission, employment, or honorary recognition, for which you have waived access. (The University may not require you to sign a waiver in order to obtain services, but a person writing a recommendation may insist on a waiver as a condition for his or her writing it.)
   e) Personal notes made by a faculty member or counselor that are accessible only to that person and are not shared with others.
   f) Materials in any admissions files, until you have been admitted to, and have attended in the U-M school or college for which the materials were submitted.
Most offices will require you to file a written request if you wish to review your records. Sometimes the response will be immediate, but in most instances you should expect to wait several days; in no case, however, may the response be delayed more than 45 days from the date of your request. Also, once you have submitted such a request, no non-exempt material may be removed from the file in question until the matter is resolved.

NOTE: Federal law requires that an institution make copies of materials available to a student only if the failure to do so effectively prevents the student from reviewing his or her file (for example, if you were at some distance from the campus and could not readily come to the campus). Most offices at the University, however, will provide copies if you need them. You will probably have to wait several days for the copies and you will be charged not more than fifteen cents per page plus any postage involved. In certain instances, you may be directed to obtain copies from the office responsible for maintaining a particular record. For example, most offices will not copy transcripts (whether from U-M or another institution you have attended) that are in their files; rather, you will be advised to obtain them directly from the Office of the Registrar here or at your former school.

2) The right to a hearing if you feel that (a) you have been improperly denied access to your records, (b) your records contain information that is inaccurate or misleading, or (c) information from your records has been improperly released to third parties. Each record-keeping office has a procedure for this purpose. The use of that procedure will result in one of the following:
   a) If the head of the office involved agrees with your contention, he or she will see to it that the necessary corrective action is taken.
   b) If the head of the office does not agree with your contention, you may request a hearing by a hearing panel or hearing officer designated by the unit's procedures.
   c) If the decision of the hearing panel or hearing officer agrees with you, the necessary corrective action will be taken.
   d) If the decision disagrees with you, you have the right to submit an explanatory statement, which must be included as a permanent part of your record.

3) The right in most instances to control access to information in your records by persons or agencies outside the University. Within the University, information from your records will be made available to those staff members who demonstrate a legitimate educational interest consistent with their official functions for the University and consistent with normal professional and legal practices.
   a) Except for directory information (see d) below), however, persons outside the University - including your parents and/or spouse - will be given information from your records only: 1) when you authorize it in writing, or 2) in connection with your application for or receipt of financial aid, or 3) in connection with studies conducted for the purpose of accreditation, development and validation of predictive tests, administration of student aid programs, or improvement of instruction, or 4) when disclosure is required in a health or safety emergency or by federal or state law or by subpoena. If information from your record is subpoenaed, you will be notified as quickly as possible. In addition, the results of a disciplinary hearing conducted by the institution against the alleged perpetrator of a crime of violence will be made available to the alleged victim of that crime.
   b) Each office is required to keep a record of all requests for non-directory information from your records made by persons outside the University, and to make that record available for you to examine.
   c) Federal law requires that the University designate what it regards as directory information and which may, therefore, be released to those outside the University without specific authorization. The law also requires that each currently enrolled student be given the opportunity to direct that items designated as directory information not be released without his or her consent.
   d) The UM-D has designated the following items as directory information: 1) name, 2) permanent and local address and telephone, 3) U-M school or college, 4) class level, 5) major field, 6) dates of attendance at the University of Michigan, 7) degree received and date awarded, 8) honors and awards received, 9) participation in recognized activities, 10) previous school(s) attended, and 11) height and weight of members of intercollegiate athletic teams.
   e) You have the right to direct that directory information about you not be released, however, you should carefully consider the consequences of that action before making the decision to do so. Information is not withheld selectively. If you choose to have directory information withheld, it is withheld from everybody who inquires.
   f) If you wish the University not to release those items designated as directory information, you must file a written request to that effect with the Registrar's Office not later than ten (10) days from the beginning of the term for which the restriction is to begin. If you elect to have the University not release this information, all items designated as directory information will be withheld.

4) The right to file a complaint to federal officials if you feel that there has been a violation of the rights afforded you under the Family Educational Rights and Privacy Act of 1974. The complaint must be submitted in writing within 180 days of the alleged violation to:

   Family Policy Compliance Office
   U.S. Department of Education
   400 Maryland Avenue, SW
   Washington, D.C. 20202-4605
   Telephone 202-260-3887
   TDD 800-877-8339

Questions about the policies and procedures of any unit should be directed to the head of that unit. Questions about the University's "Policies on Student Records" or about the Family Educational Rights and Privacy Act of 1974 should be directed to:

Vice-Chancellor for Enrollment Management and Student Life
1060 Administration Building
Telephone 313-593-5151
**Student Records Location**

- Academic Support and Outreach Services: 2136 UC
- Admissions: 1145 UC
- Alumni Society: 1040 AB
- Athletics: FH/A
- College of Arts, Sciences, and Letters: 1091 CA
- College of Engineering and Computer Science: 2070 EC
- Counseling and Support Services: 1051/1061 CA
- Financial Aid: 1183 UC
- Library: 1157 ML
- Parking: CSS
- Personnel: 1020 AB
- Placement: 1110 AB
- Registration, Records and Student Certification: 1169 UC
- Safety and Security: 1169 UC
- School of Education: FCS
- School of Management: FCS
- Student Accounts: 1187 UC
- Student Affairs: 1060 AB

**Student Activities**

The mission of the Student Activities Office (SAO) is to complement the academic program of studies at the UM-D and enhance the overall educational experience of students through development of, exposure to, and participation in diverse social, cultural, multicultural, intellectual, recreational, leadership, governance, group development and community service programs.

As a student advocacy office, SAO provides services and program that assist students in exploring themselves in depth, to achieve greater self-understanding, as well as an understanding of others.

The SAO, an active member of the National Association for Campus Activities (NACA), presents over 100 diverse events on the UM-D campus throughout the academic year during the day and evening. A contemporary Film Series is offered throughout the fall and winter semesters. Approximately 30 first-run films are shown. UM-D students, faculty and staff, as well as their guests, are admitted free of charge. The Distinguished Speaker Series is a program that brings speakers of national and local prominence to campus to discuss timely, controversial or popular issues of interest to the student body and offers thought-provoking discussion among the campus community. Many students take the opportunity to interact and listen to contemporary authors and poets read their literary works through the Visiting Writer Series. In addition, the SAO presents campus-wide picnics, comedy, novelty and cultural programs, and contemporary musical events.

Organizationally, SAO is responsible for the Student Activities Board (which plans and implements student programs), the Student Government, the Debate Team, the Michigan Journal (campus student newspaper), Lyceum (literary arts journal), Campus Video (student television productions), WUMD (student radio station) and over 80 full-status and ad hoc student organizations and clubs.

The SAO produces the following information publications: Student Handbook, the Student Organizations Accounting Policies and Procedures Manual, the Student Clubs and

**Student Rights and Responsibilities**

The UM-D is composed of a diverse group of individuals and interests, drawn together by a common belief in the values of an education and appreciation for the significant contribution of our personal differences to that education and each other. Maintaining an environment that ensures harmony and a positive learning environment is a responsibility shared by all members of the campus community. The following information identifies behavior expectations in support of fulfilling these responsibilities and the means by which complaints may be resolved. Any member of the campus community who believes that a violation of any of these rights and responsibilities has occurred may obtain assistance in seeking redress from the Ombuds Services or the Affirmative Action Coordinator.

For information regarding unit-specific policies and procedures, refer to the unit sections in this Catalog.

**Student Organizations**

**Policies for Student Organizations**

In an effort to coordinate the activities of all student organizations, policies were codified into a formal publication issued by Student Government, known as the Student Clubs and Organizations Information and Policies Manual.

The manual is a useful booklet which contains information on forming an organization, the renewing and revoking of organizational status, office allocations, organizational accounting, the allotting of day sales and evening events, university services, descriptions of recognized organizations, etc.

The Student Organizations Coordinator and the Student Government Director of Student Organizations can assist any student group interested in this area.

**Accounting Policies and Procedures**

The Student Activities Office (SAO) maintains and services the financial accounts for student organizations that have been recognized by the Student Government. Through this student service, SAO:

1) Ensures uniformity of accounting records.
2) Facilitates continuity between business officers and their successors.
3) Aids student organizations in keeping their activities on a sound financial basis.
4) Provides a means for recognized student organizations to use University facilities and services.

The SAO is prepared to offer staff consultation on matters of budgeting, detailed record keeping, and securing various University and outside vendor services and facilities. The information presented in the Student Organizations Accounting Policies and Procedures Manual is intended to assist the financial officers of organizations in conducting their duties and to inform them of the policies, procedures, and benefits associated with sound fiscal policy.
Statement of Student Rights and Code of Student Conduct

The following are excerpts from the "University of Michigan-Dearborn Statement of Student Rights and Code of Student Conduct." Complete copies of the Code are available in the Office of Enrollment Management and Student Life, 1060 Administration Building.

Section 1. Introduction

The primary purpose of the Statement of Students Rights and Code of Student Conduct is to assist the UM-D (hereinafter in this document called the University) in providing an environment that supports the educational process and well-being of the campus community. The responsibility for maintaining such an environment is shared by all members of the campus community.

Student rights and student conduct are defined in this Statement and Code in order to give general notice of conduct expectations, to identify sanctions which shall be imposed when misconduct occurs, and to ensure that students are treated with fundamental fairness and personal dignity. Disciplinary proceedings initiated in response to a charge of violation will be the responsibility of the Code Judicial System and will be undertaken according to the provisions and procedures articulated by the Code. The focus of inquiry in disciplinary proceedings will be on the question of guilt or innocence of those charged with violating the Code.

The Statement and Code is an articulation of the University's commitment to recognize and support the rights of its students and to provide a guide for defining behaviors the University considers inappropriate. It is not, however, meant to be an exhaustive list of all rights supported by the University or of all actions that may be considered misconduct.

Members of the University community are accountable to both civil authorities and to the University for acts that violate the law and this Code. Disciplinary action at the University will, normally, proceed during the pendency of external civil or criminal proceedings and will not be subject to challenge on the grounds that external civil or criminal charges involving the same incident are pending or have been invoked, dismissed, or reduced.

The discontinuance of enrollment of a student does not negate the jurisdiction of this Code, which shall remain applicable with respect to matters that arose when the person was a student. Adjudication of alleged violations of the Code by a University employee will be handled, via the Code Judicial System, by the appropriate University resources.

The UM-D Statement of Student Rights and Code of Student Conduct was written by students, faculty and staff of the UM-D.

Section 2. Student Rights

In recognition of students' rights and dignity as members of the University community, UM-D is committed to supporting the following principles and to protecting those rights guaranteed by the Constitution, the laws of the United States and the State of Michigan, and the policies adopted by the Board of Regents.

1) Students have the right to free inquiry, expression, and association.
2) Students have the right to editorial freedom in student publications and the student media.
3) Students have the right to representation on the appropriate, designated University decisionary bodies.
4) Students accused of misconduct or of violating University policy have the right to have their guilt or innocence determined in accord with University procedures.
5) Students have the right to protection against improper disclosure of their student record as provided for in the Family Educational Rights and Privacy Act.
6) Students have the right of access to their personal records and other University files as provided for under the Family Educational Rights and Privacy Act and the Michigan Freedom of Information Act.
7) Students have the right to access all policies, rules, and decisions concerning their continued enrollment, and to those course materials and facilities necessary to pursue their studies.
8) Students have the right to educational programs that meet the objectives of the discipline, to teaching consistent with those objectives, and to a learning environment that encourages the students' active participation.
9) Students have the right to be informed by the faculty at the beginning of each term about course requirements, evaluation procedures, and evaluation criteria to be used, and the right to expect that those criteria be employed.
10) Students have the right to take reasoned exception to the data or views offered in any course of study; they are, however, responsible for learning the content of any course of study for which they are enrolled.
11) Students have the right to be evaluated solely on relevant academic criteria and to have protection against prejudicial or capricious academic evaluation.
12) Students have the right to request and receive timely assessment of their academic work.
13) Students have the right to request and receive a reasoned, impartial, and timely review of their grades.
14) Students have the right of redress if their rights have been violated.

Section 3. Student Conduct

Students are expected to conduct themselves in a manner conducive to an environment of academic integrity and of respect for the educational process and the safety and well-being of all members of the campus community. The actions cited as prohibited conduct should be used as a guide rather than an exhaustive list of behaviors the University considers misconduct and subject to disciplinary action.

A. Prohibited Academic Conduct

The following actions shall be considered academic misconduct and be subject to disciplinary action:

1) Furnishing false information to the University pertaining to one's own or to others' academic work, activities, records or status or initiating, or causing to be initiated, any false report pertaining to one's own or to others' academic work, activities, records or status (Falsification of Records or Official Documents).
2) Possessing, using, or distributing and altering or destroying any materials or information for the purpose of dishonestly affecting one's own or others' academic work, grades or student status (Cheating).
3) Aiding or abetting another in obtaining, using or distributing any materials or information for the purpose of dishonestly affecting one's own or others' academic work, grades, or student status (Aiding and Abetting Dishonesty).

4) Submitting as one's own any work that, in part or whole, is not entirely one's own work without properly attributing it to its correct source (Plagiarism).

5) Presenting data that were not gathered, or are not accounted for, in accordance with the appropriate methods for collecting and generating data (Fabrication).

6) Interfering with the academic work or study of other members of the University community. This includes, but is not limited to, alteration, destruction, and denial of access to learning materials.

7) Failing to comply with additional specific criteria for academic conduct communicated by the instructor to his/her class regarding assignments, tests, and/or exams.

8) Violating, or aiding and abetting the violation of, any published University academic policy, regulation, or procedure.

9) Attempting to commit, or assisting another in attempting to commit, any act prohibited by Section 3.a. of this Code.

10) Violating the terms of any disciplinary sanction imposed in accordance with Section 3.c. of this Code.

B. Prohibited Non-Academic Conduct

The following actions shall be considered non-academic misconduct and be subject to disciplinary action.

1) Causing or threatening to cause harm to any person on University premises or at University-sponsored activities and events.

2) Hazing, i.e., action taken or situation created for the purpose of initiation of affiliation with any University organization or team, with or without the consent of the individual, which jeopardizes the physical or mental well-being of the individual. Hazing includes: physical injury, assault, or battery; kidnapping or imprisonment; forced consumption of any liquid or solid; mandatory personal servitude; interference with academic endeavors.

3) Interfering with normal University or University-sponsored activities. This includes but is not limited to studying, teaching, research, University administration, or campus safety, fire, police or emergency services.

4) Interfering with the freedom of expression or rights of individuals on the University premises or at University-sponsored activities.

5) Harassment, i.e., physical force or violence or behavior, including stalking, that involves a deliberate interference or a deliberate threat to interfere with an individual's personal safety, academic efforts, employment or participation in University-sponsored activities and causes the person to have a reasonable apprehension that such harm is about to occur. Students may not use threats concerning the terms or conditions of an individual's education, employment, housing, or participation in a University activity as a way to gain sex and/or sexual favors.

6) Furnishing false information to the University.

7) Failing to comply with directions of University officials, including campus safety, acting in performance of their duties.

8) Initiating or causing to be initiated any false report, warning, or threat of fire, explosion, or other emergency on University premises or at University-sponsored activities.

9) Theft of University property or funds or misuse of services on University premises; possession of stolen University property; possession of stolen property on University premises.

10) Destroying, or damaging, or misusing, or unauthorized use of any University funds, equipment, materials, or property including safety equipment and library materials; or such equipment or materials of others when on University premises.

11) Unauthorized use, possession, or storage of any weapon on University premises or at University-sponsored activities.

12) Unauthorized use or possession of fireworks or explosives on University premises or at University-sponsored activities.

13) Unauthorized use or possession or distribution of any controlled substance, alcoholic beverage, or illegal drug on University premises or at University-sponsored activities.

14) Violations of any published University policies, including those regarding affirmative action or procedures regulating entry and use of University facilities and properties, sales or consumption of alcoholic beverages, use of vehicles and sound equipment, use of telephone equipment or privileges, campus demonstrations, and use of identification cards.

15) Commission of any state or federal crime on University premises or at University-sponsored activities.

16) Violations of the terms of any disciplinary sanction imposed in accordance with Section 3.e. of this Code.

17) Attempt to commit any act prohibited by Section 3.b. of this Code.

C. Sanctions

The sanctions to be imposed should be commensurate with the offending conduct. Because education may be the most effective and appropriate means of addressing behavior that violates the standards of a university community, the University encourages fashioning sanctions to include an educational element that may help students understand their behavior in the context of the academic community. Although it is inappropriate for the University to try to change student's convictions, it is appropriate for the University to ask a student to change behavior. Sanctions should, therefore, be designed which may deter behaviors that harm, intimidate, harass, or threaten others.

Factors that may be considered in determining the nature of sanctions to be imposed for Code violation include the intent of the respondent, the effect of the conduct on the victim and the University community, presence or absence of violations of the Code on the part of the student, the presence or absence of past violations of the standards on the part of the student, and the appropriateness of sanctions such as community service.

Regrettably, some conduct is so harmful to members of the University community or deleterious to the educational process that more severe sanctions may be required. Severe sanctions, such as suspension or expulsion, should be imposed only when the offending behavior involves violent or dangerous acts, acts that disrupt the educational process and/or when there has been willful failure to comply with a lesser sanction. The Chair of the Conduct Board shall consult with the Dean of the School/College in which the student is enrolled before expulsion or suspension is imposed. The range of potential sanctions is as follows:

1) Suspension from Specific Course or Activity. The student is removed from a specific course or activity, or is moved to a different section of the course.
2) Class Attendance. The student enrolls in and completes a class that may help improve his/her understanding of why the conduct engaged in is inappropriate.

3) Community Service. The student performs an appropriate amount of service that is both beneficial to the community and likely to assist the student in understanding the harm caused by his or her conduct.

4) Disciplinary Reprimand. The student receives a formal reprimand for violating the standards of behavior and a warning that future violations may result in more severe disciplinary action. The student does not lose his/her University privileges.

5) Disciplinary Probation. During the probation period, the student may not represent the University in any way. This includes, but is not limited to, engaging in any extracurricular activity, running for or holding office in any student group or organization, and serving on any University committees. The appropriate University units shall be notified of the student's probationary status.

6) Suspension in Abeyance. The student remains enrolled. However, any violation of the conduct regulations during the period of Suspension in Abeyance will, after a determination of guilt, result in automatic suspension.

7) Suspension. The student is temporarily separated from the University for a specified period of time. Conditions may be stipulated for the readmission of a student. When a student is suspended during a term, he/she is not exempted from the payment of tuition for that term.

8) Expulsion. The student is permanently separated from the University. Penalty shall consist of the student being barred from the premises of the University. When a student is expelled during a term, he/she is not exempted from the payment of tuition for that term.

9) Restitution. The student makes payment to the University for damages incurred by the University as a result of his/her violation.

10) Other Disciplinary Actions. In addition to or in place of the above sanctions, the student may be subject to other penalties commensurate with the offending conduct. This may include but is not limited to degree and/or transcript actions, such as recession of a degree, withholding of course credit, loss of credit for an assignment/exam, assignment of additional work, loss of special privileges, behavioral counseling, or a behavioral contract.

11) Combined Sanctions. A combination of the sanctions described above may be imposed.

The sanctions imposed under these standards do not diminish or replace the penalties that may be invoked under generally applicable civil or criminal laws. Students are reminded that many violations of the standards, including harassment and other discriminatory behavior, may violate various local, state and federal laws and, therefore, also be subject to legal action.

D. Sanctioned Academic Dishonesty Database

As described above, sanctions refer to penalties imposed by faculty such as a failing grade on an exam or paper and accepted by the student. Sanctions also include penalties imposed through disciplinary proceedings initiated by a charge of violation of the Code of Academic Conduct. Academic units are responsible for administering sanctions according to their published procedures.

The purpose of the database is to enable units to consider past evidence of academic dishonesty at the University in any of its academic units when determining sanctions to be imposed for violations of the Code of Academic Conduct. The database will be maintained by the Office of Institutional Research and only full-time employees of that office will be authorized to enter data. Records of sanctioned cases will be deleted from the database two years after the student graduates or two years after the last date of attendance.

Judicial System

The UM-D judicial system shall provide a uniform, fair, and impartial process for the reporting, adjudicating, and resolving of alleged violations of the UM-D Statement of Student Rights and Code of Student Conduct. Complete information on the judicial system is available from the Ombudsman, 1060 Administration Building.

Posting and Handbill Distribution

The posting of any information or advertisement and distribution of handbills (fliers) is governed not only by the following policy below, but also by all other applicable University Policies and Procedures:

1) The Posting Approval Log must be completed and signed by a representative of the organization or person responsible for the posted material.

2) All posted literature must be approved and officially stamped with a removal date at the lower left- or right-hand corner by a staff member of the Student Activities Office (SAO). Approved literature may be posted for a maximum of thirty days. Extensions to the thirty-day maximum posting period may be granted by the SAO in extenuating circumstances.

3) The indiscriminate distribution (littering) of handbills (fliers) on the UM-D campus is strictly prohibited. Offending parties may have their personal and/or organizational rights to distribute handbills (fliers) on campus revoked and/or may be rebilled for inordinate custodial or plant maintenance costs.

4) Material must be posted on designated Campus News & Activities bulletin boards, tack stripping, and kiosk structures only. Posting on University walls, windows, doors, lighting poles, floors, telephones, restroom facilities, sidewalks, roadways, parking lots, plants, or any vehicle on University property is strictly forbidden.

5) Chalking of University property is prohibited.

6) Fliers or posters partially or fully covering pre-approved material or Campus News & Activities signs will be removed.

7) Standard staples, thumbtacks, and pushpins are the only acceptable methods of affixing posted materials to bulletin boards.

8) Individuals and organizations are limited to posting one flier not to exceed 8-1/2 x 14 inches, or one sign not to exceed 18 x 24 inches per designated bulletin board, except where specified. Individual or organizations may post four fliers or two signs of the above-noted dimensions on the tack stripping in the University Center. Fliers or posters with different formats or graphics that essentially provide the same basic advertisement information are considered the
Advisory: The Rock Painting Policy, as codified in The Student Clubs and Organizations Information and Policy Manual governs painting on the rock outside the northwest entrance to the University Center.

GENERAL POLICIES

Policy for Electronic Communication (EMail) With Students

The UM-D uses your assigned UM-D email address for all university email communications. You are responsible for accessing your UM-D email account on a frequent and consistent basis to stay informed of important University business such as information regarding your student account, financial aid, registration, grades, or correspondence from faculty.

You may choose to forward messages from your UM-D email address to an alternate personal address. However, doing so may place you at risk of not receiving critical University communications. For additional information on your UM-D email account (including how to forward your UM-D email address), go to http://www.its.umd.umich.edu/ and select Accounts.

This policy reflects UM-D’s commitment to using available technology to communicate among members of the campus community. It recognizes an expanding reliance on electronic communication among students, faculty, staff, and the administration due to the convenience, speed, cost-effectiveness and environmental advantages it provides. This policy will define the proper use of electronic communications between University staff, faculty, and students. Electronic communications may include, but are not limited to, electronic mail, electronic bulletin boards, and web sites.

UM-D authorizes the use of email for official communication between students, staff, faculty, and the administration. All members of the campus community are expected to comply with established guidelines and procedures that define the proper use of electronic communications.

To implement this policy, the following actions and services will be provided:

1. Provision of University email
   UM-D will provide all staff, faculty, and students with an official University email address. This will be the address listed in University directories. All official University email communications will be directed to this address.

2. Appropriate use of University email
   Certain University electronic communications may be time-critical. Students, staff, and faculty are responsible for checking their official email address on a frequent and consistent basis in order to stay current with University communications.
   - Confidentiality regarding student records is protected under the Family Educational Rights and Privacy Act of 1974 (FERPA). All use of email, including use for sensitive or confidential information, must be consistent with FERPA.
   - Email shall not be the sole method for notification of any legal action.

3. Redirecting of University email
   Members of the campus community may elect to forward University email to an alternate address (e.g., aol.com, hotmail.com, comcast.net). They are responsible for ensuring that the configuration of their email service does not accidentally label University messages as spam. Users who redirect email from their official address to another email address do so at their own risk. The University will not be responsible for the handling of email by outside vendors or by departmental servers. Having email redirected to an alternate service does not absolve students, staff or faculty members from the responsibilities associated with communication sent to their official email address.

4. Access to University email
   Students who are not in possession of a home computer, or do not have access to a computer at work, can use computers available in campus labs or in their local library.

5. Faculty use of University email
   Faculty may determine how email will be used in their classes. It is highly recommended that if faculty have email requirements and expectations, they specify these requirements in their course syllabus. Faculty may reasonably expect that students are accessing their University email, and may use email for their courses accordingly.

Affirmative Action, Non-Discrimination and Diversity

The University of Michigan, as an Equal Opportunity/Affirmative Action employer, complies with applicable federal and state laws regarding nondiscrimination
and affirmative action, including Title IX of the Education Amendments of 1972 and Section 504 of the Rehabilitation Act of 1973. The University of Michigan is committed to a policy of nondiscrimination and equal opportunity for all persons regardless of race, sex, color, religion, creed, national origin or ancestry, age, marital status, sexual orientation, disability, or Vietnam-era veteran status in employment, educational programs and activities, and admissions. Inquiries or complaints may be directed to the University's Director of Affirmative Action and Title IX/Section 504 Coordinator, Room 4005, Wolverine Tower, Ann Arbor, Michigan 48109-1281, 313-763-0235; TTY 313-747-1388; fax 313-763-2891. UM-D inquiries may be addressed to the Dearborn Affirmative Action Coordinator, Office of Human Resources/Affirmative Action, 1020 Administration Building, Dearborn, Michigan 48128-2406, 313-593-5320/5190, TTY 313-593-5430, fax 313-593-3568.

The Affirmative Action Office aims to ensure that protected groups (racial minorities, women, the disabled, senior citizens, persons of different sexual orientation and Vietnam-era veterans) have equal opportunity and receive the support they need to be effective and successful as student, faculty or staff members. The Office oversees the University's compliance with affirmative action/nondiscrimination legislation, and provides pre-grievance counseling to faculty, staff and students with discrimination complaints. The Office is available to help with any sexual harassment problems or questions. The Office also provides staff and financial support to a number of constituency groups on campus and co-sponsors training and educational programs.

The University of Michigan believes that educational and employment decisions should be based on individuals' abilities and qualifications and should not be based on irrelevant factors or personal characteristics that have no connection with academic abilities or job performance. It strives to build a diverse community in which opportunity is equal for all persons regardless of race, sex, color, religion, creed, national origin or ancestry, age, marital status, handicap, Vietnam-era veteran status, or sexual orientation. It exerts its leadership for the achievement of this goal by all parties with which the University transacts business, which it recognizes, or with which students or employees of the University are involved.

It is the policy of the University of Michigan that an individual's sexual orientation be treated in the same manner. Such a policy ensures that only relevant factors are considered and that equitable and consistent standards of conduct and performance are applied. Any University of Michigan employee having a complaint of discrimination should notify the Affirmative Action Office, 1020 Administration Building, 313-593-5320. A student should notify the Affirmative Action Coordinator or the Ombudsman in the Office of Enrollment Management and Student Life, 1060 Administration Building, 313-593-5440, TTY 313-593-5430, fax 313-593-3568.

It should be noted that this policy does not apply to the University's relationships with outside organizations, including the federal government, the military and ROTC.

Alcohol and Drug Prevention Program and Policy

This policy is intended to educate members of the University community about the health risks associated with the use and abuse of alcohol and other drugs and about the resources available for counseling and therapy. In addition, in order to assure a work and learning environment that promotes the University's mission and proper function, the University prohibits unlawful possession, use, or distribution of alcohol or illicit drugs by faculty, staff, or students on University property or as a part of any University activity. Federal and state sanctions also apply to such conduct.

The following are excerpts from the University of Michigan-Dearborn Alcohol and Drug Prevention Program and Policy. Complete copies of the Program and Policy are available in the Office of Enrollment Management and Student Life, 1060 Administration Building. Individuals should view the following website for current policy: http://www.umd.umich.edu/dept/safety/AlcoholAndDrugPreventionProgramAndPolicy.html.

Health Risks

The use or abuse of alcohol and other drugs increases the risk for a number of health-related and other medical, behavioral, and social problems. These include acute health problems related to intoxication or overdose (blackouts, convulsions, coma, death); physical and psychological dependence; malnutrition; long-term health problems including cirrhosis of the liver, organic brain damage, high blood pressure, heart diseases, ulcers, and cancer of the liver, mouth, throat, stomach; contracting diseases, such as AIDS, through the sharing of hypodermic needles; pregnancy problems including miscarriages, stillbirths, and learning disabilities; fetal alcohol syndrome (physical and mental birth defects); psychological or psychiatric problems; diminished behavior (hangover, hallucinations, disorientation, slurred speech); unusual or inappropriate risk-taking that may result in physical or emotional injury or death; violent behavior toward others, such as assaults and rape; accidents caused by operating machinery while impaired; impaired driving resulting in alcohol and drug-related arrests, traffic accidents, injuries, and fatalities; negative effects on academic or work performance; conflicts with co-workers, classmates, families, friends, and others; conduct problems resulting in disciplinary actions, including loss of employment; and legal problems, including imprisonment.

Counseling and Treatment Programs

The University of Michigan encourages individuals with alcohol- or drug-related problems to seek assistance by contacting Counseling and Support Services, 2157 University Center, 313-593-5430.

The office can also provide additional information on local, state and national resources for those seeking assistance.

University Sanctions

Unlawful possession, use, or distribution of alcohol or illicit drugs by faculty, staff or students on University property or as a part of any University activity may lead to sanctions within the University, the severity of which shall increase as the seriousness of the violation increases.

Sanctions include:

- verbal or written reprimand;
- completion of an appropriate rehabilitation program;
- a disciplinary warning, with notice that repetition of the offense or continuation of the offense may result in a more serious sanction;
• suspension from the University (student) or from employment (employee) from a specified University activity or facility for a fixed period of time or until completion of specific conditions, such as completion of an appropriate rehabilitation program;
• Expulsion from the University (student) or termination of employment (faculty or staff); and
• Other appropriate sanctions.
Sanctions for violations by faculty and staff shall be imposed pursuant to existing procedures applicable to acts of misconduct (e.g., Regental Bylaw 5.09, Standard Practice Guide 201.12, and appropriate collective bargaining agreements). Sanctions for violations by students shall be imposed pursuant to the University of Michigan-Dearborn Student Code of Non-Academic Conduct or pursuant to other approved procedures.
Copies of the applicable student procedures are available at the Office of Enrollment Management and Student Life, 1060 Administration Building.

External Sanctions

Unlawful possession and use or distribution of alcohol or illicit drugs may lead to referral to the appropriate local, state and/or federal authorities for prosecution for a misdemeanor or a felony, depending on the nature of the offense. The sanctions for such offenses may include fines and/or imprisonment.

For example, under federal laws, trafficking in drugs such as heroin or cocaine may result in sanctions up to and including life imprisonment for a first offense involving 100 grams or more. Fines for such an offense can reach $4 million. Offenses involving lesser amounts, 10 grams, may result in sanctions up to and including 20 years of imprisonment and/or fines of up to $2 million. A first offense for trafficking in marijuana may lead to sanctions up to life imprisonment for offenses involving 1,000 kilograms or more or up to five years of imprisonment for an offense involving less than 50 kilograms. Such an offense carries with it fines that can reach $4 million for an individual offender. Federal and state sanctions for illegal possession of controlled substances range from up to one year of imprisonment and up to $100,000 in fines to three years of imprisonment and $250,000 in fines for repeat offenders. Under Michigan laws, use of marijuana is a misdemeanor punishable by up to 90 days in jail and a $100 fine. Delivery of marijuana is a felony punishable by up to four years of imprisonment and up to $2,000 in fines. Violations may also lead to forfeiture of personal and real property and denial of federal benefits, such as grants, contracts and student loans.

The State of Michigan may impose a wide range of sanctions for alcohol-related offenses. For example, a first drunk-driving offense may be punishable by up to 90 days in jail, a fine of not less than $100 nor more than $500, a suspended license for not less than six months nor more than two years, and attendance at a substance abuse program. Subsequent offenses can lead to significantly increased sanctions. The vehicle of a minor transporting alcohol may be impounded for up to 30 days. Furnishing or using fraudulent identification to obtain alcohol may be punishable by up to 90 days in jail and a $100 fine.

More detailed descriptions of sanctions related to these and other drug and alcohol offenses are available in the libraries; at the personnel centers and offices; at the Office of Enrollment Management and Student Life, 1060 Administration Building, UM-D.

On September 1, 1995, the Michigan Legislature expanded the law concerning minors and alcohol possession, consumption, and purchase. A minor is anyone under the age of 21. The minor may be required to submit to a preliminary chemical breath test and may be subject to suspension of his/her driver’s license even if he/she was not in an automobile at the time of the arrest. In addition, it is now a misdemeanor, not a civil Infraction, for a minor to attempt to possess, consume, or purchase alcohol. If the underage person is less than 18 years of age, the agency charging him/her must notify the parents or guardian within 48 hours.

Policy on Serving Alcohol at Campus Events

Consumption of beverages containing alcohol is prohibited on the UM-D campus except under the conditions specified in this policy.
Events at Henry Ford Estate, the University Center, and Fairlane Center are governed by the policies of those facilities. Alcohol may be served at events held in other facilities on the UM-D campus under the conditions described below.
Any event at which alcoholic beverages will be served must have a designated host who is a full-time permanent faculty or staff member of the UM-D. The host assumes responsibility for implementing these guidelines, supervising servers and intervening if non-moderate drinking or other high-risk behaviors are developing.
Beverages containing alcohol must be monitored by a designated server at all times. The designated server may not consume alcohol at the event. [Event sponsors are strongly encouraged to employ the services of a licensed caterer.] Alcoholic beverages may not be carried out of the designated event location.
Serving alcoholic beverages to individuals under 21 years of age is illegal and expressly prohibited. Events at which the majority of participants will be under age should not include alcoholic beverages.
Under no circumstances may University General Fund accounts, including organization accounts funded with student activity fees, be used to purchase alcoholic beverages.
Any event at which alcohol will be served must be planned in such a way as to respect the preferences of individuals who choose not to drink for religious, personal, or health reasons; and in no case should an event be planned around or advertised to feature the consumption of alcohol. Substantial food and beverages that do not contain alcohol must always be served at an event that includes alcoholic beverages.
Written authorization to serve alcohol at a campus event must be obtained from the Chancellor’s Office at least one week before the planned event. Authorization will specify type of event, participants, location, time, and the responsible host.

Privacy and Access to Information

Individuals should also consult the section “Student Records and Student Rights” in this Catalog.
In collecting, utilizing and releasing information about individuals associated with the University, the University will strive to protect individual privacy, to use information only for the purpose for which it was collected and to inform individuals of the personal information about them that is being collected, used or released. The University will not
release sensitive information without the consent of the individual involved unless required to do so by law.

**Sexual Harassment by Faculty and Staff**

**Policy Statement**

It is the policy of the University of Michigan to maintain an academic and work environment free of sexual harassment for students, faculty, and staff. Sexual harassment is contrary to the standards of the University community. It diminishes individual dignity and impedes equal employment and educational opportunities and equal access to freedom of academic inquiry. Sexual harassment is a barrier to fulfilling the University's scholarly, research, educational, and service missions. It will not be tolerated at the University of Michigan.

Sexual harassment violates the University's long-standing policy against discrimination on the basis of sex. Sexual harassment is also illegal. It is prohibited in the employment context by Title VII of the 1964 Civil Rights Act, in the education context by Title IX of the Educational Amendments of 1972 and, in both employment and education contexts, by Michigan's Elliot-Larsen Civil Rights Act, adopted in 1976.

A claim under this policy may be brought by the University or by a faculty, staff, or student member of the University community based on the conduct of any University employee. Complaints based on conduct by students who are not also employees of the University are addressed in the Interim Policy on Discrimination and Discriminatory Conduct by Students in the University Environment, which is administered by the Office of Student Services.

Sexual harassment can be a very serious matter having far-reaching effects on the lives and careers of individuals. Intentionally false accusations can have similar impact. Thus the charge of sexual harassment is not to be taken lightly by a charging party, an accused party, or any member of the University community. A person who knowingly and intentionally files a false complaint under this policy is subject to University discipline.

**Definition of Sexual Harassment**

For the purposes of determining whether a particular act or course of conduct constitutes sexual harassment under this policy, the following definition will be used:

Sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature constitute sexual harassment when:

1) submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment, education, living environment, or participation in a University activity;

2) submission to or rejection of such conduct by an individual is used as the basis for or a factor in decisions affecting that individual's employment, education, living environment, or participation in a University activity; or

3) such conduct has the purpose or effect of unreasonably interfering with an individual's employment or educational performance or creating an intimidating, hostile, or offensive environment for that individual's employment, education, living environment, or participation in a University activity.

Conduct alleged to be sexual harassment will be evaluated by considering the totality of the particular circumstances, including the nature, frequency, intensity, location, context, and duration of the questioned behavior. Although repeated incidents generally create a stronger claim of sexual harassment, a serious incident, even if isolated, can be sufficient. For example, a single suggestion that academic, other educational, or employment rewards or reprisals will follow the granting or refusal of sexual favors, will constitute sexual harassment and grounds for action under this policy.

This policy addresses intentional conduct. It also addresses conduct that results in negative effects even though such negative effects were unintended. Sexually related conduct forms the basis of a sexual harassment claim if a reasonable person of the same gender and University status as the complainant would consider it sufficiently severe or pervasive to interfere unreasonably with academic, other educational, or employment performance or participation in a University activity or living environment.

Sexual harassment most often occurs when one person has actual or apparent power or authority over another; however, it may also occur between individuals of equal status or rank within the University. Sexual harassment may occur between males and females and between persons of the same gender.

Although sexual harassment as described and prohibited by this policy includes a wide range of behaviors, it does not include certain discriminatory conduct even though that conduct may be otherwise unlawful, offensive, or prohibited by University policy. For example, unequal pay and denial of access to educational programs based on gender are unlawful sex discrimination not addressed by this policy. Also, not all harassment based on gender or sexual orientation may be addressed by this policy, if such conduct is not sexual in nature or sexually motivated. Some conduct, which negatively emphasizes gender, gender differences or sexual orientation, may violate this policy, but may also be a violation of another University policy. Harassment that is both racist and sexual in nature would be addressed by this policy and possibly by other University policies as well.

**Consensual Relationships**

Romantic and sexual relationships between supervisor and employee or between faculty or other staff and student are not expressly prohibited by University policy. However, even when both parties have consented to the development of such relationships, they can raise serious concerns about the validity of the consent, conflicts of interest, and unfair treatment of others. Similar concerns can be raised by consensual relationships between senior and junior faculty members.

In 1986 the University’s Senate Assembly adopted a statement of principle concerning relationships between faculty (including teaching assistants) and students. The University concurs with the Assembly's position that sexual relationships, even mutually consenting ones, are a basic violation of professional ethics and responsibility when the faculty member has any professional responsibility for the student's academic performance or professional future.

The University's nepotism policy precludes individuals from evaluating the work performance of others with whom they have intimate, familial or close personal relationships, or from making hiring, salary or similar financial decisions concerning such persons, without prior written approval. The same principles apply to staff-student or faculty-student relationships in the context of work or academic evaluation. Thus, consensual romantic or sexual relationships between faculty or
staff and students also require disclosure to the appropriate administrative supervisor so that arrangements can be made for objective evaluation and decision making with regard to the student.

Romantic or sexual relationships with students that occur outside of the instructional or supervisory context may also lead to difficulties. The Senate Assembly has concluded, and the University concurs, that the asymmetry of the faculty-student relationship means that any sexual relationship between a faculty member and a student is potentially exploitative and should be avoided. Faculty and staff engaged in such relationships should be sensitive to the constant possibility that they may unexpectedly be placed in a position of responsibility for the student's instruction or evaluation.

In the event of a charge of sexual harassment, the University will, in general, be unsympathetic to a defense based upon consent when the facts establish that a professional faculty-student, staff-student, or supervisor-employee power differential existed within the relationship.

**Response and Procedures**

**Prevention and Education**

The University is committed to preventing and eliminating sexual harassment of students, faculty, and staff. To that end, this policy will be published in pamphlet form and disseminated to the University community. The pamphlets will be included in orientation material for new students, faculty, and staff and made available in the Affirmative Action Office and other appropriate locations on each campus. In addition, appropriate educational sessions will be conducted by the University on an ongoing basis to 1) inform students, faculty, and staff about identifying sexual harassment and the problems it causes, 2) advise members of the University community about their rights and responsibilities under this policy, and 3) train personnel in the administration of this policy.

**Assistance with Sexual Harassment Problems**

The Affirmative Action Office is responsible for ensuring and monitoring the University's compliance with federal and state nondiscrimination laws. However, a discrimination-free environment is the responsibility of every member of the community. The University can take corrective action only when it becomes aware of problems. Therefore, the University encourages persons who believe that they have experienced or witnessed sexual harassment to come forward promptly with their inquiries, reports, or complaints and to seek assistance within the University. Individuals also have the right to pursue a legal remedy for sexual harassment in addition to or instead of proceeding under this policy.

**Confidential Counseling**

Information about or assistance with sexual harassment issues may be obtained from a variety of University resources. Prior to or concurrent with making a report or complaint of sexual harassment, individuals may find it helpful to consult with a counselor. The following offices can advise and support victims of and witnesses to sexual harassment in a confidential setting. Discussions with representatives of these offices will not be considered official reports to the University and will not, without additional action by the complainant, result in intervention or corrective action.

- Counseling Services (available to students on each campus)
- Faculty and Staff Assistance Program (available to faculty and staff on each campus);
- Lesbian-Gay Male Programs Office (in Ann Arbor but available to students, faculty and staff from Dearborn and Flint);
- Sexual Assault Prevention and Awareness Center (in Ann Arbor but available to students, faculty and staff from Dearborn and Flint).

**Informal Resolution Process**

At the complainant's option, a sexual harassment report or complaint can be made centrally or locally on the Ann Arbor, Dearborn, and Flint campuses. Centrally, informal reports or complaints may be received by representatives of the Affirmative Action Office, the Office of the Ombudsman (students only), the Office of Student Services (students only), Dean's Office of the Horace H. Rackham Graduate School (graduate students only), Center for the Education of Women, Department of Public Safety, and appropriate Office of Human Resources.

At the local level, persons designated to receive informal reports or complaints are any dean, director, department head, unit manager, residence hall building director, and/or their designees. Each school/college or other unit shall be certain that at least one of the persons designated to receive complaints is a female.

The person who receives a sexual harassment report or complaint will advise the complainant about the informal and formal resolution alternatives available under this policy. At the complainant's option, the intake person can 1) provide information about sexual harassment and this policy, 2) help the complainant deal directly with the alleged offender, 3) assist with or mediate a resolution of the problem within the unit, and/or 4) help the complainant prepare a written complaint and pursue a formal investigation. Informal resolution measures should be custom-designed to address the particular circumstances. If the complainant wishes, the intake person can, in consultation with a representative of the appropriate Office of Human Resources and/or the Affirmative Action Office, conduct an informal inquiry into the reported incident and assist in resolving it. The person to whom an informal complaint is brought will not inform the accused of the complainant's action or identity without the consent of the complainant.

**Formal Investigation**

Either subsequent to or instead of following an informal process, a complainant may elect to make a formal charge of sexual harassment and have it pursued. The University will investigate all formal charges of sexual harassment.
There are two internal mechanisms available to pursue a formal charge and their availability depends on the employment status of the complainant. All employees represented by a union must pursue a formal charge through the grievance procedure in the relevant collective bargaining agreement. All other employees may pursue a formal charge through the use of the appropriate faculty or staff grievance procedure set forth in the Standard Practice Guide or, in the alternative, through the procedures set forth in this policy.

Formal charges under this Policy's procedures should be made in writing and filed either with a dean or director, the Affirmative Action Office, the appropriate Office of Human Resources, or, on the Dearborn campus, with the Office of the Provost. If a formal investigation is initiated, the person accused of sexual harassment must be notified of the charge and given the opportunity to respond to any allegations before disciplinary actions are taken.

The purpose of an investigation, which will include interviewing the parties and witnesses, is to gather and verify facts about the case. Formal investigations will be conducted in consultation with the Office of the General Counsel, by a three-person team consisting of a representative from the appropriate Office of Human Resources, the Affirmative Action Office, and the office of the dean or director. Investigation of a complaint against a dean or director will include a representative from the office of the appropriate Vice President or Vice Chancellor in place of a representative from the office of that dean or director. Faculty and student participants in an investigation may elect to have a peer representative included on the investigatory team. Student or faculty peer representatives will be drawn by lot from the student panel which hears complaints under the Interim Policy on Discrimination and Discriminatory Conduct by Students in the University Environment or from the faculty cognate panel for the faculty grievance procedure, respectively, on the Ann Arbor campus, and from an equivalent representative pool on the Dearborn and Flint campuses.

Investigations will be conducted promptly, thoroughly, and fairly, affording both the complainant and the accused a full opportunity to participate. Possible outcomes of an investigation are 1) a finding that the allegations are not warranted or could not be substantiated, 2) a negotiated settlement of the complaint, 3) a finding that the allegations are substantiated and, if so, 4) recommendations to the appropriate supervisor regarding corrective action to be taken. If an allegation of sexual harassment is substantiated, appropriate corrective action will follow. The University utilizes a disciplinary system for this and other misconduct in which the extent of the disciplinary action taken depends on all the facts and circumstances available at the time the decision is made. The severity of the punishment will depend on the frequency and severity of the offense. Corrective action could include a requirement not to repeat or continue the harassing conduct, a reprimand, denial of a merit pay increase, reassignment, and suspension. A finding of sexual harassment may cause for the separation of the offending party from the University, in accordance with University procedures, including, for qualified faculty, the procedures set forth in Regental Bylaw 5.09. Every effort will be made to assure University-wide uniformity of sanctions. The complainant and the person complained against will be notified in writing of the final disposition of a formal complaint. In the event the allegations are not substantiated, all reasonable steps will be taken to restore the reputation of the accused if damaged by the proceeding.

University Action

At the request of a complainant or with the consent of one or more complainants who agree to participate as witnesses, the University may, in appropriate circumstances, assume the role of a complainant and pursue a report or complaint of sexual harassment, either informally or formally. The University may respond to complaints or reports by persons external to the University community about conduct of University employees alleged to be sexual harassment.

Appeals Process

Complainants and faculty and staff members against whom corrective action is taken may avail themselves of the relevant grievance procedure as to the appropriateness of the corrective action and the procedures followed. A student complainant who is not satisfied with the outcome of a formal investigation may appeal the outcome to the Provost and Vice President for Academic Affairs (if person complained against is a faculty member or teaching assistant) or relevant Vice President (if person complained against is a staff member). On the Dearborn and Flint campuses, student complainants should utilize the appeals process specific to their own campus.

Reporting Requirements

To assure University-wide compliance with this policy and with federal and state law, the Affirmative Action Office must be advised of all reported incidents of sexual harassment and their resolution. Reports in which the complainant's and/or the accused's names are not revealed should be reported generically. The Affirmative Action Office will use this information to prepare annual statistical reports for the campus community on the incidence of sexual harassment. The Office of the General Counsel will monitor repeated complaints within the same unit or against the same individual, where appropriately identified, to assure that such claims are appropriately handled.

General

In all cases, a person who 1) reports or complains, 2) participates in an inquiry or investigation, or 3) is accused of sexual harassment incidents may be accompanied by an individual of his or her choice who shall be permitted to attend, but not participate in, the proceedings.

The University will take appropriate steps to assure that a person who in good faith reports, complains about, or participates in an informal resolution or formal investigation of a sexual harassment allegation will not be subjected to retaliation. The University also will take appropriate steps to assure that a person against whom such an allegation is made is treated fairly. The University will also undertake appropriate follow-up measures to assure compliance with settlements and the goals of this policy.

Inquiries and complaints of sexual harassment shall be treated with the maximum degree of confidentiality. Only when required by law or when personal safety is at risk will confidential information be acted upon or disclosed to others without a complainant's consent.

Sexual harassment complaints should be made promptly and resolved as quickly as possible, generally within two weeks of
the date the complaint is made. Formal investigations should be concluded within thirty (30) days from the date of the complaint. The complainant and the accused should be kept apprised of the progress of the investigation as well as the ultimate outcome.

The University will make every effort to accommodate parties who are unable to participate in a formal investigation because of physical incapacity or geographical location.

**Complaint-Handling Guidelines**

The University will issue and make available to persons entrusted with administering this policy and other interested parties, appropriate complaint-handling guidelines, consistent with this policy. All guidelines shall be reviewed and approved by the Office of the Provost and the Office of the General Counsel. These guidelines shall be issued within ninety (90) days of the effective date of this policy.

**Revisions**

This policy and these procedures are subject to revision as determined necessary or desirable in view of experience or changes in the law.

**Smoke-Free Building Policy**

Since September 1, 1992, smoking has not been permitted in campus buildings. In a very real sense, the responsibility for implementing this policy lies with each individual in the UM-D community. Successful implementation requires your understanding, consideration and cooperation. Smoking control/cessation programs are available through Counseling and Support Services, 2157 University Center, 313-593-5430.

**Parking and Transportation**

Access to the campus is available on bus routes operated by the Suburban Mobility Authority for Regional Transportation (SMART). Connecting service is available on routes operated by the Detroit Department of Transportation (DDOT).

Direct service is available for most Detroit and western Wayne County residents, with transfer service available for Oakland and Macomb County commuters. Additional information may be obtained by telephoning SMART at 313-962-5515.

UM-D provides a shuttle service between the main campus and Fairlane Center for students, staff and faculty. A valid ID card is required to board the shuttle. The shuttle will pick up and drop off passengers at the University Center turnaround and the Fairlane Center South turnaround. For times of operation consult the Parking website: http://www.umd.umich.edu/univ/bus/aux/parking.html.

Parking of all motor vehicles at UM-D is by permit only. Parking for students, faculty and staff is allowed in designated permit lots only when vehicles are properly registered and display the appropriate parking decal. Guest permits are available at the Parking Office (in the Campus Support Services Building). The Montich Parking Structure provides parking for all visitors. For further information, refer to the UM-D Parking & Transportation Manual or contact the Parking Office by telephone at 313-593-5480.

**Parking Enforcement**

Parking enforcement, including issuance of tickets, is primarily handled by the Parking Office. There is a $70.00 fine for unauthorized parking in Faculty/Staff lots and in fire lanes, and a $125.00 fine for unauthorized parking in handicap zones. All fines are paid to the 19th District Court in the City of Dearborn.

Although the Public Safety and Environmental Health Office provides 24-hour surveillance of all parking lots, UM-D cannot be held responsible for acts of theft or vandalism committed upon vehicles parked in campus lots or in the parking structure.

**Public Safety and Environmental Health**

The Public Safety and Environmental Health Department, located in the Campus Support Services building, provides 24-hour emergency, safety and security services. Services offered include: crime prevention, emergency assistance, health/safety/crime reporting, escort service, patrol of buildings, grounds and parking lots, and administration of the Lost & Found Program, Occupational Safety and Environmental Health Programs and Services, Fire Prevention and Safety Programs.

For immediate response to any campus emergency, DIAL 911 from a campus phone or 313-593-5333 from a cell phone. There are 52 direct-dial emergency phones strategically placed around campus at the flagpoles, in the parking lots, and in each of the buildings. There are three phones in Fairlane Center South (near the information desk and two in the middle of the building).

For emergency medical assistance, DIAL 911 from a campus phone or 313-593-5333 from a cell phone. Transportation from campus to Henry Ford Hospital-Fairlane for minor injuries may be provided.

For additional information telephone 313-593-9953 (department office), or 313-593-5333 (dispatch center).
COLLEGE OF ARTS, SCIENCES, & LETTERS

Administration

Kathryn M. Anderson-Levitt, PhD, Dean
Camron Amin, PhD, Associate Dean
Jonathan Smith, PhD, Associate Dean
Leah Long, Administrative Manager
Marlene Pruitt, BA, Senior Staff Assistant
Susan Cushnier, MA, Director, Academic Outreach
Susan Gedert, AB, Editor, *Artes Liberales* and Alumni Affiliate Coordinator
Caroline Landrum, MEd, Director, Distance Learning and REACH
Carol Ligienza, BGS, Graduate Programs
Chalina Hillson, MA, Financial Specialist
Sharie Beard, Administrative Coordinator
Patricia D. Jones, MPA, Director, Cooperative Education
Don Barbacci, AS, Senior Computer Systems Specialist
Marlis Shannon, MA, Director, Office of Advising and Student Records
Vera Mical, Administrative Coordinator, Women SOAR Program

Chairs and Directors

Suzanne Bergeron, Director, Women’s and Gender Studies
Moulouk Berry, Interim Director, Center for Arab American Studies
Lars Bjorn, Director, American Studies
Sidney Bolkosky, Director, Honors Program
Kevin Early, Director, Criminal Justice
Orin Gelderloos, Director, Environmental Interpretive Center
John A. Gillespie, Chair, Department of Mathematics and Statistics
Martin Hershock, Chair, Department of Social Sciences
Gloria House, Director, African & African American Studies
Poonam Arora, Chair, Department of Humanities
Brooks Hull, Director, Center for Economic Education and Director, Master of Public Policy
Claude Jacobs, Director, Center for the Study of Religion and Society
Patti Jones, Director, Cooperative Education
Maureen Linker, Director, Science & Technology Studies
Vaman Naik, Chair, Department of Natural Sciences
Pam McAuslan, Director, MS in Psychology
Gerald Moran, Director, Cooperative Education
Troy Murphy, Associate Chair, Humanities
Kent Murray, Director, MS in Environmental Science
Bruce Pietykowski, Director, Center for the Study of Auto Heritage
Joan Remski, Director, MS in Applied and Computational Mathematics
Ara Sanjian, Director, Center for Armenian Studies
Nancy Wrobel, Chair, Department of Behavioral Sciences
Roger Verhey, Chair, Department for Mathematics Education
Kathleen Wider, Director, MA in Liberal Studies
Margaret Willard-Traub, Director, Campus Writing Center

Faculty (Full-Time)

Department of Behavioral Sciences

Michael Akiyama, PhD, University of Illinois at Urbana-Champaign, Professor of Psychology
Kathryn M. Anderson-Levitt, PhD, Stanford University, Professor of Anthropology
Pamela Aronson, PhD, University of Minnesota, Assistant Professor of Sociology
Lars Bjorn, PhD, University of North Carolina, Professor of Sociology
Barry A. Bogin, PhD, Temple University, William E. Stirton Professor of Anthropology
David Chatkoff, PhD, University of Southern Mississippi, Assistant Professor of Psychology
Paul Draus, PhD, Loyola University, Assistant Professor of Sociology
Kevin Early, PhD, University of Florida, Director of the Criminal Justice Program, Associate Professor of Sociology
James Gruber, PhD, University of North Carolina, Professor of Sociology
Robert W. Hymes, PhD, Michigan State University, Associate Professor of Psychology
Claude Jacobs, PhD, Tulane University, Associate Professor of Behavioral Science
Lora Lempert, PhD, University of California at San Francisco, Professor of Sociology
Roger C. Loeb, PhD, Cornell University, Professor of Psychology
Pamela McAuslan, PhD, Wayne State University, Associate Professor of Psychology
Brian McKenna, PhD, Michigan State University, Assistant Professor of Anthropology
Diane Oliver, PhD, University of Washington, Assistant Professor of Psychology
Heather O’Mahen, PhD, University of Georgia, Assistant Professor of Psychology
Susana Peciña, PhD, University of Michigan, Assistant Professor of Psychology
Lawrence Radine, PhD, Washington University, Associate Professor of Sociology
Jane Sheldon, PhD, University of Michigan, Associate Professor of Psychology
Jeffrey Stern, PhD, University of California at Berkeley, Professor of Psychology
Richard O. Straub, PhD, Columbia University, Professor of Psychology
Dan J. Swift, PhD, University of New Hampshire, Associate Professor of Psychology
Marie Waug, PhD, Ohio State University, Associate Professor of Psychology
Nancy Wrobel, PhD, Wayne State University, Associate Professor of Psychology

Department of Humanities

Poonam Arora, PhD, State University of New York-Binghamton, Associate Professor of English
Elias Baumgarten, PhD, Northwestern University, Associate Professor of Philosophy
Moulouk Berry, PhD, University of Michigan, Assistant Professor of Arabic
Erik Bond, PhD, New York University, Assistant Professor of English Language and Literature
Daniel D. Davis, PhD Phil, Oxford University, Associate Professor of Linguistics
William DeGenaro, PhD, University of Arizona, Assistant Professor of Composition and Rhetoric
Scott Degregorio, PhD, University of Toronto, Assistant Professor of English Language and Literature
Susan N. Erickson, PhD, University of Minnesota, Associate Professor of Art History
Gabriella Eschrich, PhD, Wayne State University, Associate Professor of French
Caitlin Finlayson, PhD, University of Toronto, Assistant Professor of English
Nouri Gana, PhD, Université de Montréal, Assistant Professor of English and Arab American Studies
Gloria House, PhD, University of Michigan, Associate Professor of Humanities and African/African-American Studies
Paul Hughes, PhD, University of Michigan, Associate Professor of Philosophy
Timothy Kiska, PhD, Wayne State University, Assistant Professor of Communications
Carolyn Kraus, PhD, University of Michigan, Associate Professor of Communications and Director, Humanities Internship Program
Jamie Lee, PhD, University of Illinois, Assistant Professor of Linguistics
Maureen Linker, PhD, City University of New York, Associate Professor of Philosophy
William J. Linn, PhD, New York University, Associate Professor of English Language and Literature
Daniel Little, PhD, Harvard University, Professor of Philosophy
Rashmi Luthra, PhD, University of Wisconsin-Madison, Professor of Communications
Troy Murphy, PhD, University of Pittsburgh, Associate Professor of Communications
Seryl S. Pearson, PhD, University of Michigan, Associate Professor of English Language and Literature, and Communications
Shelley K. Perlove, PhD, University of Michigan, Professor of Art History
Deborah Smith Pollard, PhD, Michigan State University, Associate Professor of English Language and Literature
Carlos Rodriguez-McGill, PhD, Ohio State University, Assistant Professor of Spanish
Elizabeth Rohan, PhD, University of Illinois at Urbana-Champaign, Assistant Professor of Composition and Rhetoric
Melita Schaum, PhD, University of Notre Dame, Professor of English Language and Literature
Jonathan Smith, PhD, Columbia University, Professor of English Language and Literature
Melanie Sobocinski, PhD, University of Michigan, Assistant Professor of Art History
Stephane Spoiden, PhD, Ohio State University, Associate Professor of French
Jacqueline Vansant, PhD, University of Texas-Austin, Professor of German
Jason Weems, PhD, Stanford University, Assistant Professor of Art History
Kathleen Wider, PhD, Wayne State University, Professor of Philosophy
Margaret Willard-Traub, PhD, University of Michigan, Associate Professor of Composition and Rhetoric

Randal Woodland, PhD, University of North Carolina-Chapel Hill, Associate Professor of Composition and Rhetoric
Wayne Woodward, PhD, University of Illinois at Urbana-Champaign, Associate Professor of Communications

**Department of Mathematics and Statistics**

James W. Brown, PhD, University of Michigan, Professor of Mathematics
Nesrin Cengiz, PhD, Western Michigan University, Assistant Professor of Mathematics Education
Rama Chidambaram, PhD, Arizona State University, Assistant Professor of Mathematics
John Clifford, PhD, Michigan State University, Assistant Professor of Mathematics
Robert Fakler, PhD, University of Minnesota, Associate Professor of Mathematics
John F. Fink, PhD, Western Michigan University, Professor of Mathematics
Judith M. Flowers, PhD, University of Michigan, Assistant Professor of Mathematics Education and Mathematics
John A. Gillespie, PhD, Temple University, Professor of Mathematics and Statistics
Margret H. Höft, PhD, University of Houston, Professor of Mathematics
David A. James, PhD, University of Wisconsin, Professor of Mathematics
Angela Krebs, PhD, Michigan State University, Associate Professor of Mathematics Education and Mathematics
Michael A. LaChance, PhD, University of South Florida, Professor of Mathematics
Paul Lin, PhD, Wayne State University, Associate Professor of Mathematics and Statistics
Frank J. Massey, PhD, University of California-Berkeley, Associate Professor of Mathematics and Computer Science
Ronald P. Morash, PhD, University of Massachusetts, Professor of Mathematics
F. J. Papp, PhD, University of Delaware, Professor of Mathematics
Margaret Rathouz, PhD, University of California-San Diego, Assistant Professor of Mathematics Education
Joan Remski, PhD, Michigan State University, Associate Professor of Mathematics
Rheta N. Rubenstein, PhD, Wayne State University, Professor of Mathematics Education and Mathematics
Thomas E. Snabb, PhD, Wayne State University, Associate Professor of Mathematics and Statistics
Jennifer Zhao, PhD, Indiana University, Professor of Mathematics

**Department of Natural Sciences**

Radwan Abu Issa, PhD, Baylor College of Medicine, Assistant Professor of Biology
Richard Adler, PhD, Pennsylvania State University, Associate Professor of Biology and Microbiology
Larry Alexander, PhD, McHarry Medical College, Assistant Professor of Biology
Krisanu Bandyopadhyay, PhD, National Chemical Laboratory University of Dune (India), Assistant Professor of Chemistry
Ali A. H. Bazzi, PhD, Wayne State University, Professor of Chemistry
Donald J. Bord, PhD, Dartmouth College, Professor of Physics
Ann Danielson-Francois, PhD, University of Arizona, Assistant Professor of Chemistry
Mark R. DeCamp, PhD, Princeton University, Associate Professor of Chemistry
Yiwei Deng, PhD, Swiss Federal Institute of Technology, Associate Professor of Chemistry
John F. Devlin, PhD, Michigan State University, Associate Professor of Physics
Craig J. Donahue, PhD, University of Massachusetts, Associate Professor of Chemistry
Orin G. Gelderloos, PhD, Northwestern University, Professor of Biology and Environmental Studies
Daniel Lawson, PhD, Michigan State University, Associate Professor of Chemistry
Simona Marincean, PhD, Michigan State University, Assistant Professor of Chemistry
M. Kazem Mostafapour, PhD, Wayne State University, Associate Professor of Chemistry and Biochemistry
Kent Murray, PhD, University of California-Davis, Professor of Geology
Vaman Naik, PhD, University of Michigan, Professor of Physics
Jacob Napieralski, PhD, Purdue University, Assistant Professor of Geology
Charlotte A. Otto, PhD, University of Illinois at Urbana-Champaign, Professor of Chemistry
Marilee B. Parsons, PhD, University of Delaware, Associate Professor of Biology and Biochemistry
Jeffrey J. Prentis, PhD, University of Michigan, Professor of Physics
John Riebesell, PhD, University of Chicago, Associate Professor of Biology
Robert L. Simpson, PhD, Cornell University, Professor of Biology and Environmental Science
Sheila R. Smith, PhD, University of North Carolina, Assistant Professor of Chemistry
David Susko, PhD, University of Windsor, Assistant Professor of Biology
Carrie Swift, PhD, University of Michigan, Assistant Professor of Physics
John Thomas, PhD, University of Arizona, Professor of Biology
Sonia Tiquia, PhD, University of Hong Kong, Assistant Professor of Biology
Paul W. Zitzewitz, PhD, Harvard University, Professor of Physics

Martin Hershock, PhD, University of Michigan, Associate Professor of History
Georgina Hickey, PhD, University of Michigan, Associate Professor of History
Brooks B. Hull, PhD, University of Washington, Professor of Economics
Grace Kim, PhD, Vanderbilt University, Assistant Professor of Economics
Joe Lunn, PhD, University of Wisconsin-Madison, Associate Professor of History
Ilir Miteza, PhD, University of Wisconsin-Milwaukee, Associate Professor of Economics
Gerald F. Moran, PhD, Rutgers University, Professor of History
Pamela Pennock, PhD, Ohio State University, Associate Professor of History
Bruce Pietykowski, PhD, New School for Social Research, Professor of Economics
Ahmad Rahman, PhD, University of Michigan, Assistant Professor of History
Juliette Roddy, PhD, Wayne State University, Assistant Professor of Public Policy
Michael Rosano, PhD, University of Toronto, Associate Professor of Political Science
Ara Sanjian, PhD, University of London, Associate Professor of History
Lowell Sklar, PhD, University of Pennsylvania, Assistant Professor of History
Patricia Smith, PhD, Virginia Polytechnical Institute and State University, Professor of Economics
Ronald R. Stockton, PhD, Michigan State University, Professor of Political Science
Trevor Thrall, PhD, Massachusetts Institute of Technology, Assistant Professor of Political Science
Michael J. Twomey, PhD, Cornell University, Professor of Economics
Patrick VanHorn, PhD, University of California-Irvine, Assistant Professor of Economics
Francis W. Wayman, PhD, University of Pennsylvania, Professor of Political Science

Professors Emeriti

Peter Amann, PhD, William E. Stirton Professor of History
Eugene J. Arden, PhD, Professor of English
Richard Axson, PhD, Professor of Art History
Philip H. Beggrov-Peter, PhD, Associate Professor of Music
Lawrence I. Berkove, PhD, Professor of Economics
Richard Axsom, PhD, Professor of Art History
John G. Constant, PhD, Associate Professor of History
Allan Emery, PhD, Professor of Chemistry
Neil M. Flax, PhD, Associate Professor of Comparative Literature and German
Gerald Gardner, PhD, Professor of Psychology
Frank Garland, PhD, Associate Professor of Chemistry
Helen Graves, PhD, Associate Professor of Political Science
Eugene Grewe, PhD, Professor of Rhetoric and English Composition
Judith E. Heady, PhD, Associate Professor of Biology
Emmanuel Hertzler, PhD, Professor of Biology
Elton Higgs, PhD, Professor of English Language and Literature

Department of Social Sciences

Camron M. Amin, PhD, University of Chicago, Associate Professor of History
Donald F. Anderson, PhD, Cornell University, Professor of Political Science
Suzanne Bergeron, PhD, University of Notre Dame, Associate Professor of Women’s Studies and Social Sciences
Sidney M. Bolkosky, PhD, State University of New York-Binghamton, William E. Stirton Professor of History
Julio Borquez, PhD, University of Michigan, Associate Professor of Political Science
Elaine G. Clark, PhD, University of Michigan, Professor of History
Elizabeth Crowell, PhD, Indiana University, Associate Professor of Economics
Lada Dunbar, PhD, University of Oregon, Assistant Professor of Political Science

A RTS, SCI E N C E S, A ND LETT E R S 41
Noriko Kamachi, PhD, Professor of History  
Bernard W. Klein, PhD, Professor of Political Science  
John Kotre, PhD, Professor of Psychology  
Dorothy A. Lee, PhD, Professor of Comparative Literature and English  
Donald Levin, PhD, Professor of Sociology  
Robert Lyjak, PhD, Professor of Mathematics and Computer Science  
Stephen Milles, PhD, Associate Professor of Mathematics and Mathematics Education  
Daniel E. Moerman, PhD, William E. Stirton Professor of Anthropology  
Arunajallam Nadasen, PhD, Professor of Physics  
Richard S. Norman, PhD, Associate Professor of Biology  
Dennis R. Papazian, PhD, Professor of History  
Ted-Larry Pebworth, PhD, William E. Stirton Professor of English Language and Literature  
Richard A. Potts, PhD, Professor of Chemistry  
Donald Proctor, PhD, Professor of History  
Richard Roehl, PhD, Professor of Economics  
Marilynn Rosenthal, PhD, Professor of Sociology  
Edward Sayles, PhD, Professor of Philosophy  
Michael Schneider, PhD, Professor of Biology  
Emily L. Spinelli, PhD, Professor of Spanish  
Claude Summers, PhD, Professor of English Language and Literature  
Julia C. Tai, PhD, Professor of Chemistry  
Leslie W. Tentler, PhD, Professor of History  
William Thomson, PhD, Associate Professor of Psychology  
Roger F. Verhey, PhD, Professor of Mathematics and Mathematics Education  
Sidney Warschausky, PhD, Professor of English Language and Literature  
Louis Zuck, PhD, Professor of Linguistics

College of Arts, Sciences, and Letters History of the College

From the beginning of the Dearborn Center of the University of Michigan, as it was called at first, there was “an intent to provide a full schedule of daytime courses in Engineering, Business Administration, and the Liberal Arts and Sciences” (Report by the University’s Dean of Statewide Education, January 1957). On January 10, 1958, the Regents approved the creation of the Division of Literature, Science, and the Arts (LSA) as an official academic division. Full programs in the liberal arts began in Fall 1960; by Fall 1965 the LSA Division was the largest academic unit on the Dearborn Campus, a distinction which continues to the present.

When it became a four-year undergraduate institution in 1971, the Campus was designated the University of Michigan-Dearborn (UM-D). Two years later, the Regents approved a new set of UM-D Bylaws, in which the Department of Education became a separate division, and the LSA Division became the College of Arts, Sciences, and Letters (CASL), administered by a Dean. CASL now consists of five multidisciplinary departments: Behavioral Sciences, Humanities, Mathematics and Statistics, Natural Sciences and Social Sciences.

College of Arts, Sciences, and Letters Mission Statement

Graduate programs in the College of Arts, Sciences, and Letters engage a diverse, highly motivated, and talented student body in disciplined and sustained study for both intellectual and vocational purposes. In particular, these programs are designed to equip students with the intellectual resilience required for the complex challenges of a changing world—and for the intersecting domains of professional activity, citizenship and public policy, and life-long learning.

Building on the talents of a distinguished faculty of teacher-scholars and the resources of the region, these programs fulfill two broad liberal arts functions. They enlarge, deepen, and refine students’ knowledge and awareness. They also develop students’ analytical, critical thinking, and problem-solving skills. Most emphasize interdisciplinary perspectives and methods, a hallmark of the College, in the conviction that multiple perspectives yield richer analytical contexts. Most offer small classes, close interaction with faculty, and special sensitivity to issues that have regional significance. Whether specifically oriented to a particular profession or not, these programs try to accommodate the interests and needs of working adults through convenient scheduling, customized plans of study, and thoughtful advising. Partnerships with the broader community provide opportunities for the dissemination and application of knowledge, and for collaborative projects. For example, our students might develop problem-solving applications for industrial and scientific settings like those in southeastern Michigan, use the Rouge River watershed as a laboratory for environmental concerns, or work with nearby healthcare providers.

CASL offers five graduate degrees: Master of Science in Applied and Computational Mathematics, Master of Science in Environmental Science, Master of Arts in Liberal Studies, Master of Science in Psychology with Specializations in Health Psychology and Clinical Health Psychology, and Master of Public Policy.

Following are descriptions of each program’s mission, admission standards, and requirements. Additional information is available at http://casl.umd.umich.edu/gradprograms/.
MASTER OF SCIENCE IN
APPLIED AND
COMPUTATIONAL
MATHEMATICS

The Applied and Computational Mathematics (ACM) program provides graduate-level education in applied mathematics for people whose goal is to develop comprehension of principles of applied mathematics and skills in employing those principles in industrial or scientific settings. It has three central themes: general principles and theories of applied mathematics, the construction and analysis of mathematical models, and the development and efficient execution of computational mathematical algorithms. Effective use of advanced applied mathematical techniques has become increasingly important in industrial settings as the amount of sophisticated simulation software has mushroomed. People are needed who can help engineers, scientists and managers in the precise formulation of complex problems and in selecting the goal of the program to provide these skills.

The Program

The ACM program provides not only coursework in various areas of applied mathematics, but also opportunities for independent or collaborative work. These approaches to learning contribute to a student’s outlook and depth of understanding. The program supports the development and enhancement of students’ skills useful in industrial and scientific careers, and in other careers having applied mathematics as its primary focus. It is geared toward three groups of prospective students: individuals in established careers who want or require further training for their current positions, individuals in the workforce who wish to retrain for new career directions, in some cases preparing for a more mathematically-oriented assignment with their current employer, and recent graduates who desire a deeper understanding of applied mathematics as an aid in launching a career.

Admission and Prerequisites

Admission to the ACM program as a regular student requires a BA or a BS degree in mathematics, computer and information science, engineering, a physical science or a life science earned from a program at an accredited institution with an average of B or better. Individuals with other degrees or less than a B average may be considered for conditional admission status and may be required to submit evidence of potential for success in a graduate program. An entering student should have completed three courses in Calculus, including multivariate calculus, plus introductory courses in Linear Algebra and Differential Equations. Deficiencies in prerequisites may be made up after entrance to the Graduate Program. However, credits received in courses elected to make up the deficiencies do not count toward the degree.

Each applicant should submit the following:
1) Official transcripts from all universities attended.
2) A one-page statement of purpose describing the applicant’s career goals and personal objectives in pursuing the program.
3) Three letters of recommendation. At least one letter must be from an academic source.
4) Students whose native language is not English are also required to satisfy the requirements set forth in The University of Michigan Bulletin: Graduate Student Handbook for English proficiency.

Please send materials to: University of Michigan-Dearborn, CASL Graduate Programs, 1080 SSB, 4901 Evergreen Road, Dearborn, MI 48128. For more information, visit the ACM website at: http://casl.umd.umich.edu/math/ or call 313-593-1183.

Advanced Standing

Up to six graduate credit hours (grade of B or better) may be transferred from another accredited institution as specified in the Horace H. Rackham School of Graduate Studies regulations. You may transfer up to one-half (1/2) the minimum number of credit hours required for your master's or professional degree from U-M/non-Rackham departments and programs (including Ann Arbor, Dearborn and Flint).

Degree Requirements

The general master’s degree requirements are on the Rackham School of Graduate Studies website: http://www.rackham.umich.edu/Admis/ and are to be considered as degree requirements. The handbook is available online at http://www.rackham.umich.edu/StudentInfo/Publications/GSH/html/contents.html. In addition, the ACM degree requires 30 semester hours of graduate coursework with a cumulative grade point average of B or better. The 30 hours must meet the requirements below and be selected from lists of approved courses and be approved by the student’s graduate advisor. At least 15 of the hours must be in courses of the Department of Mathematics and Statistics.

Specific Course Requirements

Core Courses

One course from each of the following areas. At most, nine hours of these courses may count toward the 30 hours.

Mathematical Analysis

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 551</td>
<td>Advanced Calculus I</td>
<td>3 hrs</td>
</tr>
<tr>
<td>MATH 554</td>
<td>Fourier Series and Boundary Value Problems</td>
<td>3 hrs</td>
</tr>
<tr>
<td>MATH 555</td>
<td>Functions of a Complex Variable with Applications</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>
Modeling

MATH 562 Mathematical Modeling ......................... 3 hrs

Numerical Methods

MATH 572 Introduction to Numerical Analysis .......... 3 hrs
MATH 573 Matrix Computation ......................... 3 hrs

Concentration

At least four courses from the modeling specialization areas listed below. At least two courses must be from the same area; however, not all four may be from the same area.

Linear Models

STAT 530 Applied Regression Analysis .................... 3 hrs
MATH 515 B-Splines and Their Applications ............ 3 hrs
MATH 523 Linear Algebra with Applications ............ 3 hrs
MATH 558 Introduction to Wavelets .................... 3 hrs

Discrete Models

MATH 582 Computer Algebra Systems .................... 3 hrs
MATH 583 Discrete Optimization ......................... 3 hrs
MATH 584 Applied and Algorithmic Graph Theory ....... 3 hrs

Differential Models

MATH 504 Dynamical Systems ............................ 3 hrs
MATH 514 Numerical Solutions of Partial Differential Equations ............... 3 hrs
MATH 516 Partial Differential Equations ............... 3 hrs

Stochastic Models

MATH 520 Stochastic Processes .......................... 3 hrs
MATH 525 Mathematical Statistics II ...................... 3 hrs
STAT 535 Data Analysis and Modeling ................... 3 hrs
STAT 545 Reliability and Survival Analysis ............ 3 hrs

Project

At least one of the following is required:

MATH 595 Master’s Project Seminar .................... 3 hrs
or
MATH 599 Independent Research Project ............... 3 hrs

Cognates .................................................................. 6 hrs

Six hours of cognate courses outside the Department of Mathematics and Statistics are required. The courses should be selected from an approved list.

MASTER OF SCIENCE IN ENVIRONMENTAL SCIENCE

The Master of Science in Environmental Science (MSES) is a two-year program designed for students who wish to pursue graduate study on a full or part-time basis so they can balance professional and personal goals. Courses are primarily held in the evening and occasionally on Saturdays. Graduate students in the Department of Natural Sciences are talented and often have significant professional experience. Graduate faculty are highly qualified and experienced, and the educational culture is one in which learning, teaching, and research are emphasized. Pursuing a graduate degree in Environmental Science at UM-D will result in substantial growth in knowledge, skills, and long-term career potential.

The Program

With approximately 30 students enrolled, we stress personalized, individual attention to graduate student education and research. The program provides a choice between emphasizing the environmental aspects of biology, chemistry, or geology, or a more broadly focused approach involving courses in each of the above fields.

Faculty and students are engaged in the research of environmental issues including: wetlands delineation, the treatment of nitrate contaminated groundwater with microbiological techniques, the impact of land use on groundwater and surface water quality, the use of phytoremediation in the cleanup of polycyclic aromatic hydrocarbon contaminated soil, and brownfield investigation and restoration.

Research Facilities

The Department of Natural Sciences has extensive networked computing facilities, including scanners, digitizers and plotters, GIS and groundwater modeling software, GPS equipment, a scanning electron microscope, and labs for preparation and chemical analysis of environmental, biological and geological samples. We also have extensive mineralogic and paleontologic collections as well as the Merritt Geode Collections, one of the finest in the world.

Admission and Prerequisites

Admission to the MSES program requires a bachelor’s degree in biology, chemistry, environmental science or geology from an accredited institution with a cumulative undergraduate GPA of 3.1 or higher (based on a 4.0 scale). Candidates with degrees in other fields may be conditionally accepted into the program with the understanding that additional prerequisites may be required. Entering students should have completed a field course in biology or geology, one course in biology, geology, physics, and statistics, two courses in calculus, and three courses in chemistry. Deficiencies may be satisfied by completing prerequisite courses at UM-D or at another school with the approval of the graduate program committee.

Each applicant should submit the following:

1) Official transcripts from all universities attended.
2) A one-page statement of purpose describing the applicant’s career goals and personal objectives in pursuing the program.
3) Two letters of recommendation.
4) Students whose native language is not English are also required to satisfy the requirements set forth in The University of Michigan Bulletin: Graduate Student Handbook for English proficiency.
Programs (including Ann Arbor, Dearborn and Flint).

Advanced Standing

Up to six graduate credit hours (grade of B or better) may be transferred from another accredited institution as specified in the Horace H. Rackham School of Graduate Studies regulations. You may transfer up to one-half the minimum number of credit hours required for your master’s or professional degree from U-M/non-Rackham departments and programs (including Ann Arbor, Dearborn and Flint).

Degree Requirements

The general master’s degree requirements on the Rackham School of Graduate Studies website http://www.rackham.umich.edu/Admis/ are to be considered as degree requirements. The handbook is available online at http://www.rackham.umich.edu/StudentInfo/Publications/GSH/ht ml/contents.html. In addition, the MSES degree requires 30 semester hours of graduate coursework with a cumulative grade point average of B or better. The 30 hours must meet the requirements below, be selected from lists of approved courses, and be approved by the student’s graduate advisor.

Three Options for a MSES Degree

- **Plan A. Thesis Option** 24 credit hours (500 level or above) plus ESCI 699. A thesis will be based on original research. (Preferred by the environmental consulting industry)
- **Plan B. Project Option** 27 credit hours (500 level or above) plus ESCI 698. A project will be based on library/field/laboratory research or classroom exercises demonstrating analysis and interpretation of scientific data.
- **Plan C. Coursework Option** 30 credit hours (500 level or above) (Not recommended for students interested in doctoral degrees).

Specific Course Requirements

Core Courses................................................................. 15 hrs

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 514</td>
<td>Applied Ecology</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CHEM 548</td>
<td>Environmental Chemistry</td>
<td>3 hrs</td>
</tr>
<tr>
<td>ESCI 572</td>
<td>Environmental Communications</td>
<td>3 hrs</td>
</tr>
<tr>
<td>ESCI 595</td>
<td>Topics in Environmental Science</td>
<td>3 hrs</td>
</tr>
<tr>
<td>GEOL 575</td>
<td>Contaminant Hydrogeology</td>
<td>3 hrs</td>
</tr>
<tr>
<td>or</td>
<td>LIBS 585</td>
<td>Watershed Analysis</td>
</tr>
</tbody>
</table>

Electives ...........................................................................15 hrs

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 508</td>
<td>Invasive Species Ecology</td>
<td>3 hrs</td>
</tr>
<tr>
<td>BIOL 515</td>
<td>Aquatic Ecosystem</td>
<td>4 hrs</td>
</tr>
</tbody>
</table>

Other Departments

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIBS 585</td>
<td>Watershed Analysis</td>
<td>3 hrs</td>
</tr>
<tr>
<td>LIBS 586</td>
<td>Ecological Economics</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

MASTER OF ARTS IN LIBERAL STUDIES

The Master of Arts in Liberal Studies (MALS) program offers an interdisciplinary approach to learning. Designed for people who value the liberal arts and seek a customized education, the program is intended to provide for the personal enrichment of those who desire an alternative to specialized graduate programs. Its purpose is to provide a liberal arts experience at the post-graduate level to motivated and mature individuals who wish to expand their intellectual horizons, to explore new areas of learning, and to extend the range of ideas and knowledge. While the program is neither professional nor vocational in orientation, it does develop critical thinking skills and interdisciplinary knowledge and techniques and communication skills that are broadly applicable in professional and workplace contexts.

The Program

The MALS program consists of a minimum of thirty graduate-level credit hours. Students draw on LIBS graduate courses as well as other graduate courses in CASL to design a plan of study. To accommodate those working full-time, required classes are offered in the evening hours.

Admission and Prerequisites

Admission to the MALS program requires a bachelor’s degree in any field, or the equivalent, from an accredited college or university with a minimum GPA of 3.0 on a 4.0 scale. Students must receive a B or better in LIBS 560 to continue in the program.

Each applicant should submit the following:

1) Official transcripts from all universities attended.
2) A statement of applicant’s purpose and objectives in seeking admission to the program.
3) A writing sample that displays the applicant’s critical and analytical skills.

4) Students whose native language is not English are also required to satisfy the requirements set forth in the University of Michigan Bulletin: Graduate Student Handbook for English proficiency.

Please send materials to: University of Michigan-Dearborn, CASL Graduate Programs, 1080 SSB, 4901 Evergreen Road, Dearborn, MI 48128. For more information, visit the MALS website at: http://www.casl.umd.umich.edu/MALS or call 313-593-1183.

Advanced Standing

Up to six graduate credit hours (grade of B or better) may be transferred from another accredited institution as specified in the Rackham School of Graduate Studies regulations. Students may transfer up to one-half (1/2) the minimum number of credit hours required for the master's or professional degree from U-M/non-Rackham departments and programs (including Ann Arbor, Dearborn and Flint).

Degree Requirements

The general master’s degree requirements of the Horace H. Rackham School of Graduate Studies are specified on its website http://www.rackham.umich.edu/Admis/, and are to be considered as degree requirements. The handbook is available online at http://www.rackham.umich.edu/StudentInfo/Publications/GSH/html/contents.html. In addition, the MALS degree requires 30 semester hours of graduate coursework with a cumulative grade point average of B or better. The 30 hours must meet the requirements below, be selected from lists of approved courses, and be approved by the Director of the program.

Specific Course Requirements

Prerequisite for all LIBS Graduate Seminars ................. 3 hrs

LIBS 560 Foundations in Liberal Studies ................. 3 hrs

LIBS Graduate Seminars and Graduate Courses ........ 21 hrs

After completing LIBS 560, students may choose to design a theme-centered program of graduate study by selecting courses from LIBS graduate seminars and other graduate courses in CASL. Areas that students have focused on include Environmental Studies, and Women and Gender Studies. However, students are not required to choose a thematic focus.

Thesis/Project/Capstone Experience ......................... 6 hrs

To complete the last 6 credit hours of the MA, students have 3 options: 1) a thesis, 2) a project, or 3) LIBS 697 (the Capstone Course) plus an additional LIBS Graduate Seminar.

Liberal Studies Seminars

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIBS 536</td>
<td>Memoir and Travel Writing</td>
<td>3 hrs</td>
</tr>
<tr>
<td>LIBS 561</td>
<td>Self and Society</td>
<td>3 hrs</td>
</tr>
<tr>
<td>LIBS 562</td>
<td>Postmodernism and truth</td>
<td>3 hrs</td>
</tr>
<tr>
<td>LIBS 563</td>
<td>New World Cultures</td>
<td>3 hrs</td>
</tr>
<tr>
<td>LIBS 564</td>
<td>Literature and Science Studies</td>
<td>3 hrs</td>
</tr>
<tr>
<td>LIBS 565</td>
<td>Investigating Academic Literacy</td>
<td>3 hrs</td>
</tr>
<tr>
<td>LIBS 566</td>
<td>The Self in Philosophy and Literature</td>
<td>3 hrs</td>
</tr>
<tr>
<td>LIBS 567</td>
<td>Religion and Society</td>
<td>3 hrs</td>
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<td>LIBS 568</td>
<td>The Texture of Memory</td>
<td>3 hrs</td>
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<td>LIBS 569</td>
<td>History of Warfare during the Age of Gunpowder, 1500-2000</td>
<td>3 hrs</td>
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<tr>
<td>LIBS 570</td>
<td>The Science, Psychology, and Philosophy of Emotions</td>
<td>3 hrs</td>
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<tr>
<td>LIBS 571</td>
<td>Making Modern Science</td>
<td>3 hrs</td>
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<tr>
<td>LIBS 572</td>
<td>Gender, Culture and Identity</td>
<td>3 hrs</td>
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<tr>
<td>LIBS 573</td>
<td>Aspects of Greek Culture</td>
<td>3 hrs</td>
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<tr>
<td>LIBS 574</td>
<td>European Ideas in American Culture, 1800-Present</td>
<td>3 hrs</td>
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<tr>
<td>LIBS 575</td>
<td>Early Modern Era in New and Old Worlds</td>
<td>3 hrs</td>
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<tr>
<td>LIBS 576</td>
<td>Environmental Studies: Concepts and Philosophy</td>
<td>3 hrs</td>
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<tr>
<td>LIBS 577</td>
<td>Watershed Analysis</td>
<td>3 hrs</td>
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<tr>
<td>LIBS 578</td>
<td>Ecological Economics</td>
<td>3 hrs</td>
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<tr>
<td>LIBS 579</td>
<td>Women and Public Spaces</td>
<td>3 hrs</td>
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<tr>
<td>LIBS 580</td>
<td>Creative Class/Working Class</td>
<td>3 hrs</td>
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<tr>
<td>LIBS 581</td>
<td>LIBS 582</td>
<td>European Ideas in American Culture, 1800-Present</td>
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<tr>
<td>LIBS 583</td>
<td>Early Modern Era in New and Old Worlds</td>
<td>3 hrs</td>
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<tr>
<td>LIBS 584</td>
<td>Environmental Studies: Concepts and Philosophy</td>
<td>3 hrs</td>
</tr>
<tr>
<td>LIBS 585</td>
<td>Watershed Analysis</td>
<td>3 hrs</td>
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<tr>
<td>LIBS 586</td>
<td>Ecological Economics</td>
<td>3 hrs</td>
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<tr>
<td>LIBS 587</td>
<td>Women and Public Spaces</td>
<td>3 hrs</td>
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<tr>
<td>LIBS 588</td>
<td>Creative Class/Working Class</td>
<td>3 hrs</td>
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Additional Courses

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>LIBS 599</td>
<td>MALS Independent Study</td>
<td>3 hrs</td>
</tr>
<tr>
<td>LIBS 690</td>
<td>Topics in Liberal Studies</td>
<td>3 hrs</td>
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<tr>
<td>LIBS 697</td>
<td>MALS Capstone Experience</td>
<td>3 hrs</td>
</tr>
<tr>
<td>LIBS 698</td>
<td>MALS Masters Project</td>
<td>3 or 6 hrs</td>
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<tr>
<td>LIBS 699</td>
<td>MALS Masters Thesis</td>
<td>3 or 6 hrs</td>
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</table>

MASTER OF SCIENCE IN PSYCHOLOGY

The Master of Science in Psychology (MS) is a graduate degree offered by the Behavioral Sciences Department in the College of Arts, Sciences, and Letters (CASL) at the UM-D. Two specializations are available.

Master of Science: Specialization in Health Psychology

This two-year, 37-credit program provides students with intensive training in one or more content areas within Health Psychology and is intended to serve several populations: 1) students who would like to continue graduate training in a research related field, 2) medical professionals who wish to continue their education on a part- or full-time basis, and 3) individuals who require an advanced degree to advance in their careers. This program will not fulfill the course requirements for the Michigan Limited License in Psychology.

The Program

The 37-credit program consists of 13 hours (5 courses) in core areas of Health Psychology. Students will complete either a 3 credit project or a 6 credit thesis under the supervision of program faculty. The remaining 18-21 credits will be composed of elective courses that focus on one or more content areas.
Admission and Prerequisites

Admission decisions are based upon applicants’ records of academic achievement, Graduate Record Examination (general test) scores, letters of recommendation, and personal statements of education and career goals. More specifically a BA or BS in Psychology or a related major with a cumulative undergraduate GPA of at least 3.0 (4.0 scale) and a minimum GRE score (general test) of 1000 are required for admission. Students without undergraduate psychology degrees are welcome to apply but will need Introductory Psychology, Statistics, and Abnormal Psychology. undergraduate Health Psychology and Research Methods are strongly recommended.

Each applicant should submit the following:

1) Official transcripts from all universities attended.
2) A one-page statement of purpose describing the applicant’s career goals and personal objectives in pursuing the program.
3) Three letters of recommendation. (at least 2 from academic sources).
4) GRE Test Results (general test).
5) Students whose native language is not English are also required to satisfy the requirements set forth in The University of Michigan Bulletin: Graduate Student Handbook for English proficiency.

Please send materials to: University of Michigan-Dearborn, CASL Graduate Programs, 1080 SSB, 4901 Evergreen Road, Dearborn, MI, 48128. For more information, visit the psychology website at: http://casl.umd.umich.edu/psychology/ or call 313-593-1183.

Degree Requirements

To complete the degree program a minimum of 37 credits are required in the Behavioral Sciences. The following schedule provides the sequence of courses that students in the MS in Psychology: Specialization in Health Psychology program are expected to take. Although it is possible to take some of the courses out of sequence, many build on previous courses and all course schedules will need to be approved by the program director or your appointed program advisor.

Specific Course Requirements

Year 1: Fall
PSYC 557 Advanced Health Psychology ......................... 3 hrs
PSYC 5825 Basic Methods & Statistics in Health Psychology ........................................ 3 hrs
Elective 1 ........................................................................ 3 hrs

Year 1: Winter
PSYC 5835 Advanced Methods & Statistics in Health Psychology ........................................ 3 hrs
PSYC 575 Biological Foundations of Health Psy. ........... 3 hrs
Elective 2 ........................................................................ 3 hrs

Year 1: Spring
Elective 3 ........................................................................ 3 hrs

Year 2: Fall
PSYC 593 Professional & Ethical Issues ......................... 1 hr
Elective 4 ........................................................................ 3 hrs
Elective 5 ........................................................................ 3 hrs

Year 2: Winter
Elective 6 ........................................................................ 3 hrs
PSYC 697 Thesis or Project ............................................. 3 hrs

Year 2: Spring
PSYC 697 Thesis or Elective ............................................. 3 hrs
Electives ........................................................................ 18-21 hrs

Students are required to have 18-21 credits in approved elective courses. Examples of elective courses that would fulfill program requirements include: Advanced Psychopathology (PSYC 545); Multicultural Issues in Counseling (PSYC 523); Psychology of Women’s Health (PSYC 558). More information about the specific elective courses that will fulfill program requirements should be discussed with your program advisor or the program director each semester.

Thesis/Project Requirements ........................................ 3-6 hrs

Students in the MS in Psychology: Specialization in Health Psychology program will complete either a 3 credit Project or a 6 credit master’s thesis during their second year.

Plan of Work

Students will be required to complete a plan of work during their first semester in the MS in Psychology: Specialization in Health Psychology program. The plan of work requires discussion between students and their program advisers. Copies will be retained by the student and the program director or program advisor.

Grade Requirements

The graduate grading system is intended to reflect higher standards of critical and creative scholarship than those applied at the undergraduate level. To receive a graduate grade in courses open to both undergraduate and graduate students, the graduate student is expected to do work of superior quality and is required to do additional work specified by the instructor. Graduate students are required to earn a B (5.0) average or higher to satisfy degree requirements.

Grades of C+ and below are unsatisfactory for graduate level work and constitute valid cause for dropping a student from the graduate program. To be awarded the MS in Psychology: Specialization in Health Psychology, a student must have achieved at least a 5.0 GPA (a B average). No more than two grades of C+ may be applied toward the MS in Psychology: Specialization in Health Psychology degree. Students who fail to maintain a 5.0 average or have more than two C+ or lower grades will be placed on academic probation for the term following the lapse. Upon the recommendation of the program director, a student may be granted an opportunity to correct the scholastic and/or academic deficiency. Students who fail to meet program requirements may be denied permission to register or may be required to withdraw from the program.
Master of Science: Specialization in Clinical Health Psychology

This two-year, 46-credit program trains mental health care providers to work in primary care settings, as well as more traditional clinical psychology settings. The curriculum of the program, in conjunction with 1 year of supervised postgraduate experience in an organized health care setting, is designed to fulfill the course requirements for the Michigan Limited License.

The Program

The 46-credit program consists of ten required courses (31 credits) in core areas of Clinical Health Psychology. Six credit hours will be devoted to practicum in a community setting. Students will take either three elective courses or one elective course and complete a master’s thesis under the supervision of program faculty.

Admission and Prerequisites

Admission decisions are based upon applicants’ records of academic achievement, Graduate Record Examination (general test) scores, letters of recommendation, and personal statements of education and career goals. More specifically a BA or BS in Psychology or a related major with a cumulative undergraduate GPA of at least 3.0 on a 4.0 scale and a minimum GRE score (general test) of 1000 are required for admission. Students without undergraduate psychology degrees are welcome to apply but will need Introductory Psychology, Statistics, and Abnormal Psychology; undergraduate Health Psychology and Research Methods are strongly recommended.

Each applicant should submit the following:

1) Official transcripts from all universities attended.
2) A one-page statement of purpose describing the applicant’s career goals and personal objectives in pursuing the program.
3) Three letters of recommendation. (at least 2 from academic sources).
4) GRE Test Results (general test).
5) Students whose native language is not English are also required to satisfy the requirements set forth in The University of Michigan Bulletin: Graduate Student Handbook for English proficiency.

Please send materials to: University of Michigan-Dearborn, CASL Graduate Programs, 1080 SSB, 4901 Evergreen Road, Dearborn, MI, 48128. For more information, call 313-593-1183 or visit the psychology website at: http://casl.umd.umich.edu/psychology/

Degree Requirements

To complete the degree program a minimum of 46 credits are required in the Behavioral Sciences. The following schedule provides the sequence of courses that students in the MS in Psychology: Specialization in Clinical Health Psychology program are expected to take. Although it is possible to take some of the courses out of sequence, many build on previous courses and all course schedules will need to be approved by the program director or your appointed program advisor.

Specific Course Requirements

<table>
<thead>
<tr>
<th>Year 1: Fall</th>
<th>Year 1: Winter</th>
<th>Year 1: Spring</th>
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<tbody>
<tr>
<td>PSYC 557 Advanced Health Psychology</td>
<td>PSYC 5835 Advanced Methods &amp; Statistics in Health</td>
<td>PSYC 548 Psychological Assessment I</td>
</tr>
</tbody>
</table>
| PSYC 5825 Basic Methods & Statistics in Health Psychology | PSYC 547 Theories & Techniques of Therapeutic Intervention | Elective 1  
| PSYC 545 Advanced Psychopathology | PSYC 575 Biological Foundations of Health Psychology | 3 hrs |

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<tr>
<th>Year 2: Fall</th>
<th>Year 2: Winter</th>
<th>Year 2: Spring</th>
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<tr>
<td>PSYC 593 Professional and Ethical Issues</td>
<td>PSYC 549 Psychological Assessment II</td>
<td>PSYC 698 Practicum in Clinical Health Psychology</td>
</tr>
</tbody>
</table>
| PSYC 549 Psychological Assessment II | PSYC 565 Individual & Group Techniques in Clinical Health Psychology | Elective 2  
| PSYC 565 Individual & Group Techniques in Clinical Health Psychology | PSYC 593 Professional and Ethical Issues | 3 hrs |

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<th>Electives</th>
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Students are required to have nine credits in approved elective courses if they do not elect to complete a master’s thesis. Information about specific elective courses that will fulfill these requirements should be discussed with your program advisor or the program director each semester.

Thesis

Students in the MS in Psychology: Specialization in Clinical Health Psychology who choose to do so can elect to complete a master’s thesis during their second year of the program. Students selecting this option will need to take 3 credits in an approved elective course and 6 thesis credits.

Plan of Work

Students will be required to complete a Plan of Work during their first semester in the MS in Psychology: Specialization in Clinical Health Psychology program. The plan of work requires discussion between students and their program advisers. Copies will be retained by the student and the program director or program advisor.
Grade Requirements

The graduate grading system is intended to reflect higher standards of critical and creative scholarship than those applied at the undergraduate level. To receive a graduate grade in courses open to both undergraduate and graduate students, the graduate student is expected to do work of superior quality and is required to do additional work specified by the instructor. Graduate students are required to earn a B (5.0) average or higher to satisfy degree requirements.

Grades of C+ and below are unsatisfactory for graduate level work and constitute valid cause for dropping a student from the graduate program. To be awarded a MS in Clinical Health Psychology, a student must have achieved at least a 5.0 grade point average (a B average). C+ grades in the core classes, PSYC 545, 547, 549, 565, 593, and 698 will not be applied toward the MS in Psychology: Specialization in Clinical Health Psychology degree. A grade of B- or higher is required in each of these classes. Students may re-take the class one time to raise the grade to an acceptable level. Furthermore, no more than two grades of C+ in other courses may be applied toward the MS in Psychology: Specialization in Clinical Health Psychology degree; grades of C or lower will not be applied toward the MS in Psychology: Specialization in Clinical Health Psychology degree. Students who fail to maintain a 5.0 average or have more than two C+ or lower grades will be placed on academic probation for the term following the lapse. Upon the recommendation of the program director, a student may be granted an opportunity to correct the scholastic and/or academic deficiency. Students who fail to meet program requirements may be denied permission to register or may be required to withdraw from the program.

MASTER OF PUBLIC POLICY

The Master of Public Policy (MPP) program is an interdisciplinary public policy program, designed for adult, part-time, college-educated students who are already working in related policy positions and for students who wish to prepare for careers in public service and public affairs. The program is aimed at developing analytical skills essential to understanding and improving public policy for persons engaged in a wide range of professional careers in the public, non-profit, and private sectors.

This interdisciplinary program offers students an opportunity to integrate research and learning in an innovative and open atmosphere that fosters links among higher education, the health care industry, governmental agencies and non-profit organizations. Contemporary political, social, and economic problems are interdisciplinary in nature, and an interdisciplinary approach is required to address those problems in a holistic way. Contemporary public leadership requires a broad understanding of and skill in policy analysis in order to design, implement, and evaluate effective new policies. Trained policy analysts who can address increasingly complex policy issues are in demand in the public and private sector. There are thousands of governmental units at the local, state and national level that employ specialized policy analysts. They assist elected and appointed officials of every nature in the process of governing. Their job titles vary but include positions such as program specialist, legislative or administrative assistant, policy analyst, research analyst and research director, among others. In addition, there are literally thousands of interests groups, trade associations and consulting firms operating in the private and non-profit sector that likewise employ individuals with the ability to analyze policy issues and engage in the political process.

The interdisciplinary nature of UM-D’s administrative structure also makes it easier for faculty from diverse disciplines and programs to cooperate naturally with the Program. Interdisciplinary cooperation is second nature to UM-D faculty and historically part of the educational culture at UM-D. The MPP Program is designed to complement existing graduate programs such as the MPA program in the School of Education, the MBA program in the School of Management, and the MS in Psychology, the MS in Environmental Science and the MA in Liberal Studies offered in the College of Arts, Sciences, and Letters. MPP students will be able to access relevant elective courses in other programs that fit their career needs that may be unavailable in the MPP program.

The Program

The MPP Program requires 21 hours of required core courses and either:
Plan A: 21 credits of policy-related electives approved by a program advisor plus a Project Writing course (1 credit)
or
Plan B: 15 credits of policy-related electives approved by a program advisor plus a thesis (6 credits).

Admission and Prerequisites

Admission to the MPP program as a regular student requires a bachelor’s degree from an accredited college or university with an undergraduate 3.0 grade point average in the last 60 credits (on a 4.0 scale), and an ability to write on an acceptable level. Individuals with less than a 3.0 average, but no lower than 2.75, may be considered for conditional admission status. Two basic courses in the principles of microeconomics and macroeconomics are a prerequisite for the program. The prerequisite may be fulfilled after admission to the program but prior to enrollment in PPOL 503 Economics and Public Policy or PPOL 507 Cost-Benefit Analysis. The prerequisite can also be fulfilled by taking PPOL 500 Economic Theory and Policy. Non-core policy courses or electives may also have prerequisites that must be completed before enrolling in those courses.

Each applicant should submit the following:
1) Official transcripts from all universities attended.
2) A five-hundred word statement of purpose describing the applicant’s career goals and personal objectives in pursuing the program.
3) Two letters of recommendation from academic or professional references who know the applicant’s abilities and potential for graduate work.
4) GRE Test Results. (general test) The minimum GRE passing score is the 50th percentile.
5) Students whose native language is not English are also required to satisfy the requirements set forth in The University of Michigan Bulletin: Graduate Student Handbook for English proficiency.

Please send materials to: University of Michigan-Dearborn, CASL Graduate Programs, 1080 SSB, 4901 Evergreen Road,
Dearborn, MI, 48128. For more information, visit the MPP website at: http://casl.umd.umich.edu/MPP/ or call 313-593-1183.

Undergraduate students

For UM-D undergraduate students, there will be a transition term available in the final semester prior to graduation. If students have a course load in the transition term that allows room for the start of MPP courses, they will be allowed to begin such coursework if they meet all other admission criteria. If students do not finish their undergraduate work in the transition term, they must successfully finish their undergraduate degree prior to taking any additional MPP courses.

Advanced Standing

Up to six graduate credit hours (grade of B or better) may be transferred from another accredited institution as specified in the Rackham School of Graduate Studies regulations. Students may transfer up to one-half (1/2) the minimum number of credit hours required for the master's from U-M/non-Rackham departments and programs (including Ann Arbor, Dearborn and Flint).

Guest Student Enrollment

Guest students may enroll in graduate courses with permission of the director of the MPP.

Degree Requirements

A cumulative average grade of B or higher will be required in all graduate courses taken for credit and applied to the credit hour requirements. A passing grade is B- or above. No more than two grades of I can be counted towards a student’s degree. To be recommended for the MPP degree, the student must file a formal diploma application online at the beginning of their final semester of work. Depending on the thesis option selected, a total of 42-43 hours of graduate credit is required for graduation.

Specific Course Requirements

Core courses are designed to provide students with perspectives of several disciplines on how to evaluate and improve public policy. The premise is that we should be aiming at good public policy, and that can only be attained by understanding both the policy making process and the methods of studying policy, particularly the tools of economics and political science, ethics and philosophy, cost-benefit analysis, policy evaluation, and rational choice theory, among others. With the approval of a program advisor, students will have additional flexibility in fulfilling the requirements of the core by electing comparable, available courses in other units.

Core Courses .......................................................... 21-22 hrs

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>PPOL 501</td>
<td>Research Methods</td>
<td>3 hrs</td>
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<tr>
<td>PPOL 502</td>
<td>The Political Environment of Public Policy</td>
<td>3 hrs</td>
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<tr>
<td>PPOL 503</td>
<td>Economics and Public Policy</td>
<td>3 hrs</td>
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<tr>
<td>PPOL 504</td>
<td>Rational Choice</td>
<td>3 hrs</td>
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<tr>
<td>PPOL 505</td>
<td>Ethics and Public Policy</td>
<td>3 hrs</td>
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<tr>
<td>PPOL 506</td>
<td>Program Evaluation</td>
<td>3 hrs</td>
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<tr>
<td>PPOL 507</td>
<td>Cost–Benefit Analysis</td>
<td>3 hrs</td>
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<tr>
<td>PPOL 508</td>
<td>Project Writing</td>
<td>1 hr</td>
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</table>

Policy Related Electives .............................................. 21 hrs

Each student in the program is expected to take twenty-one credit hours of additional policy-related courses available across the campus. Relevant policy courses in such areas as economics, health, foreign relations, the environment, social welfare, and criminal justice (among others) are offered intermittently and can be found in the Schedule of Courses and in the Graduate Catalog. Students, however, should note that some courses have required prerequisites that must be taken before enrolling in a course. Moreover, enrollment in courses offered by other graduate programs such as the MPA, the MBA, or the MS in Health Psychology may not always be available. Students should consult each semester with the program director for the time and semester of core course offerings as well as the availability of electives in other graduate programs.

Thesis/Project Requirements

Each student is expected to complete a master’s project to demonstrate that he or she has the ability to analyze and design improvements in public policy. Students will have two basic ways of satisfying this requirement.

- **Plan A. Course Only** This plan calls for the generation of four specific policy-related papers/class projects in different courses. This project is integrated into the entire curriculum from the onset. The PPOL 508 Project Writing course provides the capstone course in which the fourth and final required paper is produced, integrating previous papers into a final policy-oriented study.

- **Plan B. Thesis** (six hours) A committee of three faculty members selected by the student and program director oversees thesis work. The research plan is approved at a proposal meeting, after which the student conducts the proposed research and data analysis. On completion of the thesis, the student must present and successfully defend the thesis at an oral examination before his committee.

Professional Studies Certificate in Public Policy

A Professional Studies Certificate option is also available. Students must complete fifteen graduate credits from the required core or at least nine credits from the required core and six credits of policy-related electives approved by the program director. Credits earned in the certificate program are transferable to the MPP program.
UNIVERSITY OF MICHIGAN-DEARBORN, UNIVERSITY OF WINDSOR MASTER OF PUBLIC POLICY/MASTER OF POLITICAL SCIENCE JOINT DEGREE PROGRAM

The UM-D and the University of Windsor (Canada) offer a distinctive and valuable opportunity for individuals to earn both a Master of Public Policy (MPP) degree and a Master of Political Science (MA) degree. This unique partnership between the two campuses allows University of Windsor students to benefit from policy-focused courses with a U.S. perspective while UM-D students benefit from the International orientation and academic excellence of the Windsor program.

The Master of Public Policy program at the UM-D is an interdisciplinary public policy program integrating economics and political science in a demanding set of policy-related core courses designed for individuals working in policy positions and for individuals who wish to prepare for policy related careers in the public, non-profit, and private sectors.

The Master of Arts in Political Science program at the University of Windsor offers specializations in International Relations and Global Politics, and in Canadian Government and Politics and is especially valuable for those considering a career in government service at any level, a research position in the public or private sector, or a career in other professions such as law, journalism, or business.

The joint degree program integrates research and learning in an innovative and open atmosphere that fosters links between higher education, non-profit organizations and government agencies. It provides a sound professional foundation in policy analysis. Trained policy analysts are in demand in the public and private sectors. Literally thousands of interest groups, trade associations and consulting firms employ individuals who analyze policy issues and participate in the policy process. Job titles vary, but include program specialist, legislative assistant, policy analyst, research analyst, and research director, among others.

Participants complete the twenty-four credit hours at the University of Windsor required for a Master of Political Science degree. The UM-D accepts that Master’s degree as satisfying the electives for its Master of Public Policy degree, which requires an additional twenty-one credit hours of core courses. Courses for the two degrees can be completed concurrently.

COURSE DESCRIPTIONS

The following lists include all courses normally offered at UM-D. However, not all courses are offered every year and periodically courses are added and deleted. For details, students should consult the Schedule of Classes for each term.

AFRICAN & AFRICAN-AMERICAN STUDIES (AAAS)

AAAS 503 Minority Groups

The status of racial and ethnic minorities in the United States with particular reference to the social dynamics involved with regard to majority-minority relations. Topics of study include inequality, segregation, pluralism, the nature and causes of prejudice and discrimination and the impact that such patterns have upon American life. Additional reading assignments or projects will distinguish this course from its undergraduate version AAAS 403. Students cannot receive credit for both AAAS 403 and AAAS 503. (AY)

AAAS 504 Dissaed: Differ, Power, Discrim
3.000 Credits

Have you ever been dissed? Why are some people targets of disrespect? This class examines the unequal distribution of power - social, economic, and political - in the United States and other countries that results in favor for privileged groups. We will examine a variety of institutional practices and individual beliefs that contribute to disrespect. We'll look at ways that beliefs and practices, like viewing inequality as consequence of a 'natural order', obscure the processes that create and sustain social discrimination. We will engage in the intellectual examination of systems, behaviors, and ideologies that maintain discrimination and the unequal distribution of power and resources. Students will not receive credit for both AAAS 404 and AAAS 504. This course is distinguished from its 400-level counterpart by the requirement of additional assignments, including a required additional paper.

AAAS 569 20th-Cent Afr Amer Lit
3.000 Credits

Prequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 231 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239)

An intensive study of major 20th century African American writers. Fiction, poetry, autobiography, and drama will be examined, but one genre will be stressed in any given term, e.g., the novel. Lectures will provide historical and biographical context for analysis and discussion on the works. (OC).

AAAS 577 African American English
3.000 Credits

Prequisite(s): LING 280 or LING 281 or LING 480 or LING 580

An examination of the structure, history and use of African-American English. Topics will include the pronunciation, grammar and vocabulary of African-American English, theories of origin, linguistic repertoire and code-switching in African-American communities, the Ebonics controversy, and the role of this variety in education and identity formation. Additional reading assignments or projects will distinguish this course from its undergraduate version. Students cannot receive credit for both AAAS 477 and AAAS 577.

AAAS 591 Topics in African Diaspora
3.000 Credits
This course deals with African Diasporan history from the 19th century to the present. The method is by definition cross-cultural and comparative, requiring that the works or figures under study represent a diversity of Diasporan nationalities and/or cultures. The course may focus on a wide range of topics. Students cannot receive credit for AAAS 491 and 591 when the topic title is the same.

ARAB AMERICAN STUDIES (AAST)

AAST 573 Arab American Women Writers
3.000 Credits

Examines the literary and cultural contributions of Arab and Arab American women novelists, poets, and artists to the development and consolidation of the cultures of understanding and coexistence; explores the tensions between citizenship and belonging, race and the politics of fear, gender and geographical mobility, and ethnic minorities and mainstream consciousness; discerns how Arab women writers and artists retool their various artistic endeavors to channel socio-political disenchantment, critique and civil disobedience; stresses how literary and artistic productions of heterogeneous number of Arab American women writers and artists can indeed foster alternative visions of socio-cultural coexistence, dialogue, and hospitality via artistic commitments to technical and stylistic experimentation and renovation.

AAST 590 Topics in Arab Amer Studies
3.000 Credits

The content of this course will vary. All courses which will run under this number will cover Arab American issues. (OC)

ANTHROPOLOGY (ANTH)

ANTH 506 Culture and Sexuality
3.000 Credits

The study of women, men, children, socialization practices, and the genesis of sex roles cross-culturally. Additionally, reading assignments or projects will distinguish this course from its undergraduate version ANTH 406. Students cannot receive credit for both ANTH 406 and ANTH 506. ANTH 101 recommended. (YR).

ANTH 507 Sexual Praxis and Theory
3.000 Credits
Prerequisite(s): WST 275 or SOC 443 or PSYC 405 or ANTH 406 or ANTH 101 or ANTH 506

This course will offer an overview of sexual differences including: the socio-cultural construction of gender; sexual behavior, and orientation; sex and sexualities in language and literature; and diversity by race, class, and cultural heritage. (F).

ANTH 509 Human Body, Growth, and Health
3.000 Credits

This course provides an advanced undergraduate introduction to the topic of human growth and shows how human growth can be a reliable measure of the psychological, social, economic and moral conditions of a society. A major theme will be the interplay of biology and culture in shaping the patterns of human growth and, consequently, the health of populations and individuals.

ANTH 515 Nutrition and Health
3.000 Credits
Prerequisite(s): ANTH 101

The influence of nutrition on physical and mental development from conception to adulthood. Topics include: 1) definition and function of the essential nutrients for people, 2) basic principles of human growth and development, 3) the causes and consequences of under- and over-nutrition, 4) feeding practices for infants and children and the development of food habits, 5) nutrient and food problems in the local region and in global perspective. Additional reading assignments or projects will distinguish this course from its undergraduate version ANTH 415. Students cannot receive credit for both ANTH 415 and ANTH 515. (YR).

ANTH 520 Kinship and Marriage
3.000 Credits
Prerequisite(s): ANTH 101 or ANTH 201

A study of the diversity of kinship and marriage systems, and of the history of kinship theory which has played a seminal role in the development of general anthropological theory. Additional reading assignments or projects will distinguish this course from its undergraduate version ANTH 420. Students cannot receive credit for both ANTH 420 and ANTH 520. (OC).

ANTH 521 Education and Culture
3.000 Credits

How and where do people learn? Why are there schools, and how is schooling culturally organized? Why do school experiences tend to vary by "race", social class, and gender? What insights does anthropology bring to practical problems of learning and teaching? Additional reading assignments or projects will distinguish this course from its undergraduate version ANTH 421. Students cannot receive credit for both ANTH 421 and ANTH 521. (AY).

ANTH 525 Language and Society
3.000 Credits

An examination of the social functions of speech through readings and exercises, emphasizing schools and other applied settings. Topics include ethnic and social class dialects, codeswitching, and the organization of conversation. Additional reading assignments or projects will distinguish this course from its undergraduate version ANTH 425. Students cannot receive credit for both ANTH 425 and ANTH 525. (OC).

ANTH 530 Health, Culture and Medicine
3.000 Credits
A comprehensive examination of how culture mediates processes of illness and healing. Comparative materials worldwide are examined and provide a context for an anthropological analysis of modern biomedicine. Special attention is given to psychosocial illnesses, culture-bound syndromes, and the role of meaning in sickness and curing. Admission to the Master of Science in Health Psychology Program or permission of instructor. (W).

ANTH 555 Immigrants USA 3.000 Credits

The history and culture of immigration since 1850, including: 1) formation and perseverance of immigrant communities and interethnic boundaries; 2) relations between the homeland and the immigrant; and 3) impact of migration on family life and gender roles. Additional reading assignments or project will distinguish this course from its undergraduate version ANTH 455. Students cannot receive credit for both ANTH 455 and ANTH 555. ANTH 101 recommended. (OC).

ANTH 560 Economic Anthropology 3.000 Credits

A comparative examination of the basis of political economy. Economic problems (the production and distribution of goods and services) will be considered in ecological, evolutionary, and political terms. The primary emphasis will be on traditional economies, on production and exchange at the household level, and on the effect of modern market systems on indigenous cultures. (OC).

ANTH 570 Doing Anthropology 3.000 Credits

Prerequisite(s): ANTH 101

A practicum of anthropological theory and method, including ethnographic interviews and participant observation. Students will conduct field research and evaluate results with the help of classmates. Additional reading assignments or projects will distinguish this course from its undergraduate version ANTH 470. Students cannot receive credit for both ANTH 470 and ANTH 570. (YR).

ANTH 577 Ethnographic Film 3.000 Credits

Prerequisite(s): FILM 240 or HUM 240 or FILM 248 or HUM 248 or ANTH 101 or ENGL 240 or ENGL 248

This course will analyze ethnographic films as a medium for the construction of meaning in and across cultures. It will teach students to understand how the putatively "real" content of documentary film creates a mixture of fantasy, news and "science." Covering texts as varied as National Geographic photographic layouts, traditional ethnographic films made by anthropologists, and auto-ethnographies of cultural groups such as Native Americans and the Trobriand Islanders of Papua New Guinea, the course will aim to deconstruct such oppositions as indigene vs. alien, us vs. them, and self vs. other. Additional reading assignments or projects will distinguish this course from its undergraduate version ANTH 477. Students cannot receive credit for both ANTH 477 and ANTH 577. (AY)

ANTH 581 Gender and Globalization 3.000 Credits

Mass media, politics, and academia are full of references to globalization, and a future "world without borders." This interdisciplinary course considers the implication of globalization for women's lives, gender relations, and feminism. Topics covered include the global factory, cross-cultural consumption, human rights, global communications, economic restructuring, nationalism, and environmental challenges. Rather than survey international women's movements, this course explores how globalization reframes identities and locations and the political possibilities they create. Students cannot receive credit for both ANTH 481 and ANTH 581. (AY)

ANTH 582 Psychological Anthropology 3.000 Credits

Cross-cultural comparison of theories of human nature, including psychoanalytic anthropology, culture-and-personality, and other theories from Western science, as well as non-Western theories about such concepts as the person, emotions, and mental illness. Additional reading assignments or projects will distinguish this course from its undergraduate version ANTH 482. Students cannot receive credit for both ANTH 482 and ANTH 582. ANTH 101 and PSYC 170 or 171 highly recommended. (YR)

ANTH 590 Topics in Anthropology 1.000 TO 3.000 Credits

Examination of problems and issues in selected areas of anthropology. Title in the Schedule of Classes will change according to content. Course may be repeated for credit when specific topic differs. (OC)

ANTH 598 Independent Study 1.000 TO 6.000 Credits

Readings or analytical assignments in Anthropology in accordance with the needs and interests of those enrolled and agreed upon by the student and instructor. (F,W,S)

ANTH 599 Readings in Anthropology 1.000 TO 3.000 Credits

For students desiring study not available in the regular course offerings. Additional reading assignments or projects will distinguish this course from its undergraduate version ANTH 499. Students cannot receive credit for both ANTH 499 and ANTH 599. (F,W,S)

ART HISTORY (ARTH)

ARTH 516 Earl Mod Jpn Paint&Wood Prnts 3.000 Credits

Prerequisite(s): ARTH 101 or ARTH 102 or ARTH 103

Paintings and woodblock prints of the Edo/Tokugawa (1600-1868) and Meiji (1868-1912) periods are considered in light of competing
developments that on the one hand looked to Japan's classical tradition and on the other to the influence of arts and artists from China and the West. Special attention is given to female artists and images of women. (AY)

**ARTH 525 Women in Classical Antiquity**
3.000 Credits
Prerequisite(s): ARTH 101

This course examines the evidence for the lives of women in Greek, Etruscan, and Roman Antiquity, from the Bronze Age through the Imperial Period. Special emphasis will be placed on the archaeological evidence, especially works of art which illustrate women's lives and their relationships with men. Documents such as dedicatory and funerary inscriptions, the poetry of Sappho and Sulpicia, and selections from the writings of Homer, Hesiod, Aristotle, Pliny, Juvenal, and other ancient authors, will also be examined critically, particularly in relationship to the works of art. (AY)

**ARTH 526 City of Ancient Rome**
3.000 Credits
Prerequisite(s): ARTH 101 or ARTH 102 or ARTH 103 or LIBS 560

This course will focus on the ancient city of Rome, from its foundation to its precipitous decline in the fifth century AD. It will explore the public art and architecture of the city, emphasizing the different types of evidence available (topography, architecture, sculpture, texts) for understanding the history, politics, religion, and urban development of Rome as well as the various historical and archaeological techniques used to analyze the evidence. Students cannot receive credit for both ARTH 426 and 526. (OC)

**ARTH 554 Rembrandt**
3.000 Credits
Prerequisite(s): ARTH 101 or ARTH 102 or ARTH 103

Rembrandt's paintings, drawings, and prints are considered in the full historical and cultural context of the Golden Age of the Northern Netherlands, a period of unprecedented wealth and cultural diversity. Special attention will be given to issues of style, iconography, biography, art criticism, gender, and artistic technique. (AY)

**BIOLOGICAL SCIENCE (BIOL)**

**BIOL 501 Discoveries in Current Biology**
3.000 Credits

Current issues in biology based on an inquiry approach to learning with a primary emphasis on laboratory, field observations, and discussion. Students will help to develop the specific topics within the subject areas that include the environment, heredity, and health. Projects will have direct applications for classroom teaching. Lecture and laboratory. Permission of School of Education advisor. Teacher experience. (S).

**BIOL 508 Invasive Species Ecology**
3.000 Credits
Prerequisite(s): BIOL 304 and BIOL 320

This course will examine the biological, ecological and societal impacts of invasive species. Major issues including characteristics of invasive species, invaded communities, origins and success rates of invaders, economic and health effects, methodologies and regulatory strategies for dealing with invasive species will be discussed. Students will investigate an invasive species and make oral and written reports.

**BIOL 514 Applied Ecology**
3.000 Credits
Prerequisite(s): BIOL 304 or ESCI 304

An advanced treatment of the principles of ecology especially as they relate to environmental problems and environmental management. This course is intended for graduate students only. Students should have earned a C or above in Ecology (BIOL/ESCI 304) or equivalent. (AY).

**BIOL 515 Aquatic Ecosystems**
4.000 Credits
Prerequisite(s): BIOL 130 and CHEM 124 and GEOL 118

Advanced course based on the comparative study of the structure and function of lakes, wetlands and rivers. The physical, geological, chemical and biological characteristics of natural and disturbed ecosystems will be emphasized. (F, AY).

**BIOL 545 Restoration Ecology**
3.000 Credits
Prerequisite(s): BIOL 304 or ESCI 304

Restoration Ecology is an interdisciplinary course that develops theories and practices that help rehabilitate impaired ecosystems towards a sustainable state. Bioremediation and phytoremediation are some approaches to be discussed. Short-term site management is discussed, often including continued resource or recreational use, with the eventual site sustainability in mind. (F, AY).

**BIOL 552 Med & Env Toxicology**
3.000 Credits
Prerequisite(s): BIOL 140 and CHEM 225 or (BIOL 301 or BIOL 303 or BIOL 385 or BIOL 370 or BIOL 455 or BIOL 470)

Emphasis will be on cellular and human pathophysiology resulting from environmental toxicants. Examples will be based on toxicant exposure and subsequent diseases in humans and other biological systems. (AY).

**BIOL 561 Advances in Cell Biology**
2.000 Credits
Prerequisite(s): BIOL 140 and CHEM 225 and (BIOL 301 or BIOL 303 or BIOL 304 or BIOL 306 or BIOL 307 or BIOL 309 or BIOL 310 or BIOL 311 or BIOL 312 or BIOL 313 or BIOL 315 or BIOL 320 or BIOL 326 or BIOL 333 or BIOL 335 or BIOL 350 or BIOL 351 or BIOL 360 or BIOL 361 or BIOL 370 or BIOL 380 or BIOL 385 or BIOL 390 or BIOL 405 or BIOL 406 or BIOL 414 or BIOL 416 or BIOL 420 or
Normal and environmentally changing circumstances regulate genes and proteins affecting many important cellular processes. This course will link recent discoveries in cell biology to organisms and the environment that the cell inhabits. Lectures will discuss the roles of organelle and membrane structure and function, gene regulation, metabolism, immunology, and cellular pathology. (OC).

BIOL 590 Topics in Biology
1.000 TO 4.000 Credits

Current topics in Biology. One to four credit hours. (OC)

CHEMISTRY (CHEM)

CHEM 548 Environmental Chemistry
3.000 Credits
Prerequisite(s): CHEM 344

Advanced study of the concepts, principles, practices, and current problems in the chemistry of natural waters, the soils, and the atmosphere. Students in this graduate-level course will engage in mutually agreed-upon projects in addition to the class work assigned undergraduates. (W, AY).

CHEM 590 Topics in Chemistry
1.000 TO 4.000 Credits

Current topics in Chemistry. One to four credit hours. (OC)

COMMUNICATION (COMM)

COMM 503 Issues in Cyberspace
3.000 Credits
Prerequisite(s): COMM 280

This course will explore some of the current social, political, legal, and technological issues associated with the use of new media technology to move ideas and information in a democratic society. Examples of areas to be explored include the Internet and World Wide Web, privacy, the future of the mass audience, and the meaning of the First Amendment in the 21st Century. (YR).

COMM 520 Critical Media Studies
3.000 Credits

Course presents various critical approaches to the study of the media. Perspectives include political economy, cultural studies, critical theory of the Frankfurt school, and feminism. Focus of seminar portion will be on a particular medium or a particular societal issue (e.g., media and politics, gender and media, media and minorities). Students cannot receive credit for both COMM 420 and COMM 520. (F, W).

COMM 530 International Communications
3.000 Credits

Course covers key concepts and debates in international communications, including interculturalism, media globalization; international news, coverage; flows of data and cultural programming across national boundaries; and the control of communication resources. Students cannot receive credit for both COMM 430 and COMM 530. (F, W).

COMM 536 Memoir and Travel Writing
3.000 Credits
Prerequisite(s): COMP 106+ or COMP 220 or COMP 270

A course in narrative nonfiction that focuses on memoir and travel writing. Reading involves several books as well as classic essay-length examples. Assignments include both short and analytical papers and the writing and revising of three original articles, based on research, interviews, memory, and observation, and drawing on literary techniques. In addition to these assignments, graduate students must prepare a substantial critical analysis focusing on a particular writer or theme, and present their work to the class as well as in writing. (YR).

COMM 550 Prin of Organizational Comm
3.000 Credits
Prerequisite(s): COMP 106 or CPAS 40 or COMP 220 or COMP 270

Course covers skills and strategies of writing for organizations in a public/employee relations capacity. Applications include setting up a public relations program for an organization; writing backgrounders, position papers, newsletters and brochures; and compiling a media kit. Topics include crisis management and communication, the role of document design in creating a positive organizational image, and analysis of various publics. (AY).

COMM 555 Gender and Media Studies
3.000 Credits
Prerequisite(s): COMM 340 or COMM 440

Course examines how communication networks function in organizations. Purpose: to provide an organizational context and conceptual framework for the practice of professional writing and speaking skills. Writing projects include a research report, a case study, and shorter papers (practical and analytical) on assigned topics. Areas of focus include persuasion, decision-making, conflict resolution, problem solving, and the role of communication in leadership, motivation, small group activity, organizational change, and job satisfaction. (AY).
An examination of contemporary rhetorical theories through study of representative practitioners in related developments in linguistics, philosophy, and psychology. (OC)

COMM 571 Narratives of Film and Lit
3.000 Credits
Prerequisite(s): ENGL 240 or FILM 240 or HUM 240 or ENGL 248 or FILM 248 or HUM 248

Explores the narrative conventions of literary and filmic fictions in a cultural, historical, and psychoanalytic context. The course goes beyond a discussion of the relative merits of novels and their respective film adaptations and examines the more complex interchanges between the two narrative forms: the ideological function of narrative in contemporary society; and the effect of the medium of a fictional text on the reader/viewer. (OC)

COMM 577 Professional Comm Ethics
3.000 Credits
Prerequisite(s): COMM 340 or COMM 440 or COMM 450

An examination of professional communication in the organizational context, focusing on important issues, problems, and concepts. This course is designed to help students become conscious of the role of values in a wide range of professional communication situations; to locate organizational behavior in an ethical framework based on considered definitions, standards, perspectives, and criteria for evaluation and analysis; to consider individuals as well as organizations as moral agents in a changing and complex universe; and to analyze topical cases on emergent issues in communication ethics. (YR)

COMM 581 Gender and Globalization
3.000 Credits

Mass media, politics, and academia are full of references to globalization, and a future "world without borders." This interdisciplinary course considers the implication of globalization for women's lives, gender relations, and feminism. Topics covered include the global factory, cross-cultural consumption, human rights, global communications, economic restructuring, nationalism, and environmental challenges. Rather than survey international women's movements, this course explores how globalization reformulates identities and locations and the political possibilities they create. Students cannot receive credit for both COMM 481 and COMM 581. (AY).

COMM 590 Topics in Communication
1.000 TO 3.000 Credits

Examination of problems and issues in selected areas of Communications. Titles listed in the Schedule of Classes will change according to content. Course may be repeated for credit when specific topic differs. Only offered for graduate credit. (OC)

COMPARATIVE LITERATURE (COML)

COML 533 Writing Women in Renaissance
3.000 Credits

This course will be taught in English, and will focus on the influence of Italian literary models for the construction of female literary types as well as female voices in France and Italy from 1300 to about 1600. Italian authors studied include three very influential Florentines, Dante, Petrarch and Boccaccio, as well as Castiglione and Ariosto. We will read women poets, patrons, prostitutes and queens from Italy and France such as Veronica Gambara, Isabella di Morra, Vittoria Colonna, Christine de Pizan, Louise Labe, and Marguerite de Navarre. At issue will be women's roles and women's images in city and court culture during the early modern period, and the interaction of their writings with the literary canons of Italy and France. (OC)

COMPOSITION (COMP)

COMP 590 Topics in Composition
1.000 TO 3.000 Credits

Examination of problems and issues in selected areas of Composition. Titles listed in the Schedule of Classes will change according to content. Course may be repeated for credit when specific topic differs. Only offered for graduate credit. (OC)
**COMPUTER & COMPUTATIONAL MATH (CCM)**

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<th>Course</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CCM 504</td>
<td>Dynamical Systems</td>
<td>3.000</td>
<td>MATH 216 and (MATH 217 or MATH 227)</td>
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The aim of this course is to survey the standard types of differential equations. This includes systems of differential equations, and partial differential equations, including for each type, a discussion of the basic theory, examples of applications, and classical techniques of solution with remarks about their numerical aspects. Also included are autonomous and periodic solutions, phase space, stability, perturbation techniques and Method of Liapunov. Additional reading assignments or projects will distinguish this course from its undergraduate version CCM 404. Students cannot receive credit for both CCM 404 and CCM 504. (AY)

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<tbody>
<tr>
<td>CCM 551</td>
<td>Computer Graphics</td>
<td>3.000</td>
<td>(CCM 350 or CIS 350) and (MATH 215 or MATH 205) and MATH 217</td>
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</tbody>
</table>

Basic geometrical concepts, graphics output primitives, two dimensional transformations, windowing, and clipping, three dimensional viewing, visible surface detection methods, graphical user interfaces. Additional reading assignments or projects will distinguish this course from its undergraduate version CCM 451. Students cannot receive credit for both CCM 451 and CCM 551. (YR)

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<tbody>
<tr>
<td>CCM 558</td>
<td>Introduction to Wavelets</td>
<td>3.000</td>
<td>MATH 216 and (MATH 217 or MATH 227)</td>
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</table>

This course will introduce the student to theory and application of wavelets using linear algebra. Topics will include the discrete Fourier transform, linear transformations, orthogonal decomposition, discrete wavelet analysis, the filter bank, Harr Wavelet family, Daubechies’s Wavelet family, and applications. Additional reading assignments or projects will distinguish this course from its undergraduate version CCM 458. Students cannot receive credit for both CCM 458 and CCM 558. (OC)

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<tr>
<td>CCM 572</td>
<td>Intro to Numerical Analysis</td>
<td>3.000</td>
<td>MATH 216 and (MATH 217 or MATH 227)</td>
</tr>
</tbody>
</table>

Solution of linear systems by Gaussian elimination, solution of non-linear equations by iterative methods, numerical solution of ordinary differential equations, data fitting with spline functions, numerical integration, optimization. Additional reading assignments or projects will distinguish this course from its undergraduate version CCM 472. Students cannot receive credit for both CCM 472 and CCM 572. (F)

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<tr>
<td>CCM 573</td>
<td>Matrix Computation</td>
<td>3.000</td>
<td>MATH 217 or MATH 227</td>
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</table>

A study of the most effective methods for finding the numerical solution of problems that can be expected in terms of matrices, including simultaneous linear equations, orthogonal projections and least squares, eigenvalues and eigenvectors, positive definite matrices, and difference and differential equations. Additional reading assignments or projects will distinguish this course from its undergraduate version CCM 473. Students cannot receive credit for both CCM 473 and CCM 573. (AY)

**CRIMINAL JUSTICE STUDIES (CRJ)**

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<tr>
<td>CRJ 513</td>
<td>American Constitutional Law</td>
<td>3.000</td>
<td>MATH 217 or MATH 227</td>
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</table>

A major theme of this course is the development of the constitution, especially focusing on the themes of judicial review: judicial self-restraint and judicial activism; the expansion of executive and legislative powers; and the rise of "substantive due process of the law". Prerequisite or equivalent recommended. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (AY).

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<tr>
<td>CRJ 514</td>
<td>Civil Rights and Liberties</td>
<td>3.000</td>
<td>MATH 217 or MATH 227</td>
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</tbody>
</table>

An analysis of the Bill of Rights and the 14th Amendment, with particular emphasis upon recent landmark or controversial Supreme Court decisions dealing with freedom of speech and religion, rights of criminal defendants; cruel and unusual punishment, right to privacy; civil rights and equal protection clause; and apportionment. Prerequisite or equivalent recommended. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (YR).

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<tr>
<td>CRJ 543</td>
<td>Gender Roles</td>
<td>3.000</td>
<td>MATH 217 or MATH 227</td>
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</table>

This course will investigate the development of gender roles in childhood and adolescence due to either innate physiological differences of sociological patterning, the effect of gender roles upon male-female relationships within our society, and the possibility of transcending sociological gender roles in alternate modes of living. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (F, W).

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<tr>
<td>CRJ 546</td>
<td>Marriage and Family Problems</td>
<td>3.000</td>
<td>MATH 217 or MATH 227</td>
</tr>
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</table>

Sociological analysis of problems encountered within the institution of marriage with particular reference to such issues as choosing a marriage partner, sexual adjustment,
occupational involvement, conflict resolution, child rearing, divorce and readjustment. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (YR).

**CRJ 547 Family Violence**
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201 or SOC 301 or SOC 443 or PSYC 405 or WST 405

Sociological analysis of various forms of family violence which occur disproportionately in the lives of girls and women. Topics such as incest, sexual abuse, date rape, wife battering, and elder abuse will be situated within the social and cultural context of contemporary gender relationships. Social and political responses to the phenomena will be examined. Permission of instructor is an optional prerequisite. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (YR).

**CRJ 553 Sociology of Law**
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

Various aspects of the relationship between law and society are explored. After a look at processes of law making, attention is turned to the administration of law. This involves a study of the activities of legislatures, courts, police, and correctional agents. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (YR).

**CRJ 555 Immigrant Community in N Amer Soc**
3.000 Credits
Prerequisite(s): ANTH 101

The history and culture of immigration since 1850, including: (1) formation and perseverance of immigrant communities and inter-ethnic boundaries; (2) relations between the homeland and the immigrant; and (3) impact of migration on family life and gender roles. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (AY).

**CRJ 565 Deviant Behavior/Soc Disorganz**
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

General analysis of the concepts of social deviance and social disorganizations: factors producing each condition, the effects of social control measures on the course of deviance and disorganization consequences for the social system, and the relationship between the two concepts. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (YR).

**CRJ 568 Criminology**
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

Analysis of criminal behavior in relationship to the institutional framework of society. Emphasis upon the more routinized and persistent forms of criminality along with the joint roles played by victims, the criminal, the police, and all other relevant parties. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (F, W).

**CRJ 569 Juvenile Delinquency**
3.000 Credits
Prerequisite(s): SOC 200 or SOC 202

The analysis of juvenile delinquent behavior in relationship to the institutional framework of society. Emphasis on the extent, causes, and methods of treatment of juvenile delinquency in the United States. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (YR).

**CRJ 570 Current Issues in Crim Justice**
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

Current issues in the field of criminal justice and law enforcement in the US and other countries. Topics include an evaluation of police activities, problems of apprehensions and prosecution, the courts and the correctional system, and the efficacy of the legal structure in its social context. Prerequisite or permission of instructor. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (F, W, S).

**CRJ 571 Comp Crim Justice Systems**
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

Description, analysis, and evaluation of selected criminal justice systems throughout the world. Course focuses on the various systems, theories, structures, methods, and functions, including common law systems and socialist law systems. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (YR).

**CRJ 572 Corrections**
3.000 Credits

Analysis of the legal, social and political issues affecting contemporary correctional theory and practice. Topics covered include the history of corrections; the nature of existing institutions; the functions and social structure of correctional institutions; and alternatives to institutional incarceration; probation and parole. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (OC).

**CRJ 590 Topics in Criminal Justice**
3.000 Credits

Examination of problems and issues in selected areas of criminal justice. Title as listed in Schedule of Classes will change according to the content of the course. Course may be repeated for credit when specific topics differ. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research.

**CRJ 598 Directed Studies**
1.000 TO 6.000 Credits

Directed individual study of any subject agreed upon by the
student and the instructor. May not duplicate a formal course offering. (F, S, W).

ECONOMICS (ECON)

ECON 503 Economics and Public Policy
3.000 Credits
Prerequisite(s): ECON 201 and ECON 202

In this course students will review basic neoclassical microeconomics theory and learn to apply it to the analysis of public policy issues. Microeconomics offers important insights into the behavior of businesses, consumers, and government entities. We will review key microeconomic concepts, applying each to an array of public policy questions. Next we'll evaluate resource allocation via the market system and consider how public policy might address situations where the market fails to produce desirable results. Lastly, we'll learn about the basic tools economists use to evaluate public policies. (YR)

ECON 511 Monetary Economics
3.000 Credits
Prerequisite(s): ECON 301 and ECON 311

This course examines financial institutions in a macroeconomic theoretical context. A rigorous treatment of monetary theory is presented followed by practical discussion of U.S. monetary policy as implemented by Federal Reserve System. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (YR).

ECON 515 Introduction to Econometrics
3.000 Credits
Prerequisite(s): (MATH 113 or MATH 115 or MPLS 116) and ECON 305 and (ECON 302 or ECON 311 or ECON 321 or ECON 325 or ECON 331 or ECON 333 or ECON 342 or ECON 345 or ECON 347 or ECON 348 or ECON 351 or ECON 355 or ECON 361 or ECON 362 or ECON 372 or ECON 375 or ECON 381 or ECON 382 or ECON 385 or ECON 390 or ECON 411 or ECON 421 or ECON 465 or ECON 481 or ECON 390A or ECON 390B)

The theory and practice of the statistical analysis of economic relationships. Topics covered include the construction and estimation of econometric models, emphasizing the use of multiple regression techniques. Course concludes with examples of econometric investigations and the use of econometric models for forecasting and policy. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (YR).

ECON 521 Economics of the Labor Sector
3.000 Credits
Prerequisite(s): ECON 302

Theoretical analysis and empirical studies of the nature and operation of labor markets. Includes theories of wage determination and income distribution, the nature of unemployment, the impact of collective bargaining on the economy, the extent and effects of discrimination, and the nature and effects of government wage and employment policies. ECON 321, Labor in the American Economy, is valuable background to this course although it is not a prerequisite. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research.

ECON 565 History of Economic Theory
3.000 Credits
Prerequisite(s): ECON 302

Course examines the evolution of economic thought and theory from the early origins to the present, focusing on the major contributions to economics, especially from Adam Smith onward, and assesses the current condition of economic analysis. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (F).

ECON 581 Public Finance
3.000 Credits
Prerequisite(s): ECON 301

Analysis of the role of government in the economy. Course examines theories of the need for the nature of government intervention in economic activities. Includes analysis of public goods, externalities, taxation, state and local finance, and modes of public decision making. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (YR).

ECON 597 Economics Seminar
3.000 Credits

An advanced study in selected areas of economics. Topics vary; see the current Schedule of Classes for topics and prerequisites. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (OC).

ECON 599 Directed Research
1.000 TO 3.000 Credits

Independent study under the direction of a faculty supervision in advanced topic areas. Normally must be elected on the "pass-fail" option, in which case it does not count toward credit hour requirement or concentration. Special consideration for the A through E grading option must be approved by members of the Economics discipline. In all cases students must have faculty supervision's permission to register. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (F, W, S).

ENGLISH (ENGL)

ENGL 501 Beowulf and Other Engl Poems
3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239 or ENGL 240 or ENGL 250)
A literary analysis of Beowulf and other Old English poems. Some attention will be given to the structure and pronunciation of Old English. (OC)

**ENGL 505 Chaucer**
3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239 or ENGL 240 or ENGL 250)

An introduction to the poetry of Chaucer, with primary reference to the Canterbury Tales and some attention to Chaucer's short poems. (AY)

**ENGL 508 Shakespeare I: Earlier Works**
3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239 or ENGL 240 or ENGL 250)

Intense study of selected works from the first half of Shakespeare's career, designed to increase the student's critical appreciation and understanding. Students cannot receive credit for both ENGL 408 and ENGL 508. (YR)

**ENGL 509 Shakespeare II: Later Works**
3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239 or ENGL 240 or ENGL 250)

Intensive study of selected works from the second half of Shakespeare's career, designed to increase the student's critical appreciation and understanding. Student cannot receive credit for both ENGL 409 and ENGL 509. (YR)

**ENGL 512 Milton**
3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239 or ENGL 240 or ENGL 250)

An intensive study of Paradise Lost and Paradise Regained, Aeropagitica, and the shorter poems, including Samson Agonistes and Comus. Consideration is given to historical background and to other writings by Milton insofar as they illuminate his major works. Students cannot receive credit for both ENGL 412 and ENGL 512. (AY)

**ENGL 513 Engl Ren Drama, Exc Shakespr**
3.000 Credits

An examination of representative works of Elizabethan and Stuart playwrights, with special attention being given to the literary history reflected in the plays. Students cannot receive credit for both ENGL 413 and 513. (YR).

**ENGL 514 Seventeenth-Century Readings**
3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239 or ENGL 240)

An intensive study of mid-17th century authors or literary movements, such as Browne, Burton, and the metaphysical poets. Students cannot receive credit for both ENGL 414 and ENGL 514 (OC)

**ENGL 520 Maj Engl 18th-Century Authors**
2.00 TO 3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239 or ENGL 240 or ENGL 250)

An intensive study of two or three authors, such as Dryden, Behn, Pope, Swift, Burney, Austen, or Samuel Johnson. Students cannot receive credit for both ENGL 420 and ENGL 520. (AY)

**ENGL 524 18th-Century English Novel**
3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239 or ENGL 240 or ENGL 250)

A study of the rise and development of the English novel during the 18th century. Consideration is given to such novelists as Defoe, Richardson, Fielding, Sterne, Austen, and Smollett. Students cannot receive credit for both ENGL 424 and ENGL 524. (AY)

**ENGL 531 English Romantic Writers**
3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239 or ENGL 240 or ENGL 250)

An intensive study of selected British Romantic writers, with attention to the historical and literary contexts in which they wrote. Students cannot receive credit for both ENGL 431 and ENGL 531.

**ENGL 532 Victorian Writers**
3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239 or ENGL 240)

An intensive study of selected Victorian poets and/or nonfiction prose writers, with attention to the literary and
historical contexts in which they wrote. Students cannot receive credit for both ENGL 432 and ENGL 532.

ENGL 536 Memoir and Travel Writing
.000 Credits
Prerequisite(s): COMP 106 or COMP 220 or COMP 270

A course in narrative non-fiction that focuses on memoir and travel writing. Reading involves several books as well as essay-length examples. Assignments include both short analytical papers and the writing and revising of three original articles, based on research, interviews, memory, and observation, and drawing on literary techniques. In addition to these assignments, graduate students must prepare a substantial critical analysis focusing on a particular writer or theme, and present their work to the class as well as in writing. (YR).

ENGL 540 Maj Eng/Amer 20th-Cent Author
3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239 or ENGL 240)

An intensive examination of the works of representative English and American authors since 1900. Students cannot receive credit for both ENGL 440 and ENGL 540.

ENGL 541 Maj Engl Auth of 20th Cent
3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239)

An intensive study of several modern English authors, such as Shaw, Joyce, Dylan Thomas, and D.H. Lawrence. Students cannot receive credit for both ENGL 441 and ENGL 541 (OC).

ENGL 542 Studies in 20th Century Lit
3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 232 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239 or ENGL 240)

Intensive study of a special topic in 20th- or 21st-century literatures in English. The course may treat a single author (e.g. E.M. Forster), a movement (e.g. Postmodernism) a genre (e.g. modern short story), or a theme (e.g. Literature of World War).

ENGL 545 20C/21C Women Authors
3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239 or ENGL 240)

An analysis of images and problems of women as defined by significant British and American women writers of the 20th
This course explores the expression of postmodernism in literature (primarily fiction) and critical theory. Selected works of fiction and creative non-fiction will be analyzed in terms of the problems and issues raised by the postmodern movement. Students cannot receive credit for both ENGL 454 and ENGL 554.

ENGL 561 Modern English Grammar 3.000 Credits
Prerequisite(s): LING 280

The morphological and syntactic analysis of the structure of present-day English considered in the light of modern linguistic science. Students cannot receive credit for both ENGL 461 and ENGL 561. (YR)

ENGL 564 Contemporary Rhetorical Theory 3.000 Credits
Prerequisite(s): COMM 201 or COMM 220 or COMM 290 or ENGL 230 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239 or ENGL 240 or ENGL 250

An examination of contemporary rhetorical theories through study of representative practitioners in related developments in linguistics, philosophy, and psychology. (OC)

ENGL 565 Disclosure Analysis 3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239 or ENGL 240 or ENGL 250)

An examination of the syntactic and semantic devices and structures underlying communication in written text and oral interaction. Material to be analyzed will vary from term to term (technical reports, scholarly articles, newspaper stories) but examples will be drawn primarily from the written language. (OC)

ENGL 568 Writing Young Adult Fiction 3.000 Credits

In this course participants will explore the young adult novel from the point-of-view of a reader and a writer. They will read recently published and critically acclaimed popular young adult novels. They will use these texts to explore such issues as gender, race and identity as they relate to young adult lives and their respective cultures generally. They will use these texts as models for the production of their own texts and will consider the constraints and benefits of constructing and writing to a particular audience. They will consider if and why young adult novels are abbreviated or limited in relationship to adult literature. In addition to reading about ten novels, they will complete several creative exercises leading up to a final portfolio. Additional reading assignments or projects will distinguish this course from its undergraduate version. Students will not receive credit for both ENGL 468 and ENGL 568.

ENGL 569 20th-Cent Afr Amer Lit 3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239)

An intensive study of major 20th century African American writers. Fiction, poetry, autobiography, and drama will be examined, but one genre will be stressed in any given term, e.g., the novel. Lectures will provide historical and biographical context for analysis and discussion of the works. (OC).

ENGL 572 Readings in Muticult Contexts 3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239)

An examination of the effect of different cultural backgrounds on reading and literature. Topics include contrastive rhetoric, folk narrative, and multicultural juvenile literature. This course does not satisfy requirements for the English concentration. Not open to English concentrators. (YR)

ENGL 573 Arab American Women Writers 3.000 Credits

This course examines the literary and cultural contributions of Arab and Arab American women novelists, poets, filmmaker and artists to the development and consolidation of cultures of understanding and coexistence; explores the relations between, among others, citizenship and belonging, race and national security, gender and geographical mobility, and ethnic minorities and mainstream consciousness; stresses how literary and artistic productions of Arab and Arab American women writers and artists foster alternative visions of socio-cultural coexistence, dialogue, and hospitality by means of technical and stylistic experimentation and renovation.

ENGL 577 African American English 3.000 Credits
Prerequisite(s): LING 280 or LING 281 or LING 480 or LING 580

An examination of the structure, history and use of African-American English. Topics will include the pronunciation, grammar and vocabulary of African-American English, theories of origin, linguistic repertoire and code-switching in African-American communities, the Ebonics controversy, and the role of this variety in education and identity formation. Additional reading assignments or projects will distinguish this course from its undergraduate version. Student cannot receive credit for both ENGL 477 and ENGL 577.

ENGL 582 History of the English Lang 3.000 Credits
Prerequisite(s): LING 280 or LING 480
A thorough grounding in the history and structure of the English language. At issue are the linguistic and ideological origins of Standard English, and the strengths and limitations of different methods of analyzing the history of the language. The course will emphasize sound change, grammatical change, and their sociolinguistic context. (YR)

ENGL 584 World Englishes
3.000 Credits
Prerequisite(s): LING 580 or LING 480

A study of the origin and significance of different forms of English throughout the world. Contact with other languages, pidginization, creolization, standardization, and the formation of the three circles of English are examined. (YR)

ENGL 588 Env Lit & Reps of Nature
3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239)

An interdisciplinary study of the ways in which the relationship between “nature” and humankind has been represented in literature and other forms of cultural expression. Emphasis on American and British texts of the 19th and 20th centuries, but assigned materials may include reading from other cultures and historical periods.

ENGL 590 Topics in English
1.000 TO 3.000 Credits

Examination of problems and issues in selected areas of English. Titles listed in the Schedule of Classes will change according to content. Course may be repeated for credit when specific topic differs. Only offered for graduate credit. (OC).

ENVIRONMENTAL SCIENCE (ESCI)

ESCI 504 Field Studies in Environmental Science
2.000 Credits

A systematic analysis of the environment. This course will focus on the analysis of the Rouge River Watershed as an ecological unit. The student will make intensive analyses of the river water and the surrounding land surface at selected sites. The results will provide a composite of the water quality and land use of the various tributaries. Emphasis will be placed on proper sampling and testing techniques, field and lab safety procedures, aquatic chemistry, biological organisms as indicators of pollution, and the role of wastewater dumping on the watershed.

ESCI 572 Environmental Communications
3.000 Credits

Preparation and presentation of both oral and written technical abstracts and reports, including environmental newsletters, thesis, and media releases. Professional scientists must be able to effectively communicate ideas and concepts to other scientists and to the general public. This course will provide the foundations in learning how to communicate ideas effectively and succinctly. (F, YR)

ESCI 585 Spatial Analysis and GIS
3.000 Credits

Application of the principles of Spatial Analysis and the use of Geographic Information Systems as a research tool in Environmental Science. Emphasis will be placed on the use of commercially available software including: ESRI's ArcView GIS, Golden Software's Surfer and Adobe PhotoShop. Emphasis will also be placed on the use of the Michigan spatial data warehouse program and the Michigan geographic framework program for metadata specific to Michigan. (AY).

ESCI 595 Topics in Environmental Science
3.000 Credits

Problems or readings on specific topics or subjects in environmental science. (YR)

ESCI 597 Off-Campus Independent Study
1.000 TO 3.000 Credits

Provides opportunity for qualified graduate students in the MSES program to pursue independent research under the direction of a graduate faculty member off campus. A written proposal describing the project (including the nature of the project itself, dates, where the project will be done and the faculty member supervising the project) must be approved by the MSES program director/committee before the student can register for the course. Project must be appropriate to the student's chosen track. It must be designed to produce a scholarly paper, papers, or other evidence(s) that reflect significant results from the course (F, W, S).

ESCI 599 On-Campus Independent Study
1.000 TO 3.000 Credits

Provides opportunity for qualified graduate students in the MSES program to pursue independent research under the direction of a graduate faculty member. A written proposal describing the project (including the nature of the project itself, dates, and the supervising faculty member) must be submitted to the Program Director/committee for approval before the student can register for the course. Project must be appropriate to the student's chosen track. It must be designed to produce a scholarly paper, papers, or other evidence(s) that reflect significant results from the course. (F, W, S).

ESCI 608 MSES Master's Project
3.000 Credits

Intended for students who present a plan for a project using methods of intellectual exploration and analysis. Possible projects include gathering data through laboratory or field based studies, using interviews and survey instruments to gauge human responses. They should involve creative representations, writing, and other forms of interdisciplinary analysis. To be carried out under the general supervision of a member of the graduate faculty in Natural Sciences. Project plan must be approved by the MSES Program Director/committee before student registers for this course. (F, W, S).
ESC 699  MSES Master's Thesis  
1.000 TO 6.000 Credits

MSES students electing this thesis option in the last stage of the program will work under the general supervision of a member of the graduate faculty in Natural Sciences, but will plan and carry out the work independently. Prospectus and thesis plan must be approved by the MSES Program Director/committee before student registers for this course. (F, W, S).

ENVIRONMENTAL STUDIES (ENST)

ENST 588  Env Lit & Reps of Nature  
3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 200 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239)

An interdisciplinary study of the ways in which the relationship between "nature" and humankind has been represented in literature and other forms of cultural expression. Emphasis on American and British texts of the 19th and 20th centuries, but assigned materials may include readings from other cultures and historical periods.

FILM STUDIES (FILM)

FILM 557  American Cinema  
3.000 Credits
Prerequisite(s): ENGL 240 or FILM 240 or HUM 240 or ENGL 248 or FILM 248 or HUM 248

This course will analyze how Hollywood as the nation's dream factory has manufactured fantasies and cultural myths that have constructed the image of American citizenship, both for Americans and non-Americans. It will establish the ideological function of Hollywood texts as providing unifying symbols for a fragmented society. Students who elect the course for graduate credit will do additional graduate-level work as outlined in the course syllabus. (YR).

FILM 577  Ethnographic Film  
3.000 Credits
Prerequisite(s): FILM 240 or HUM 240 or FILM 248 or HUM 248 or ANTH 101 or ENGL 240 or ENGL 248

This course will analyze ethnographic films as a medium for the construction of meaning in and across cultures. It will teach students to understand how putatively "real" content of documentary film creates a mixture of fantasy, news and "science". Covering texts as varied as National Geographic photographic layouts, traditional ethnographic films made by anthropologists, and auto-ethnographies of cultural groups such as Native Americans and the Trobriand Islanders of Papua New Guinea, the course will aim to deconstruct such oppositions as indigene vs. alien, us vs. them, and self vs. other. (AY)

GEOLOGY (GEOL)

GEOL 550  Glacial Geology  
3.000 Credits
Prerequisite(s): GEOL 118 and GEOL 218

The study of landforms and sediments created by glaciers both past and present. The glacial activities of the past 2 million years will be emphasized, particularly the evolution of landforms common to the upper Midwest. The influence of glacial deposits on development, construction methods, planning and environmental protection will also be discussed. (AY).

GEOL 560  Engineering Geology  
3.000 Credits
Prerequisite(s): GEOL 370

The application of structural geology and stratigraphy to the practice of civil engineering. Emphasis is placed on the application of geologic analysis to facilitate the successful completion of engineering projects. Case histories will be used to evaluate how geologic knowledge has been used in both successful and unsuccessful engineering projects. (W, AY)

GEOL 570  Geochemistry  
3.000 Credits
Prerequisite(s): GEOL 375 and CHEM 344

Application of the principles and techniques of geochemistry to the field of groundwater hydrology. Composition of natural water and the processes affecting the geochemical mobility of dissolved solids will be studied. Emphasis will be on the influence of the geochemical environment on water composition and water pollution. Course will include a review of analytical methods for the determination of water quality. Three hours lecture. (AY).

GEOL 574  Watershed Hydrology  
2.000 Credits

Study of ecological and engineering hydrology with an emphasis on wildlands and watershed as opposed to urban or contaminant hydrogeology. Students are expected to have background knowledge of groundwater hydrology. Taught as a mini course (two weeks) through the Japan Center for Michigan Universities (JCMU) each May. This is a field course requiring rigorous outdoor activity.

GEOL 575  Contaminant Hydrogeology  
3.000 Credits
Prerequisite(s): GEOL 375

Advanced lecture treatment of selected topics in subsurface hydrology including contaminant transport and fate of organic and inorganic constituents, aquifer test analysis, and the use of selected case histories. (AY)
GEOL 577  Geology Field Methods  
1,000 TO 2,000 Credits  
Prerequisite(s): GEOL 118 and GEOL 218

One to two week long intensive field course conducted at the end of the winter semester. The course will emphasize geological field methods and analysis of geologic terrains. Use of Brunton compass and clinometer, GPS, recognition and identification of geological structures, preparation and interpretation of geologic maps, satellite images and aerial photographs will also be covered. May be repeated for credit when destination varies. Two credit hours will be given for a field course which lasts two weeks. Alternatively, students may elect to take the shorter course (one-week to 10 days) for 2 credit hours if they are willing to serve as a teaching assistant. Organizational meetings will be held during the winter semester. (YR).

GEOL 587  Groundwater Modeling  
3,000 Credits  
Prerequisite(s): GEOL 375 or GEOL 498* 

Lecture and computer laboratory applications of two- and three dimensional groundwater flow and contaminant transport problems. Visual Modflow, Modpath (-PLOT and SUTRA), MT3D, and Surfer will be used to evaluate remedial alternatives (e.g., pump and treat, funnel and gate or trench and drain systems). EPA's Basin software combined with ESRI's GIS software ArcView will be used to evaluate and compare the Rouge River watershed with other small-scale watersheds in Michigan. (AY)

GEOL 590  Topics in Earth Science  
1,000 TO 4,000 Credits

Current topics in Earth Science. One to four graduate credit hours. (OC)

GERMAN (GER)

GER 599  Advanced Individual Projects  
1,000 TO 4,000 Credits

Advanced individual study project in German language, literature, or civilization may be pursued under the direction of a faculty supervisor. (OC). 

HEALTH POLICY STUDIES (HPS)

HPS 501  Health Policy St Internship  
3,000 Credits  
Prerequisite(s): HPS 440 or HPS 540

The Health Policy Studies Internship is an academic, curriculum-based practical work experience in a health care setting, health insurance firm, or health policy agency that provides students with hands-on experience to enhance understanding of issues relevant to health policy and health service delivery. The internship is normally unpaid and, when taken as a three credit hour course, consists of 8 hours per week of field work over a 14-week semester. Students are required to attend an internship seminar that meets weekly and includes a series of lectures on organizational, ethical, and administrative topics, intended to link the work experience with students' prior coursework. (F,W)

HPS 502  Graduate Seminar  
3,000 Credits  
Prerequisite(s): HPS 440 or HPS 540

Seminar focuses on current issues and practical problems in health care organization, delivery, and financing. The Case Method (where appropriate) is used to demonstrate and discuss real problems and approaches in functioning health care institutions in Southeastern Michigan. The course is primarily from the point of view of individuals responsible for administering or advising institutions. Students cannot receive credit for both HPS 402 and HPS 502. (F)

HPS 503  Medical Information Sys  
3,000 Credits  
Prerequisite(s): HPS 440 or HPS 540

Medical Information Systems deals with how information is created, stored and used in health care settings. Areas of interest for this course include fundamentals of computers and data management, medical information documentation in the form of paper and electronic medical records, health data privacy issues, disease classification and scoring systems, quality assurance in health care delivery, commonly used health care statistics, reimbursement methodologies, health care monitoring by internal processes and external review agencies, and vital statistics and disease surveillance systems. The course also includes some hands-on computer applications instruction to familiarize students with commonly used software platforms utilized in health care administration. Student cannot receive credit for both HPS 403 and HPS 503.

HPS 504  Financing Health & Medical Sys  
3,000 Credits  
Prerequisite(s): ECON 201

The American health care system faces two great problems: access to health services and high and rising costs. This course looks at the problems of uninsured citizens as well as the strains placed on health care facilities in providing services for them. Europeans have dealt with problems of access and cost controls through universal health care coverage and the course takes up various models in use today. The course also looks at American health insurance and "managed care" programs such as HMOs and PPOs as methods of providing health coverage as well as controlling costs. The course introduces students to services provided by the government including Medicare, Medicaid, and SCHIP. Students will learn the basics of creating a budget under constraints such as contractual limitations and Diagnosis-Related Groups (DRGs). Offered once a year, ordinarily in the Winter semester. Students cannot receive credit for more than one of the following: HPS 404, HPS 504, HPS 451, HPS 551, or PADM 451. (W)

HPS 505  Healthcare Administration  
3,000 Credits  
Prerequisite(s): HPS 440 or HPS 540

This course introduces students to administrative models and skills that can be used at a supervisory level. These
conceptions include strategic planning, marketing, organizational communications, quality assurance, project management and team skills, supervision and evaluation, conflict resolution and office cultures and politics. A critical and historical perspective is used to understand the origins and meanings of these conceptions and the extent to which they correspond with the service mentality of health and human services. Applications to the health and human services will be central to the course.

HPS 510 Quantitative Research
4.000 Credits
Prerequisite(s): SOC 200 or SOC 201

An introduction to methods of data collection and analysis. Also a discussion of research design and the philosophy of social sciences. Additional reading assignments or projects will distinguish this course from its undergraduate version HPS 410. Students cannot receive credit for both HPS 410 and HPS 510. (F, W, S).

HPS 540 Medical Sociology
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

An analysis of health and illness behaviors from the point of view of the consumer, as well as the medical professionals, the structure, strengths, and weaknesses of the medical care delivery system in the U.S.; the impact of culture and personality on illness behavior; and a study of the institution of medicine and activities of health care professionals. Additional reading assignments or projects will distinguish this course from its undergraduate version HPS 440. Students cannot receive credit for both HPS 440 and HPS 540. (F, W, S).

HPS 542 Medical Ethics
3.000 Credits
Prerequisite(s): PHIL 100 or PHIL 120 or PHIL 233 or PHIL 234 or PHIL 240 or PHIL 301 or PHIL 302 or PHIL 303 or PHIL 304 or PHIL 305 or PHIL 310 or PHIL 315 or PHIL 320 or PHIL 340 or PHIL 350 or PHIL 355 or PHIL 365 or PHIL 369 or PHIL 370 or PHIL 371 or PHIL 375 or PHIL 380 or PHIL 390 or PHIL 441 or PHIL 445 or PHIL 485 or PHIL 490

Issues in medical ethics are among the most exciting and most urgent facing the world today. This course will explore some of these issues: the relationship between patient and health caregiver (truth-telling, informed consent, the right to refuse treatment, confidentiality); assisted suicide and euthanasia; treatment of defective newborns; scarce resources, social justice and the right to health care; cloning and genetic manipulation; new reproductive technologies; and others. We will discuss issues from the standpoint of patients, medical professionals, and citizens who shape policy in a democratic society. Ethical theories and concepts will be stressed. Students cannot receive credit for both HPS 442 and HPS 542. Prerequisite(s): any previous course in Philosophy or permission of instructor. (F, W, S).

HPS 548 Comparative Health Care System
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

An introduction and overview of the English, Swedish, and People's Republic of China health care systems. Focus on cultural and other organizational characteristics, unique features, approaches and ability to solve problems. Emphasis on how the three systems help us understand the American health care system. Additional reading assignments or projects will distinguish this course from its undergraduate version HPS 448. Students cannot receive credit for both HPS 448 and HPS 548. (F, W, S).

HPS 556 Health Care and the Law
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201 or POL 364

A sociological study of legal issues in health care, including regulation of hospitals, consent for treatment, confidentiality, experimentation, family planning, children's rights, access to health care. The emphasis will be on the organizational and personal consequences of legal requirements. Junior/Senior standing is a requirement. Students cannot receive credit for both HPS 456 and HPS 556. (AY).

HISTORY (HIST)

HIST 565 The Family in History
3.000 Credits

An analysis of the emergence of the modern family from the 16th century to the present with focus on the history of childrearing, family size and structure, intrafamilial and inter-generational relationships and population patterns. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (AY)

HIST 590 Topics in History
1.000 TO 3.000 Credits

Problems and issues in selected areas of history. Title changes according to content. Course may be repeated when specific topic differs. (OC).

HIST 599 Advanced Ind Studies in Hist
1.000 TO 4.000 Credits

Readings and analytical writing in history, in accordance with the interests of the student and approval of the instructor. Students must submit a written proposal of study for approval. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (F, W).

HUMANITIES (HUM)

HUM 509 Feminist Theories
3.000 Credits
Prerequisite(s): LIBS 560

This course examines the different perspectives that feminist theorists have offered to analyze the unequal conditions of women's and men's lives. Students taking this course will
develop an understanding of how theory functions as a way to
know, understand and change the world. They will also be
provided with a lens for comparing the assumptions and
implications of alternative theoretical perspectives. A particular
emphasis of this course is on theorizing the interrelationships
among gender, race, class, sexuality and nationality. Course
material includes applications of feminist theory to issues such
as gender identity formation; sexuality; gender, law and
citizenship; women and work; and the history and politics of
social movements. Students will not receive credit for both
HUM 409 and HUM 509. Additional reading assignments or
projects will distinguish this course from its undergraduate
version.

HUM 533 Writing Women in Renaissance
3.000 Credits

This course will be taught in English, and will focus in the
influence of Italian literary models for the construction of
female literary types as well as female voices in France and
Italy from 1300 to about 1600. Italian authors studied include
three very influential Florentines, Dante, Petrarch and
Boccaccio, as well as Castiglione and Ariosto. We will read
women poets, patrons, prostitutes and queens from Italy and
France such as Veronica Gambara, Isabella di Morra, Vittoria
Colonna, Christine de Pizan, Louise Labe, and Marguerite de
Navarre. At issue will be women's roles and women's images in
city and court culture during the early modern period, and the
interaction of their writings with the literary canons of Italy
and France. (OC).

HUM 557 American Cinema
3.000 Credits
Prerequisite(s): ENGL 240 or HUM 240 or
FILM 240 or ENGL 248 or HUM 248 or FILM
248

This course will analyze how Hollywood as the nation's dream
factory has manufactured fantasies and cultural myths that have
constructed the image of American citizenship, both for
Americans and non-Americans. It will establish the ideological
function of Hollywood texts as providing unifying symbols for
a fragmented society. Students who elect the course for
graduate credit will do additional graduate-level work as
outlined in the course syllabus. (YR).

HUM 577 Ethnographic Film
3.000 Credits
Prerequisite(s): FILM 240 or HUM 240 or
ENGL 240 or FILM 248 or ENGL 248 or ANTH
101

This course will analyze ethnographic films as a medium for
the construction of meaning in and across cultures. It will teach
students to understand how putatively "real" content of
documentary film creates a mixture of fantasy, news and
"science". Covering texts as varied as National Geographic
photographic layouts, traditional ethnographic films made by
anthropologists, and auto-ethnographies of cultural groups
such as Native Americans and the Trobriand Islanders of
Papua New Guinea, the course will aim to deconstruct such
oppositions as indigene vs. alien, us vs. them, and self vs.
other. (AY)

HUM 590 Advanced Topics in Humanities
3.000 TO 4.000 Credits
Senior

The presentation of a topic in a discipline of the Humanities or
an interdisciplinary course involving humanities on an
advanced undergrad/graduate level.

LIBERAL STUDIES (LIBS)

LIBS 522 Narrative Anthropology
3.000 Credits
Must be enrolled in MALS-Liberal Studies
Prerequisite(s): LIBS 560

A consideration of alternative approaches to gaining
ethnographic understandings by reading anthropological
novels (Bohannan, LeGuin), fiction and poetry by non-western
authors (Silko, Achebe), and travel writing (Chatwin,
O'Hanlon). (OC)

LIBS 536 Memoir and Travel Writing
3.000 Credits
Prerequisite(s): LIBS 560

A course in narrative nonfiction that focuses on memoir and
travel writing. Reading involves several books as well as
classic essay-length examples. Assignments include both short
and analytical papers and the writing and revising of three
original articles, based on research, interviews, memory, and
observation, and drawing on literary techniques. In addition to
these assignments, graduate students must prepare a substantial
critical analysis focusing on a particular writer or theme, and
present their work to the class as well as in writing. (YR).

LIBS 560 Foundations in Liberal Studies
3.000 Credits

This course is mandatory for students entering the MALS
program. It will introduce students to the understanding of
advanced liberal studies and to graduate-level interdisciplinary
skills and methodologies.

LIBS 561 Self and Society
3.000 Credits
Prerequisite(s): LIBS 560

This seminar examines various facets of autobiography and
memoir within the context of historical and contemporary
cultures. Drawing on texts from Europe, Africa, Asia, and
North America, the seminar analyzes the purpose of self-
narrative and explores the cultural patterning of individual
experience and literary discourse. (YR).

LIBS 562 Postmodernism and Truth
3.000 Credits
Prerequisite(s): LIBS 560

Examines the development in the last 20 years of the
emergence of "post modern" scholarship in a number of fields
in the natural and social sciences, humanities, and popular
culture; considers how in each case these approaches seem to
challenge the authority of single explanations and absolute
truth. Addresses issues such as diversity in cultures; why cultural pressures produce new forms of relativism; the dynamics of race and gender in intercultural clashes; and the interplay of strongly held values and toleration. Course format will require close reading of complex texts and responses to them in class discussion.

LIBS 563  New World Cultures  
3.000 Credits  
Prerequisite(s): LIBS 560

This is a MALS Core Seminar that will focus on the topic of crosscultural encounters in the Atlantic from the advent of the Atlantic slave trade to the emancipation of slaves in the western hemisphere. Course will stress interdisciplinary approaches to the topic, including economics, history, and anthropology. (YR).

LIBS 564  Literature and Science Studies  
3.000 Credits  
Prerequisite(s): LIBS 560

An introduction to the humanistic study of science using works of literature and the techniques of literary, historical, sociological, philosophical, cultural, feminist and rhetorical analysis.

LIBS 565  Generational Legacies  
3.000 Credits  
Prerequisite(s): LIBS 560

An interdisciplinary study of the ways adults shape their lives to nurture future generations and leave an enduring legacy. Case histories, teaching tales, and empirical research will be the focal points of student work and discussion. (AY).

LIBS 566  Investigating Academic Literacy  
3.000 Credits  
Prerequisite(s): LIBS 560

Intensive investigation of, and practice with, writing and research skills required for graduate-level work. Through regular assignments, guided reading of a variety of texts, and intensive work with instructor/s and one another, students will explore what it means to produce academic discourse, learn its conventions, and develop skills in written analysis. (YR).

LIBS 567  The Self in Philosophy & Literature  
3.000 Credits  
Prerequisite(s): LIBS 560

This course will utilize both philosophical and literary texts to examine the nature of the self. We will explore the self's inwardsness, its relation to others, its capacity for self-knowledge and self-deception, its connection to gender, its desire to disown itself and finally its relation to death. The philosophical texts will provide theoretical structures within which to both experience and discuss the literary texts.

LIBS 568  Religion and Society  
3.000 Credits  
Prerequisite(s): LIBS 560

The course will focus upon how social scientists examine the role of religion in public life. It will examine several religious organizations or communities or religious-based ideologies. The format of the class will be to read primary source materials or research studies and discuss them. This is not a class in theology or faith. (OC).

LIBS 569  The Texture of Memory  
3.000 Credits  
Prerequisite(s): LIBS 560

This seminar will examine theories of individual, collective, and cultural memory and their practical application. In addition, we will read three major novels in which the authors explore memory in its various forms. We will begin the semester by examining the ways in which clinical psychologists have looked at memory versus the ways in which social constructive sociologists and psychologists have viewed memory. In our examination, we will try to find some points of intersection between the two groups. This will provide the framework for further explorations of memory and the study of constructions of memory and their uses and abuses. We will focus on the ways in which memory has been conceptualized in the disciplines of art history, history, literary criticism, Holocaust studies, sociology, and psychology, as well as the interdisciplinary field of cultural studies. (OC).

LIBS 570  History of Warfare, 1500-2000  
3.000 Credits  
Prerequisite(s): LIBS 560

A History of Warfare during the Age of Gunpowder offers a summary of human strife from approximately 1500 to the present. Drawing on a series of diverse sources - including analytical assessments by eminent contemporary historians, eyewitness accounts by combatants, and cinematic representations of warfare - this course seeks to explore the origins of human conflict, its evolution during the past 500 years, and its future, if any. (OC).

LIBS 571  Science&Philosophy of Emotion  
3.000 Credits  
Prerequisite(s): LIBS 560

This course will examine how past philosophers and psychologists analyzed emotions to set the stage for an examination of more recent work on emotions being produced in philosophy, psychology, and neuroscience. This course will use these analyses to explore the following topics: the relationship of emotions to reason, memory, and morality, and the overall role of emotions in our relationship to ourselves and to others.

LIBS 575  Making Modern Science  
3.000 Credits  
Prerequisite(s): LIBS 560

This seminar will explore how science became a defining feature of modern life around the world in the last five centuries. We will study the so-called ‘Scientific Revolution’ in a global context in relation to other forms of belief, such as religion and magic, and changes in human society at large. By critically studying theoretical texts, primary sources, and secondary materials tied to the emergence of the modern sciences, the seminar will challenge participants to examine
their assumptions and presuppositions about what science is, how science was in the past, how science has been done, and what its history should be. We will discover how people in different cultures made knowledge of the natural world in pre-modern times, and examine why some ways of making natural knowledge became more reliable and widespread than others in recent centuries.

**LIBS 580 Gender, Culture and Identity**
3.000 Credits
Prerequisite(s): LIBS 560

This is a course about how scholars analyze women, gender, and feminist theories. It introduces students to key questions about gender and the principal methods for studying them. It will serve as a forum for building and testing theories on the totality of women's experience. (YR).

**LIBS 581 Aspects of Greek Culture**
3.000 Credits
Prerequisite(s): LIBS 560

Despite its clichéd ring, Greco-Roman and Judeo-Christian cultures are the origins of the western world. The seminar will consider a variety of classical texts (for example, the Iliad, the Oedipus Trilogy, The Oresteia, The Peloponnesian Wars) as signposts to Greek culture and values. What do the texts reveal about Greek values, social mores, social interaction—between men and women, men and men, children and adults, gods and men?

**LIBS 582 European Ideas in American Culture**
3.000 Credits
Prerequisite(s): LIBS 560

This course will introduce students to key topics in modern western culture, with focus specifically on the role played by European ideas in the creation of American culture from the eighteenth century to the present. Organized around three case studies of European intellectual influences on America using the writings of John Locke, Charles Darwin, and Sigmund Freud. (OC)

**LIBS 583 Early Mod Era/New & Old World**
3.000 Credits
Prerequisite(s): LIBS 560

This is a course on the history of the early modern West from multiple perspectives, with special emphasis on the role played by the Old and New World, together, in the creation of the modern. Course fulfills the Liberal Studies track core seminar requirement. (OC).

**LIBS 584 Environmental Studies: Concepts & Philosophy**
3.000 Credits
Prerequisite(s): LIBS 560

An extensive and intensive analysis of the roots of environmental studies. Environmental studies becomes interdisciplinary as it makes connections between the traditional disciplines in the natural sciences, social sciences, humanities, and technological sciences when dealing with current environmental issues. The students will examine and discuss the philosophical, scientific, social, and religious basis of the environmental movements through classical and contemporary readings. Possible topics will include: views of nature, sustainability, carrying capacity, management of commons, the environment of cities, and developing a sense of place.

**LIBS 585 Watershed Analysis**
3.000 Credits
Prerequisite(s): LIBS 560

An interdisciplinary study of watersheds, the most commonly used bioregional unit. The course will integrate the analysis of many factors which contribute to the character of watersheds, including bedrock and surficial geology, surface and groundwater hydrology, social history, land use history, water quality analysis, biological diversity, laws and regulations, management models, drinking water and wastewater systems, best management practices, and educational programs. The Rouge River Watershed will serve as the primary case study. (YR).

**LIBS 586 Ecological Economics**
3.000 Credits
Prerequisite(s): LIBS 560

A review of major theories and issues concerning the relationship between ecological and economic systems. Topics include these questions: What is the purpose of economic activity? How important is the preservation of the natural world compared to the production of economic goods? How do principles of social and intergenerational equity affect the use of resources and choice of goods to be produced? The course utilizes a transdisciplinary approach in the development of new models where conventional economics and ecology alone have been ineffective in addressing questions of sustainability and equity. (OC).

**LIBS 587 Women and Public Places**
3.000 Credits
Prerequisite(s): LIBS 560

Despite old and persistent myths of a woman’s place being in the home, women in America have consistently maintained a presence in public spaces. Their participation, however, was not unfettered. Laws, social mores, familial and religious restraints, etiquette, the threat of violence, lack of funds, and other factors influenced and restricted women’s behavior when in public and structured society’s reactions to their presence. This course will consider the development of these codes of behavior, formal and informal, how women of different ethnicities, races, sexual orientations, and classes experienced their effects, and the ways in which women sought to temper and undermine the system, particularly in the 20th century. This course will provide an interdisciplinary approach to historic, social physical, economic, and cultural geographies through which women have traveled. Readings will consider the scholarship generated by urban geographers, historians, sociologists, anthropologists, literary critics, economists, novelists, and journalists. (OC)

**LIBS 588 Creative Class/Working Class**
3.000 Credits
Prerequisite(s): LIBS 560

In this course we will explore changing conceptions of work and its impact on urban redevelopment policies. The issue will
be set within a larger theme: the relationship between work and creativity. We begin with a review of writings by Adam Smith, Karl Marx, Max Weber, Karl Polanyi, E. P. Thompson and others on the history and concept of work as a specific form of productive human activity. We will then critically examine the nature of the shift from manufacturing to services and the emergence of a new, knowledge-based system of production. Specific policies aimed at recruiting members of the "creative class" to live and work in "cool cities" - Michigan's cool cities initiative, for example - will be examined and critically evaluated. (OC)

LIBS 599 Independent Studies - MALS
1.000 TO 3.000 Credits
Prerequisite(s): LIBS 560

Provides opportunity for qualified graduate students in the MALS program to pursue independent research under the direction of a graduate faculty member. Project must be defined in advance, in writing, and must be appropriate to the student's chosen track. It must be designed to produce a scholarly paper or papers which reflect significant results from the course.

LIBS 690 Topics in Liberal Studies
3.000 Credits
Prerequisite(s): LIBS 560

Presents topics of current interest in graduate liberal studies. Topics vary from term to term. (OC).

LIBS 697 MALS Capstone Experience
3.000 Credits

This course is designed as a capstone experience for students in the MALS program who are interested in a non-thesis/non-project option. Its aim is to allow students to reflect and draw upon the knowledge they gained in MALS, and then apply this knowledge in class discussions, essays, and research projects on an interdisciplinary topic chosen from an agreed-upon list of topics that relate to the general MALS curriculum. In the first section of the course, students will reflect upon the interdisciplinary nature of their graduate training, drawing connections between diverse courses they have taken, pinpointing applications to the outside world, and examining the ways that interdisciplinary work has transformed their thinking. The remainder of the class will be organized around an interdisciplinary exploration of one of the following interrelated topics: "Memory", "Identity", "Place", "Community", or "Ways of Knowing". Students will examine how different disciplines and scholars approach the topic. They will also consider the relevance of this broad theme for contemporary issues and debates. Also, students should have completed at least 24 credits in the MALS program, if enrolled concurrently in a LIBS graduate course, or 27 credits otherwise, with a minimum GPA of 3.0.

LIBS 698 MALS Master's Project
3.000 OR 6.000 Credits

An alternative to the usual master's thesis for students who can present a feasible plan for a project using methods of intellectual exploration and analysis other than the document-based research typically used in preparing a thesis. Might include gathering data through the use of human subjects, as with interviews and survey instruments; creative representation, as in painting; creative writing, and other forms of artistic expression; or devising new modes of interdisciplinary analysis of human experience and thought. To be carried out under the general supervision of a member of the graduate faculty in CASL. Project plan must be approved by the MALS program director before student registers for this course. Report and oral presentation to a panel of faculty members required when the project is completed. (F,W,S).

LIBS 699 MALS Master's Thesis
3.000 OR 6.000 Credits

MALs students electing the Thesis option in the last stage of the program will work under the general supervision of a member of the graduate faculty in CASL, but will plan and carry out the work independently. A prospectus for the thesis must be approved by the MALS program director before the student registers for this course. The student will submit a report on the thesis and give an oral presentation to a panel of faculty members when the thesis is completed. (F,W,S).

LINGUISTICS (LING)

LING 525 Language and Society
3.000 Credits
Prerequisite(s): ANTH 101 or LING 280

An examination of the social functions of speech through readings and exercises, emphasizing schools and other applied settings. Topics include ethnic and social class dialects, codeswitching, and the organization of conversation. (OC).

LING 564 Contemporary Rhetorical Theory
3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 239 or ENGL 240 or ENGL 250)

An examination of contemporary rhetorical theories through the study of representative practitioners in related developments in linguistics, philosophy, and psychology. (OC)

LING 565 Disclosure Analysis
3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 232 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239 or ENGL 240 or ENGL 250)

The morphological and syntactic analysis of the structure of present-day English considered in the light of modern linguistic science. Students cannot receive credit for both LING 461 and LING 561 (YR)
An examination of the syntactic and semantic devices and structures underlying communication in written text and oral interaction. Material to be analyzed will vary from term to term (technical reports, scholarly articles, newspaper stories) but examples will be drawn primarily from the written language. (OC)

LING 575 Arab American English
3.000 Credits
Prerequisite(s): LING 480 or LING 580

The study of the development, features, functions, and significance of varieties of English in the Arab American community. A range of sociolinguistic approaches are explored and applied to the subject matter. Topics to be addressed include code switching, language shift and maintenance, and the role of language in identity formation. Students cannot receive credit for both LING 477 and LING 575. Additional reading assignments or projects will distinguish this course from its undergraduate version.

LING 576 Sociolinguistics
3.000 Credits
Prerequisite(s): LING 480 or LING 580

An examination of sociolinguistic approaches to the issue of variation in language. Areas to be considered include ways of defining and constructing language, different types of language varieties, how variation is structured in language, the role of sociolinguistic variation in linguistic change, and the significance of linguistic acts of identity. (YR)

LING 577 African American English
3.000 Credits
Prerequisite(s): LING 280 or LING 281 or LING 480 or LING 580

An examination of the structure, history and use of African-American English. Topics will include the pronunciation, grammar and vocabulary of African-American English, theories of origin, linguistic repertoire and code-switching in African-American communities, the Ebonics controversy, and the role of this variety in education and identity formation. Additional reading assignments or projects will distinguish this course from its undergraduate version LING 477. Student cannot receive credit for both LING 477 and LING 577.

LING 580 Concepts in Linguistics
3.000 Credits

An examination of foundational concepts in linguistics and sociolinguistic theory, which explores the intellectual and philosophical problems raised by these concepts. Issues covered include the metalinguistic nature of language studies, the relation of language to the communication systems of other species, the physiological basis of language, language variation, language function and instrumentality, and innate versus learned behavior. (YR)

LING 582 History of the English Lang
3.000 Credits
Prerequisite(s): LING 280 or LING 480

A thorough grounding in the history and structure of the English language. At issue are the linguistic and ideological origins of the concept of Standard English, and the strengths and limitations of different methods of analyzing the history of the language. The course will emphasize sound change, grammatical change, and their sociolinguistic context. (YR)

LING 584 World Englishes
3.000 Credits
Prerequisite(s): LING 480 or LING 580

A study of the origin and significance of different forms of English throughout the world. Contact with other languages, pidginization, creolization, standardization, and the formation of the three circles of English are examined. (YR)

MATH 504 Dynamical Systems
3.000 Credits
Prerequisite(s): MATH 216 and (MATH 217 or MATH 227)

The aim of this course is to survey the standard types of differential equations. This includes systems of differential equations, and partial differential equations, including for each type, a discussion of the basic theory, examples of applications, and classical techniques of solution with remarks about their numerical aspects. Also included are autonomous and periodic solutions, phase space, stability, perturbation techniques and Method of Liapunov. Additional reading assignments or projects will distinguish this course from its undergraduate version MATH 404. Students cannot receive credit for both MATH 404 and MATH 504. (AY)

MATH 5055 Integral Equations
3.000 Credits
Prerequisite(s): MATH 216 and (MATH 217 or MATH 227)


MATH 507 Wrkshp in Micro for Teachers
2.000 Credits
Prerequisite(s): MATH 385

Thorough introduction to the Basic programming language and the writing of an educational program in the Basic language. Consideration is also given to the use of the microcomputer in the classroom. No credit for CASL concentration, minor, or area of focus. Open only to certified teachers or elementary education students.

MATH 508 Topics for Elementary and Middle School Teachers
1.000 TO 3.000 Credits
Prerequisite(s): MATH 385
Topics such as problem solving, calculators, microcomputers, applications, algebraic and geometric concepts, probability and statistics are to be considered. Emphasis is on developing skills in these topics and their uses in the curriculum.

MATH 512  First Course in Modern Algebra  
3.000 Credits  
Prerequisite(s): MATH 200 and (MATH 217 or MATH 227)

Introduction to groups, subgroups, group homomorphisms, factor groups, simple groups, cyclic groups. Sylow theorems, rings, ideals, integral domains, field, polynomial rings, Kronecker's theorem, also properties of the integral, rational, real and complex numbers. Additional reading assignments or projects will distinguish this course from its undergraduate version MATH 412. Students cannot receive credit for both MATH 412 and MATH 512. (W)

MATH 513  Linear Algebra  
3.000 Credits  
Prerequisite(s): MATH 216 and MATH 200 and (MATH 217 or MATH 227)

Vector spaces, linear transformations and matrices, determinants, inner product spaces, bilinear and quadratic forms. Hamilton-Cayley theorem, eigenvalues and eigenvectors spectral theorem. Additional reading assignments or projects will distinguish this course from its undergraduate version MATH 413. Students cannot receive credit for both MATH 413 and MATH 513. (Y).

MATH 514  Numerical Solutions of Partial Differential Equations  
3.000 Credits  
Prerequisite(s): MATH 216 and (MATH 217 or MATH 227)

Numerical methods for the solution of initial and boundary value problems including finite difference schemes, finite element methods and steepest descent methods. Issues relating to the convergence, stability, efficiency and implementation of these methods will be examined. (OC).

MATH 515  B-Splines and Their Applications  
3.000 Credits  
Prerequisite(s): MATH 216 and (MATH 217 or MATH 227)

A historical look at approximation of functions by polynomials in the uniform and least square norms; B-splines represent the natural and concise extension of approximation by piecewise polynomials; with applications to computer-aided design and geometric modeling.

MATH 516  Partial Differential Equations  
3.000 Credits  
Prerequisite(s): MATH 216 and (MATH 217 or MATH 227)

Modeling physical problems, such as fluid flow and stochastic optimization, by partial differential equations. Basic theory of partial differential equations including first order equations, the wave equation and characteristics, energy estimates and maximum principles for elliptic and parabolic equations, and the solution of equations in terms of integral formulas. (OC).

MATH 520  Stochastic Processes  
3.000 Credits  
Prerequisite(s): MATH 325 and (MATH 217 or MATH 227)

Review of distribution theory. Introduction to stochastic processes, Markov chains and Markov processes, counting, Poisson and Gaussian processes. Applications to queuing theory. Additional reading assignments or projects will distinguish this course from its undergraduate version MATH 420. Students cannot receive credit for both MATH 420 and MATH 520. (AY)

MATH 523  Linear Algebra with Applications  
3.000 Credits  
Prerequisite(s): MATH 216 and (MATH 217 or MATH 227)

Vector spaces, linear transformations of vector spaces and their representations as matrices and canonical forms for similarity. Inner product spaces, diagonalization of the Hermitian forms by unitary transformations. Applications to linear programming and to the solution of systems of differential equations. (AY)

MATH 525  Mathematical Statistics II  
3.000 Credits  
Prerequisite(s): MATH 325

Internal estimation and pivotal quantities; maximum likelihood estimation; hypothesis tests; linear models and analysis of variance; bivariate normal distribution, regression and correlation analysis; nonparametric methods. Additional reading assignments or projects will distinguish this course from its undergraduate version, MATH 425. Students cannot receive credit for both MATH 425 and MATH 525. (OC)

MATH 5385  Number Systems & Operations for Teachers  
2.000 OR 3.000 Credits

This course is designed to deepen grades 3-5 elementary teachers' understanding of the whole number and rational number systems. Major topics include interpretations of whole number operations, the extension of whole number operations to rational numbers, the representations of rational numbers and the conceptual underpinnings of non-standard and standard algorithms. Other topics include analyzing number theoretic concepts such as prime numbers and divisibility. Pedagogical and curriculum issues will be addressed as they relate to teaching for understanding and developing computational fluency. The topics of the 2-credit hour course will include whole numbers and operations. The 3-credit course will extend topics covered to rational numbers. Open only to certified teachers. (OC)

MATH 5386  Geometry & Measurement 1 for Teachers  
2.000 OR 3.000 Credits

This course will provide participants an opportunity to develop a deeper understanding of the mathematics they teach through a thorough development of the geometric and measurement concepts associated with two-dimensional figures. Topics will
include characteristics and properties of geometric shapes with an emphasis on developing mathematical arguments about geometric relationships, transformations and use of symmetry to analyze mathematical situations, measurable attributes of objects and processes of measurement, and appropriate techniques, tools, and formulas to determine measurements. Coursework will focus on developing mathematical thinking and will highlight interactive learning styles. A three-credit course extends measurement to the real numbers by introducing the Pythagorean Theorem. Open only to certified teachers. (OC)

**MATH 5387 Geometry & Measurement 2 for Teachers**  
2.000 Credits

This course will provide participants an opportunity to develop a deeper understanding of the mathematics they teach through a thorough development of the geometric and measurement concepts associated with three-dimensional figures. Topics will include characteristics and properties of geometric shapes with an emphasis on developing mathematical arguments about geometric relationships and use of symmetry to analyze mathematical situations, measurable attributes of objects and processes of measurement, and appropriate techniques, tools, and formulas to determine measurements. In addition, topics to be covered include the Pythagorean Theorem. Coursework will also focus on developing mathematical thinking and will highlight interactive learning styles. Open only to certified teachers. (OC)

**MATH 542 Geometry for Teachers**  
3.000 Credits  
Prerequisite(s): MATH 387

Properties of two and three-dimensional figures are covered, including congruence, symmetry, transformation, and measurement. Trigonometry from a geometric perspective and the use of trigonometry in problem solving are included. Topics also include coordinate geometry and visualization as well as the nature of axiomatic reasoning and the role it has played in the development of mathematics. An investigative approach involving problem solving, reasoning and proof, connections, and communication will be emphasized. Calculator and computer technology will support the investigation of these topics. Classroom resources and materials are considered. Different levels of geometric thinking will be explored. Open only to certified teachers or elementary education students. (F, W, S)

**MATH 543 Algebra for Teachers**  
3.000 Credits  
Prerequisite(s): MATH 386

Algebraic structure is emphasized, especially as it relates to arithmetic. Emphasis is on the development of algebraic reasoning and generalizations with appropriate pedagogy. Curriculum issues relevant to teaching algebra for conceptual understanding are included. Major topics include algebraic representations of linear, exponential, power and quadratic patterns, systems of equations, and applications. An investigative approach involving problem solving, reasoning and proof, connections, and communication will be emphasized. Classroom resources and materials are considered as well as calculators and computer technology as problem solving tools to aid in algebraic thinking. Open only to certified teachers or elementary education students. (F, W, S).

**MATH 544 Data Analysis, Probability & Statistics for Teachers**  
3.000 Credits  
Prerequisite(s): MATH 387

Concepts of elementary probability using both experimental and theoretical models are considered with an emphasis on the use of probability models to describe physical phenomena and to make and interpret predictions. Topics in data analysis and statistics include drawing inferences from visual displays of data, applying techniques of inferential statistics, sampling and simulations to generate solutions to problems, and making appropriate inferences using best fit techniques. Evaluation of data and arguments to establish validity, interpreting, calculating and solving problems related to correlation, distributions, percentiles and standard scores are also included. An investigative approach involving problem solving, reasoning and proof, connections and communication will be emphasized. Calculator and computer technology will support the investigation of these topics. Open only to certified teachers or elementary education students.

**MATH 5440 Patterns in Algebra 1 for Teachers**  
2.000 OR 3.000 Credits  
Must be enrolled in School of Education

This course is designed to deepen in-service teacher's understanding of patterns and algebraic concepts. Major topics include the representation, analysis, and generalization of a variety of patterns and tables, graphs, words, and, when possible, symbolic rules; and the analysis of change in various contexts. The three credit hour course furthers teachers' understanding of the use of mathematical models to represent quantitative relationships. Pedagogical and curriculum issues will be addressed as they relate to teaching for students' understanding of patterns and algebraic concepts. Open only to certified teachers. (OC)

**MATH 5442 Geometry & Measurement 3 for Teachers**  
2.000 Credits  
Must be enrolled in School of Education

This course will provide participants an opportunity to develop a deeper understanding of the mathematics they teach through a thorough development of the geometric and measurement concepts associated with two- and three-dimensional figures. Topics will include characteristics and properties of geometric shapes with an emphasis on developing mathematical arguments about geometric relationships, transformations and use of symmetry to analyze mathematical situations, measurable attributes of objects and processes of measurement, and appropriate techniques, tools, and formulas to determine measurements. In addition, topics to be covered include Pythagorean Theorem and right-angle trigonometric concepts. Coursework will also focus on developing mathematical thinking and will highlight interactive trigonometric concepts. Open only to certified teachers. (OC)

**MATH 5443 Patterns in Algebra 2 for Teachers**  
2.000 Credits  
Must be enrolled in School of Education
This course is designed to deepen in-service teachers' understanding of patterns and algebraic concepts. Major topics include the representation, analysis, and generalization of a variety of linear and non-linear patterns (including exponential and quadratic) with tables, graphs, words, and symbolic rules; the comparing and contrasting of linear and non-linear patterns; the representation and analysis of mathematical situations and structures using algebraic symbols; the use of mathematical models to represent and understand quantitative relationships; and the analysis of change in various contexts. Pedagogical and curriculum issues will be addressed as they relate to teaching for students' understanding of patterns and algebraic concepts. Open only to certified teachers. (OC)

**MATH 545 Number Systems & Operations &Proportional Reasoning for Teachers**

2.000 Credits

Must be enrolled in School of Education

This course is designed to deepen middle school mathematics teachers' understanding of the whole number system and its operations and its extensions to the rational number system and their operations. The primary focus is on proportional reasoning as a major ingredient for success in mathematics. Pedagogical and curriculum issues will be addressed as they relate to teaching for understanding. Materials include exemplary curriculum materials and records of student thinking. Only open to certified teachers. (OC)

**MATH 546 Discrete Math & Modeling for Teachers**

3.000 Credits

Must be enrolled in School of Education

Prerequisite(s): (MATH 442 or MATH 542) and (MATH 443 or MATH 543)

This course interweaves the ideas of discrete mathematics with the approaches and strategies of mathematical modeling. It gives pre- and in-service teachers opportunities to deepen their understanding and use of mathematical models based on the concepts of discrete mathematics. Topics include recurrence, induction, permutations, combinations, binomial distributions, circuits, critical paths, minimal spanning trees, adjacency matrices, algorithm design and optimization. Systems thinking and multiple representations are emphasized. Open only to certified teachers or elementary education students. (YR)

**MATH 547 Microcomp in Math for Teachers**

2.000 Credits

Prerequisite(s): MATH 386

Use of the microcomputer in the mathematics classroom with an emphasis on the LOGO programming language. Problem solving, hands-on activities, and a cooperative learning environment are emphasized. Open only to certified teachers or elementary education students. (S)

**MATH 549 Concepts of Calculus for Teachers**

3.000 Credits

Post-baccalaureate Cert only

Post-baccalaureate NCFD

Prerequisite(s): (MATH 442 or MATH 542) and (MATH 443 or MATH 543)

Concepts of Calculus for Teachers focuses on calculus concepts appropriate for middle school mathematics teachers and teacher-candidates. The course provides a deep understanding of the major concepts of calculus: rates of change, accumulation (net change), area, and limits. Students will experience concrete approaches to the various topics using problem solving, manipulatives and technology as appropriate, with the intent being to help the learners discover how the ideas of calculus are useful in a variety of settings. Visual, numeric, and commonsense approaches will be used. Open only to certified teachers or elementary education students. (YR).

**MATH 551 Advanced Calculus I**

3.000 Credits

Prerequisite(s): MATH 200 and MATH 216 and (MATH 217 or MATH 227)

Properties of the real number system; point set theory for the real line including the Bolzano-Weierstrass theorem; sequences, functions of one variable; limits and continuity, differentiability, Riemann integrability. Additional reading assignments or projects will distinguish this course from its undergraduate version MATH 451. Students cannot receive credit for both MATH 451 and MATH 551. (YR).

**MATH 552 Advanced Calculus II**

3.000 Credits

Prerequisite(s): MATH 451 or MATH 551

Includes the rigorous study of two and more variables, partial differentiation and multiple iteration. Special topics include: Taylor Series, Implicit Function Theorem, Weierstrass Approximation Theorem, Arzela-Ascoli Theorem. Additional reading assignments or projects will distinguish this course from its undergraduate version MATH 452. Students cannot receive credit for both MATH 452 and MATH 552. (AY)

**MATH 554 Fourier Series and Boundary Value Problems**

3.000 Credits

Prerequisite(s): MATH 216 and (MATH 217 or MATH 227)
Fourier series and integrals. Their use in solving boundary value problems of mathematical physics by the method of separation of variables. Sturm-Liouville theory and generalized Fourier series, including those involving Bessel functions and Legendre polynomials, with applications. Students cannot receive credit for both MATH 454 and MATH 554. (YR).

**MATH 555 Functions of a Complex Variable with Applications**

3.000 Credits
Prerequisite(s): MATH 216 and (MATH 217 or MATH 227)

Complex number system. Functions of a complex variable, their derivatives and integrals. Taylor and Laurent series expansions. Residue theory and applications, elementary functions, conformal mapping, and applications to physical problems. Students cannot receive credit for both MATH 455 and MATH 555. (F,S).

**MATH 558 Introduction to Wavelets**

3.000 Credits
Prerequisite(s): MATH 216 and (MATH 217 or MATH 227)

This course will introduce the students to theory and application of wavelets using linear algebra. Topics will include the discrete Fourier transform, the fast Fourier transform, linear transformations, orthogonal decomposition, discrete wavelet analysis, the filter bank, Haar Wavelet family, and applications. Additional reading assignments or projects will distinguish this course from its undergraduate version MATH 458. Students cannot receive credit for both MATH 458 and MATH 558. (OC)

**MATH 562 Mathematical Modeling**

3.000 Credits
Prerequisite(s): MATH 216 and (MATH 217 or MATH 227)

The processes of constructing, implementing, and evaluating mathematical models of "real world" phenomena are investigated. Models involving continuous and discrete mathematical constructs are compared. Examples are taken from genetics, epidemiology, queuing theory, and other fields. Additional reading assignments or projects will distinguish this course from its undergraduate version MATH 462. Students cannot receive credit for both MATH 462 and MATH 562.

**MATH 572 Introduction to Numerical Analysis**

3.000 Credits
Prerequisite(s): MATH 217 or MATH 227

Solution of linear systems by Gaussian elimination, solution of non-linear equations by iterative methods, numerical solution of ordinary differential equations, data fitting with spline functions, numerical integration, optimization. Additional reading assignments or projects will distinguish this course from its undergraduate version MATH 472. Students cannot receive credit for both MATH 472 and MATH 572. (F)

**MATH 573 Matrix Computation**

3.000 Credits
Prerequisite(s): MATH 217 or MATH 227

A study of the most effective methods for finding the numerical solution of problems which can be expressed in terms of matrices, including simultaneous linear equations, orthogonal projections and least squares, eigenvalues and eigenvectors, positive definite matrices, and difference and differential equations. Additional reading assignments or projects will distinguish this course from its undergraduate version MATH 473. Students cannot receive credit for both MATH 473 and MATH 573. (AY).

**MATH 580 History of Mathematics**

3.000 Credits
Prerequisite(s): MATH 216 and (MATH 217 or MATH 227)

A unified view of the rise of mathematics from ancient times to the present, as seen in its conceptual developments and developers, its major themes and its applications (including computers). Additional reading assignments or projects will distinguish this course from its undergraduate version MATH 480. Students cannot receive credit for both MATH 480 and MATH 580. (OC)

**MATH 582 Computer Algebra Systems**

3.000 Credits
Prerequisite(s): MATH 216 and (MATH 217 or MATH 227)

The use of computer algebra in various areas of mathematics including the solution of algebraic and differential equations, matrix computations, approximation techniques, probability, and discrete mathematics. Programming within the system is also included. Students will be expected to design, implement, and present a project using a computer algebra system. (OC)

**MATH 583 Discrete Optimization**

3.000 Credits
Prerequisite(s): MATH 216 and (MATH 217 or MATH 227)

This is an introductory course in discrete optimization at the graduate level for mathematics, science, engineering, and management majors. The goal of this course is to provide an overview of the problem settings in discrete optimization. In particular, the students will learn some of the fundamental combinatorial and heuristic optimization methods used in practice. The main emphasis of the course will be on modeling optimization problems mathematically and solving them using standard optimization techniques. The course will also address the limitations and complexity of the solutions that are found. The important theoretical and practical aspects of discrete optimization will be introduced using standard software packages such as Lingo and Lindo.

**MATH 584 Applied&Algorithmic Graph Theory**

3.000 Credits
Prerequisite(s): MATH 217 or MATH 227

Selected graph theory concepts and their application to a variety of real-world problems. A study of associated
algorithms. Solution of problems using existing software packages. (OC).

MATH 586 Secondary School Math for Teachers
3.000 Credits
Prerequisite(s): MATH 217 or MATH 227

Basic concepts, relationships, generalizations, and applications from the secondary school mathematics curriculum are discussed both from an advanced viewpoint and from the standpoint of the learner. Included are the roles of technology, problem solving, and current thinking on the teaching of secondary mathematics topics. Open only to certified teachers or secondary education students. (OC).

MATH 590 Topics in Mathematics & Statistics
3.000 Credits
Prerequisite(s): MATH 216 and (MATH 217 or MATH 227)

A course designed to offer selected topics in different areas of mathematics. The specific topic or topics will be announced together with the prerequisites when offered. Course may be repeated for credit when specific topic differs. (OC).

591 Topics in Math for Teachers
1.000 TO 3.000 Credits

A course designed to offer selected topics in different areas of mathematics for teachers of mathematics. The specific topic or topics will be announced together with the prerequisites when offered. Course may be repeated for credit when specific topics differ. (OC).

592 Introduction to Topology
3.000 Credits
Prerequisite(s): MATH 451 or MATH 551

Metric spaces, topological spaces, continuous maps, connectedness, compactness, separation axioms. Additional reading assignments or projects will distinguish this course from its undergraduate version MATH 492. Students cannot receive credit for both MATH 492 and MATH 592. (OC).

595 Master’s Project Seminar
3.000 Credits

Students will do a project involving a problem which may be from either an industrial or academic source. It may involve searching for appropriate techniques developed by others or the development of one's own methods. Part of the project will be both written report and oral presentation to the seminar. In the case that the problem arises from an industrial source there should also be a written and/or oral report to the sponsoring group. (OC).

598 Independent Study in Math Education
1.000 TO 6.000 Credits

Independent study project in Mathematics Education under the supervision of a faculty member.

599 Independent Research Project
1.000 TO 3.000 Credits

Independent research project in applied mathematics or statistics with a faculty or industrial collaborator under the supervision of a faculty member. (YR).

MICROBIOLOGY (MICR)

MICR 505 Applied and Environmental Microbiology
3.000 Credits

Advanced treatment of the interplay of microorganisms and the environment. Topics will include soil and water microbiology (bacteria, archaea, fungi, algae) and plant-microbe interactions (pathogenic and symbiotic) as well as the role of microorganisms in decomposition, nutrient cycling, and bioremediation. Three hours lecture. Students cannot receive credit for both BIOL/MICR 405 and MICR 505. (W, AY)

NATURAL SCIENCE (NSCI)

NSCI 502 Adv in the Physical Sciences
2.000 Credits

New developments in the physical sciences for middle school science teachers. Topics selected from forces, motion, and solids; planets and stars; chemical properties and reactions; light and sound; heat and thermal processes; atmospheres and oceans; electricity and magnetism; nuclear and alternative energy sources. Lectures, discussions, and hands-on activities including microcomputers.

NSCI 515 Nutrition and Health
3.000 Credits
Prerequisite(s): ANTH 101

The influence of nutrition on physical and mental development from conception to adulthood. Topics include: 1) definition and function of the essential nutrients for people, 2) basic principles of human growth and development, 3) the causes and consequences of under- and over-nutrition, 4) feeding practices for infants and children and the development of food habits, 5) nutrient and food problems in the local region and in global perspective. Additional reading assignments or projects will distinguish this course from its undergraduate version NSCI 415. Students cannot receive credit for both NSCI 415 and NSCI 515. (YR).

NSCI 531 Adv Learning Inquiry: Phys Sci
3.000 Credits
Prerequisite(s): NSCI 231

This course is designed to provide in-service teachers with additional tools and knowledge to teach physical science concepts to elementary and middle school students. Topics selected from the science benchmarks in the Michigan Curriculum Framework (MCF) will be explored at significant depth. Students will be expected to integrate major themes of the physical sciences and understand how the topics covered in
the course fulfill the National Science Education Standards (NSES) and the MCF. The learning cycle and inquiry methods of instruction will be modeled and students will be expected to use these in their assignments. (YR).

**NSCI 532  Adv Inquiry: Earth/Planet Sci**
- **3.000 Credits**
- Must be enrolled in School of Education
- Prerequisite(s): NSCI 232

This course is designed to provide in-service teachers with additional tools and knowledge to teach the concepts of Earth and planetary science to elementary and middle school students. Topics selected from the science benchmarks in the Michigan Curriculum Framework (MCF) will be explored at significant depth. Students will be expected to integrate major themes and understand how the topics covered in the course fulfill the National Science Education Standards (NSES) and the MCF. The learning cycle and inquiry methods of instruction will be modeled and students will be expected to use these in their assignments. (YR).

**NSCI 533  Adv Inquiry: Life Science**
- **3.000 Credits**
- Must be enrolled in School of Education
- Prerequisite(s): NSCI 233

This course is designed to provide in-service teachers with additional tools and knowledge to teach biological science concepts to elementary and middle school students. Topics selected from the life science benchmarks in the Michigan Curriculum Framework (MCF) will be explored at significant depth. Students will be expected to integrate major biological themes and understand how the topics covered in the course fulfill the National Science Education Standards (NSES) and the MCF. The learning cycle and inquiry methods of instruction will be modeled and students will be expected to use these in their assignments. (YR).

**NSCI 598 Independent Study in NSCI**
- **1.000 TO 3.000 Credits**

Provide an opportunity for students to pursue graduate level independent library-based research under the direction of a faculty member. For students who wish to study an area that is interdisciplinary rather than an area focused on a specific science. The student and the faculty member must complete a contract outlining the area to be studied and the product of the research. The project must be approved by the program director and the faculty member before students register for the course.

**NSCI 599 Laboratory Research in NSCI**
- **1.000 TO 3.000 Credits**

Provide an opportunity for students to pursue graduate level independent laboratory-based research under the direction of a faculty member. For students who wish to study an area that is interdisciplinary rather than an area focused on a specific science. The student and the faculty member must complete a contract outlining the area to be studied and the product of the research. The project must be approved by the program director and the faculty member before students register for the course.

**PHILOSOPHY (PHIL)**

**PHIL 542 Medical Ethics**
- **3.000 Credits**
- Prerequisite(s): PHIL 240

Issues in medical ethics are among the most exciting and the most urgent in the world today. This course will explore some of these issues: the relationship between patient and health caregiver (truth-telling, informed consent, the right to refuse treatment, confidentiality); assisted suicide and euthanasia; treatment of defective newborns; scarce resources, social justice and the right to health care; cloning and genetic manipulation; new reproductive technologies; and others. We will discuss issues from the standpoint of patients, medical professionals, and citizens who shape policy in a democratic society. Ethical theories and concepts will be stressed. (F, YR)

**PHYSICS (PHYS)**

**PHYS 501 Mechanics**
- **4.000 Credits**

High school physics teachers will learn to develop the modeling method in an intensive, 20-day workshop organized around five particle models in the area of mechanics: the free-particle model, the constant-force particle model, the central-force model, the linear-binding-force model, and the impulsive-force particle model. Students will also be trained to become experts in the best use of classroom technology for mathematics and science courses. (S,OC)

**PHYS 503 Electricity & Magnetism**
- **3.000 Credits**
- Prerequisite(s): (MATH 205 or MATH 215) and PHYS 151

The study of electrostatics, magnetostatics, and electrodynamics using Maxwell's equations. The course focuses on the development of Maxwell's equations from observation and experiment and on the application of the equations to electromagnetic phenomena. Additional reading assignments and/or projects will distinguish this course from its undergraduate version PHYS 403. Students cannot receive credit for both PHYS 403 and PHYS 503. (W)

**PHYS 553 Quantum Mechanics**
- **3.000 Credits**
- Prerequisite(s): MATH 216 and PHYS 305

A course in non-relative quantum mechanics emphasizing the basic postulates of quantum theory, the concepts of eigenstates and eigenvalues, and the role and use of operators and communication relations in the development of the subject. Application of the Schrödinger and Heisenberg formalisms to the solution of single-particle systems subject to a variety of potential functions, including simple step/barrier potentials, the harmonic oscillator potential and the Coulomb potential, will be made. Additional reading assignments and/or projects distinguish this course from its undergraduate version PHYS
453. Students cannot receive credit for both PHYS 453 and PHYS 553.

**PHYS 590  Topics in Physics**  
1.000 TO 4.000 Credits

Topics in physics. (OC).

**POLITICAL SCIENCE (POL)**

**POL 513  American Constitutional Law**  
3.000 Credits  
Prerequisite(s): POL 101

A major theme of this course is the development of the constitution, especially focusing on the themes of judicial review: judicial self-restraint and judicial activism; the expansion of executive and legislative powers; and the rise of “substantive due process of law”. Prerequisite or equivalent recommended. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (AY).

**POL 514  Civil Rights and Liberties**  
3.000 Credits  
Prerequisite(s): POL 101

An analysis of the Bill of Rights and the 14th Amendment, with particular emphasis upon recent landmark or controversial Supreme Court decisions dealing with freedom of speech and religion, rights of criminal defendants; cruel and unusual punishment, right to privacy; civil rights and equal protection clause; and apportionment. Prerequisite or equivalent recommended. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (YR).

**POL 550  Revolution**  
3.000 Credits

A consideration of violent political change and the conditions which promote it. The course covers both revolutionary theories and empirical research. Specific revolutions are considered. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. Students cannot receive credit for both POL 450 and POL 550. (YR).

**POL 551  Peace and War**  
3.000 Credits

An examination of the causes of war and the means of securing peace. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (YR).

**POL 560  Science, Tech & Pub Policy**  
3.000 Credits

This course explores the intersection of science, technology, and public policy. Scientific knowledge and technological innovations are exceptionally powerful resources for policy-makers and for societies; they also pose great challenges and risks. This course will look at how science and technology affect the pursuit of policy goals in areas such as public health, environmental sustainability, economic growth, and national security. Students will not receive credit for more than one of POL 460, POL 560, and PPOL 560.

**POL 566  Politics&Policies Soc Welfare**  
3.000 Credits

The course examines the relationship between politics and public policy as related to the provision of social welfare programs in the United States.

**POL 571  American Foreign Policy I**  
3.000 Credits

American foreign policy in Western Europe, Russia, and Latin America. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (OC).

**POL 572  American Foreign Policy II**  
3.000 Credits  
Prerequisite(s): POL 101 or POL 201

American foreign policy in the non-western world. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (OC).

**POL 573  International Security Affairs**  
3.000 Credits  
Prerequisite(s): POL 101

International Security is a branch of world politics concerned with the threats, primarily military in nature, to the peace and security of the nation, states, and the international community. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (AY).

**POL 589  Seminar in Urban Politics**  
3.000 Credits

Selected topics in urban politics. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research.

**POL 590  Topics in Political Science**  
1.000 TO 3.000 Credits

Problems and issues in selected areas of political science. Title changes according to content. Courses may be repeated when specific topic differs. (OC)

**POL 591  Seminar in Political Science**  
3.000 Credits

Selected topics in political science. Course may be repeated for credit when topics differ. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (AY).

**POL 592  Seminar in Political Analysis**  
3.000 Credits
An advanced in-depth look at the problems and techniques of empirical research. Gives special attention to research design, data collections, measurement, and validity. Statistics for social scientists will also be covered. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (OC).

**POL 598 Directed Studies**

1.000 TO 6.000 Credits

Directed individual study of any subject agreed upon by the student and the instructor. May not duplicate a formal course offering. (F, S, W).

**POL 599 Directed Studies**

1.000 TO 6.000 Credits

Directed individual study of any subjects agreed upon by the student and the advising instructor, which shall not duplicate a formal course offering. This course is distinguished from its 400 level counterpart by the requirement of additional readings and research. (F, W, S).

**PSYCHOLOGY (PSYC)**

**PSYC 505 Gender Roles**

3.000 Credits
Prerequisite(s): PSYC 170 or PSYC 171 or SOC 200 or SOC 201

This course will investigate the development of gender roles in childhood and adolescence due to either innate physiological differences or sociological patterning, the effect of gender roles upon male-female relationships within our society, and the possibility of transcending sociological gender roles in alternate modes of living. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 405. Students cannot receive credit for both PSYC 405 and PSYC 505. (YR).

**PSYC 507 Psychology of Adolescence**

3.000 Credits
Prerequisite(s): PSYC 170 or PSYC 171

Considers adolescence as an interaction of rapid biological and social change. Examines the theoretical and empirical literature in some detail. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 407. Students cannot receive credit for both PSYC 407 and PSYC 507. (YR).

**PSYC 515 Lab in Developmental Psych**

3.000 Credits
Prerequisite(s): PSYC 300 or PSYC 302 or PSYC 315 or PSYC 407 or PSYC 418 or PSYC 507 or PSYC 518

An examination of research design and methodology as related to developmental psychology. Special emphasis will be given to training students in data collection techniques used in developmental research and in providing practical experience in designing and conducting research. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 415. Students cannot receive credit for both PSYC 415 and PSYC 515. (YR).

**PSYC 518 Cognitive Development**

3.000 Credits
Prerequisite(s): PSYC 170 or PSYC 171

This course explores theories and methods in cognitive development focusing on Piaget's theory and more recent significant conceptualizations. Topics include stages of cognitive development, types of inferential processes, and the acquisition of world knowledge. Discussions leading to the formation of new research ideas are emphasized. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 418. Students cannot receive credit for both PSYC 418 and PSYC 518. (YR).

**PSYC 522 Psychology of Leadership**

3.000 Credits
Prerequisite(s): PSYC 170 or PSYC 171

Analysis of theories and research findings in the field of leadership. Class will participate in and observe leadership-group interactions. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 422. Students cannot receive credit for both PSYC 422 and PSYC 522. (YR).

**PSYC 523 Multicultural Counseling**

3.000 Credits

This course will explore multicultural issues in counseling and clinical psychology. The central focus for this course will be ethnic and racial diversity, although attention will be given to gender, sexual orientation, age and socio-economic status as they relate to issues of diversity in counseling. Students will gain an appreciation of the complexities of the influence of culture on social, emotional, behavioral and cognitive development, and the major issues involved in assessment and treatment of diverse clients and their families. (F)

**PSYC 530 Psychology in the Workplace**

3.000 Credits
Prerequisite(s): PSYC 170 or PSYC 171 or OB 354 or HRM 405

This course introduces students to some of the core content areas of Industrial/Organizational (I/O) psychology. These content areas include: selection, training, performance appraisal, work teams, job design, motivation, leadership, union-management relations, and stress and health in the workplace. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 4305. Students cannot receive credit for both PSYC 4305 and PSYC 530. (YR).

**PSYC 531 Organizational Entry**

3.000 Credits
Prerequisite(s): PSYC 170* or HRM 405* or PSYC 171*

An in-depth consideration of the psychological aspects of the organizational entry process. Topics include recruitment,
selection, orientation, socialization, and training. Additional reading assignments or projects will distinguish this course from its undergraduate version. Students cannot receive credit for both PSYC 431 and PSYC 531. (OC).

**PSYC 532 Socialization of the Child**  
3.000 Credits  
Prerequisite(s): PSYC 170 or PSYC 171

An in-depth consideration of some major social systems that affect the development of the child. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 432. Students cannot receive credit for both PSYC 432 and PSYC 532. (YR).

**PSYC 540 Abnormal Psychology**  
3.000 Credits  
Prerequisite(s): PSYC 170 or PSYC 171

An introduction to the field of psychopathology, the study of mental disorders. Includes exposure to a number of historical and theoretical perspectives, each with their own theories, methodologies, and treatment approaches. Disorders covered will include: anxiety and mood disorders, personality disorders, schizophrenia, sexual disorders, and psychosomatic disorders. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 440. Students cannot receive credit for both PSYC 440 and PSYC 540. (YR).

**PSYC 542 Child Psychopathology**  
3.000 Credits  
Prerequisite(s): PSYC 170 or PSYC 171

A review of the major psychological disorders of children from birth to adolescence. These disorders are considered from a clinical and theoretical point of view. In addition to an examination of causes, approaches to treatment and behavior modifications are considered. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 442. Students cannot receive credit for both PSYC 442 and PSYC 542. (YR).

**PSYC 544 Personality Assessment**  
4.000 Credits  
Prerequisite(s): PSYC 170 or PSYC 171

This is a course in methods of assessing personality. The theory and methods of observation, interviewing, and psychological testing are discussed and then employed in brief, individually-designed studies. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 4445. Students cannot receive credit for both PSYC 4445 and PSYC 544. (AY).

**PSYC 545 Advanced Psychopathology**  
3.000 Credits

This course is designed for graduate students who require an advanced knowledge of psychological disorders and their diagnosis. Course content includes an overview of the symptoms, etiology, and treatment alternatives for major psychological disorders. The emphasis includes both an overview of research based knowledge and practical application of the current diagnostic system.

**PSYC 546 Human Sexual Behavior**  
3.000 Credits  
Prerequisite(s): PSYC 170 or PSYC 171

A comprehensive review of facts about human sexuality. The emphasis is on psychological aspects of sex, but there is also a consideration of genetic, physiological, and anatomical aspects of sex, and contemporary issues. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 446. Students cannot receive credit for both PSYC 446 and PSYC 546. (AY).

**PSYC 547 Theories and Techniques of Therapeutic Intervention**  
4.000 Credits

This course provides an introduction to the theories, practice, and ethical issues in clinical psychology. The emphasis is on the application of psychotherapeutic processes. Topics include ethical practices, formation of a therapeutic relationship, use of basic counseling skills, differing clinical orientations, and a review of relevant research. (W)

**PSYC 548 Psychological Assessment I**  
4.000 Credits  
Prerequisite(s): PSYC 545

This course is the first of a two-course sequence for graduate students who require an advanced knowledge of psychological assessment. Course content includes an overview of interviewing, behavioral observations, and personality tests used in clinical practice. The emphasis includes both an overview of research-based knowledge and practical application of assessment techniques through supervised lab experience. Only individuals admitted to the Clinical Health Psychology program can enroll. (S,YR)

**PSYC 549 Psychological Assessment II**  
4.000 Credits  
Prerequisite(s): PSYC 545

This course is the second of a two-course sequence designed for graduate students who require an advanced knowledge of psychological assessment. Course content includes an overview of tests and measures used in clinical practice, particularly those used in the assessment of intelligence, achievement, adaptive behavior, and child evaluation. The emphasis includes both an overview of research-based knowledge and practical application of assessment techniques through supervised lab experience. (F)

**PSYC 550 Personality Theory**  
3.000 Credits  
Prerequisite(s): PSYC 170 or PSYC 171

A comparative review and examination of leading theories of personality, their basic concepts, similarities and differences, applications in clinical psychology, in education, social planning and in research. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 450. Students cannot receive credit for both
PSYC 450 and PSYC 550. (YR).

PSYC 555 **Health Psychology**  
3.000 Credits

A discussion of the research on health promotion, psychological factors in the development of illness, cognitive representations of health and illness, stress and coping, social support, nutrition and exercise. Focus will be on the factors related to the development and maintenance of optimal health. (YR).

PSYC 557 **Advanced Health Psychology**  
3.000 Credits

This course will examine the research on psychological factors associated with the development and/or progression of illness, as well as psychological and social factors in health promotion. Topics include cognitive and social representation of health and illness, stress and coping, factors and interventions for behavioral change and the development of healthy lifestyles, and the treatment of psychological and behavioral risk factors for illness.

PSYC 561 **Learning and Memory**  
3.000 Credits  
Prerequisite(s): PSYC 170 or PSYC 171

A consideration of major theories and research results related to learning and memory. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 461. Students cannot receive credit for both PSYC 461 and PSYC 561. (YR).

PSYC 563 **Sensation and Perception**  
3.000 Credits  
Prerequisite(s): PSYC 170 or PSYC 171

Analysis of basic sensory and perceptual phenomena with a review of relevant behavioral and physiological literature. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 463. Students cannot receive credit for both PSYC 463 and PSYC 563. (YR).

PSYC 565 **Individual & Group Techniques in Clinical Health Psychology**  
3.000 Credits  
Prerequisite(s): PSYC 547

An introduction to the variety of assessment and intervention procedures used by health psychologists in medical settings; issues in medical consultation and liaison. Techniques discussed fall in areas such as stress management, smoking cessation, weight management, and the treatment and prevention of cardiovascular disease, cancer, and HIV/AIDS. The theoretical, conceptual, and empirical bases of intervention will be stressed. Prerequisites required or permission of instructor. Preference will be given to students enrolled in the Master of Science in Health Psychology Program. (YR).

PSYC 570 **Advanced Physiological Psych**  
3.000 Credits  
Prerequisite(s): PSYC 370

Further study of the subject matter of PSYC 431. Advanced study of topics in the area of psychology. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 470. Students cannot receive credit for both PSYC 470 and PSYC 570. (YR).

PSYC 571 **Reproductive Physio & Behavior**  
3.000 Credits  
Prerequisite(s): PSYC 170

An in depth examination of reproduction from a physiological viewpoint. Physiological topics include anatomy, hormones, and neural mechanisms. Psychological topics include behavior development and descriptions. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 471. Students cannot receive credit for both PSYC 471 and PSYC 571. (YR)

PSYC 572 **Motivation and Behavior**  
3.000 Credits  
Prerequisite(s): PSYC 170 or PSYC 171

Study of the psychobiological aspects of motivated behavior. Topics include hunger, addiction, aggression, sleep, and achievement. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 4725. Students cannot receive credit for both PSYC 4725 and PSYC 572. (YR)

PSYC 575 **Biological Foundations of Health Psychology**  
3.000 Credits  
Prerequisite(s): PSYC 555 or PSYC 455 or PSYC 557

Advanced study of the anatomical, physiological, and chemical correlates of behavior and mental processes, including the relationships among brain and body function/structure (neurochemistry, histology, anatomy), psychological variables (motor behavior, motivation, emotion, perception, learning, memory), health, and mental and physical illness. Integrates experimental and clinical research methodologies. Prerequisites or permission of instructor. Preference will be given to students enrolled in the Master of Science in Health Psychology Program.

PSYC 5825 **Basic Methods and Statistics in Health Psychology**  
3.000 Credits

This course assumes a basic background in statistics and methodology and builds from there, with special emphasis on methodological issues and statistical techniques appropriate to Health Psychology. Computer skills related to statistical packages, databases, etc. will be stressed. Specific methods and analyses include multiple regression, ANOVA, ANCOVA, MANCOVA, factor analysis, power, validity, experimental design, placebo effects, and random sampling. Preference will be given to students enrolled in the Master of Science in Health Psychology Program. (F).

PSYC 5835 **Advanced Methods and Statistics in Health Psychology**  
3.000 Credits  
Prerequisite(s): PSYC 5825
As a continuation of PSYC 5825, this course assumes a more advanced background in statistics and methodology. The course focuses on methodological issues and statistical techniques appropriate to Health Psychology. Computer skills related to statistical packages, databases, etc., will be stressed. Specific methods and analyses include survey research, program evaluation, epidemiological research, qualitative research, MANCOVA, multiple regression, logistic regression, cluster analysis, and meta-analysis. Preference will be given to students enrolled in the Master of Science in Health Psychology Program. (F).

**PSYC 585 Psychology Internship**  
3.000 Credits  
Prerequisite(s): PSYC 170 or PSYC 171

The psychology internship offers experience in a wide variety of placements dealing with human services. These include programs related to child abuse, crisis intervention, developmental disabilities, geriatrics, human resources/staff development, probation departments, teenage runaways, substance abuse, and women's issues. The program involves training in listening and helping skills. Written permission of instructor is required. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 485. (F,W).

**PSYC 590 Adv Topics in Psychology**  
1.000 TO 3.000 Credits  
Prerequisite(s): PSYC 170 or PSYC 171

A seminar in which selected topics pertaining to Psychology are studied in depth. (YR).

**PSYC 592 Individual Research**  
1.000 TO 3.000 Credits

No more than 6 hours may be counted for concentration. Arrangements will be made for adequately prepared students to undertake individual research under the direction of a member of the staff. The students, in electing, should indicate the staff member with whom the work has been arranged. Additional reading assignments or projects will distinguish this course from its undergraduate version PSYC 492. Students cannot receive credit for both PSYC 492 and PSYC 592. (YR).

**PSYC 593 Professional and Ethical Issues**  
1.000 Credits

Provides graduate psychology students with current information and decision making strategies on professional and ethical issues associated with service delivery, research, and teaching. (F,YR)

**PSYC 697 Health Psychology Thesis Research**  
3.000 TO 6.000 Credits

Students electing the Thesis option in the last stage of the Master of Science in Health Psychology program will work under the general supervision of a member of the graduate faculty in the Behavioral Sciences Department but will plan and carry out the work independently. A prospectus for the thesis must be approved by the Master of Science in Health Psychology program director before the student registers for the course. The student will submit a report on the thesis and give an oral presentation to a panel of faculty members when the thesis is completed. (YR)

**PSYC 698 Practicum in Clinical Health Psychology**  
3.000 TO 6.000 Credits  
Prerequisite(s): PSYC 545 and PSYC 547 and PSYC 548 and PSYC 549 and PSYC 565 and PSYC 593

The Practicum in Clinical Health Psychology offers students supervised clinical experience in a variety of clinical health and human service settings. The practicum is designed for students in the MS in Clinical Health Psychology program who have completed all coursework related to clinical diagnoses, assessment and therapy. Written permission of instructor or Program Director required.

**PUBLIC POLICY (PPOL)**

**PPOL 500 Economic Theory and Policy**  
3.000 Credits

This course provides an intensive and comprehensive introduction to economics for students entering the Masters in Public Policy program. Topics covered include a range of microeconomic and macroeconomic concepts, issues, and techniques with a special focus on the application of economics to public policy. (YR)

**PPOL 501 Research Methods**  
3.000 Credits

All students must begin with Research Methods, a course that provides an overview of the scientific method, methods of ethical analysis, methods of research design, widely used statistical methods, and specific means of social observation such as survey research.

**PPOL 502 Pol Env of Public Policy**  
3.000 Credits

This course examines how policy making occurs in our political system: the roles of community leaders, citizens, scientists and experts in the policy process; the stages of policy formulation, agenda setting, legislative action, administration of policy, and judicial oversight of the policy process; and the pros and cons of various ways of making policy, including cost-benefit analysis, democratic deliberation by informed citizens, the interest group process, and legal-judicial activism.

**PPOL 503 Economics and Public Policy**  
3.000 Credits  
Prerequisite(s): ECON 201 and ECON 202 or PPOL 500

In this course students will review basic neoclassical economic theory and learn to apply it to the analysis of public policy issues. Economics offers important insights into the behavior of businesses, consumers, and government entities. We will review key economic concepts, applying each to an array of public policy questions. Next we'll evaluate resource allocation...
via the market system and consider how public policy might address situations where the market fails to produce desirable results. Lastly, we'll learn about the basic tools economists use to evaluate public policies.

PPOL 504  Rational Choice  
3.000 Credits

Good public policy requires that leaders make sound decisions. A good choice is a rational choice, so the study of rational choice is central to good policy making and to policy studies. This course examines the literature on rational choice, with an emphasis on more practical and applied studies that can aid practitioners who are trying to make rational decisions that will benefit communities. (OC)

PPOL 505  Ethics and Public Policy  
3.000 Credits

This course focuses on the tensions and relationships between personal morality and political action by examining the moral aspect of contemporary policy issues such as (but not limited to) the right to live, environmental policy, social welfare policy, discrimination, and war. These will be examined in the political context of the tension between the demands of personal conscience and the need to be a member of a team in an organization, as well as in the philosophical context of contending normative theories about justice and sound public policy.

PPOL 506  Program Evaluation  
3.000 Credits

Prerequisite(s): ECON 201 and ECON 202 or PPOL 500 and PPOL 501

Program Evaluation focuses on how particular policies and programs can be evaluated to assess how well they are working and whether they are attaining their goals. A required core MPP course.

PPOL 507  Cost-Benefit Analysis  
3.000 Credits

Prerequisite(s): PPOL 503

The course focuses on the various techniques used in cost-benefit analysis, the strengths and weaknesses of these techniques, and case studies illustrating the practical problems involved in such analyses.

PPOL 508  Project Writing  
1.000 Credits

Required only for students not writing a Master's thesis, the course is designed to produce a capstone paper that demonstrates the student's ability to integrate previous policy papers (three) into a final coherent overview of a policy area. This course is required only of student electing the course-only Plan A.

PPOL 560  Science, Technology & Public Policy  
3.000 Credits

This course explores the intersection of science, technology, and public policy. Scientific knowledge and technological innovations are exceptionally powerful resources for policymakers and for societies; they also pose great challenges and risks. This course will look at how science and technology affect the pursuit of policy goals in areas such as public health, environmental sustainability, economic growth, and national security. Students will not receive credit for more than one of POL 460, POL 560, and PPOL 560.

PPOL 680  Internship  
1.000 TO 6.000 Credits

Students who desire practical experience in the area of public policy will be afforded the opportunity to gain the experience in the internship. The class and the number of hours will be arranged to fit the needs of the students, subject to approval by the program coordinator.

PPOL 690  Topics in Public Policy  
3.000 Credits

Public policy topics of current interest. Topics vary from term to term.

PPOL 698  Directed Study in Public Policy  
1.000 TO 3.000 Credits

This course will permit students to take subjects not currently offered in regular courses but within the capacity of existing faculty. To be elected only with the permission of the program director and an instructor.

PPOL 699  Master's Thesis  
1.000 TO 6.000 Credits

Prerequisite(s): PPOL 501 and PPOL 502 and PPOL 503 and PPOL 504 and PPOL 505 and PPOL 506 and PPOL 507

MPP students electing the thesis option in the last stage of the program will work under the general supervision of a member of the graduate faculty in CAS&L, but will plan and carry out the work independently. The MPP Program Director must approve a prospectus of the thesis before the student registers for the course. The student will defend the completed thesis before a panel of program faculty.

RELIGIOUS STUDIES (RELS)

RELS 501  Religion in Contemp US Culture  
3.000 Credits

The purpose of this course is to provide people in contemporary multi-religious America foundational information about beliefs and practices of several of the world's religions sufficient to engage in inter-religious dialogue. Special emphasis will be given to changes in the American religious landscape after 1965 with the passage of new immigration laws. The course will combine lectures and visits to a variety of Metropolitan Detroit religious centers including Hindu, Buddhist, Jain, Sikh, Jewish, Christian, Muslim, and Native American. (YR,S).
SOCIAL SCIENCES (SSCI)

SSCI 585  The Middle East for Teachers
2.000 Credits
Must be enrolled in School of Education

This is an orientation and curriculum development course for teachers who a) include the Middle East in their curriculum or b) have students of Middle Eastern background and would like to know more about the region.

SOCIOLOGY (SOC)

SOC 503  Minority Groups
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

The status of racial and ethnic minorities in the United States with particular reference to the social dynamics involved with regard to majority-minority relations. Topics of study include inequality, segregation, pluralism, the nature and causes of prejudice and discrimination and the impact that such patterns have upon American life. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 403. Students cannot receive credit for both SOC 403 and SOC 503. (AY)

SOC 504  Dissed: Differ, Power, Discrim
3.000 Credits

Have you ever been dissed? Why are some people targets of disrespect? This class examines the unequal distribution of power - social, economic, and political - in the United States and other countries that results in favor for privileged groups. We will examine a variety of institutional practices and individual beliefs that contribute to disrespect. We'll look at ways that beliefs and practices, like viewing inequality as consequence of a 'natural order', obscure the processes that create and sustain social discrimination. We will engage in the intellectual examination of systems, behaviors, and ideologies that maintain discrimination and the unequal distribution of power and resources. Students will not receive credit for both SOC 404 and SOC 504. This course is distinguished from its 400-level counterpart by the requirement of additional assignments, including a required additional paper.

SOC 5075  Sexual Praxis and Theory
3.000 Credits
Prerequisite(s): WGST 275 or SOC 443 or PSYC 405 or ANTH 406 or ANTH 101

This course will offer an overview of sexual differences including: the socio-cultural construction of gender, sexual behavior, and orientation; sex and sexualities in language and literature; and diversity by race, class, and cultural heritage. (F)

SOC 509  Feminist Theories
3.000 Credits
Prerequisite(s): LIBS 560

This course examines the different perspectives that feminist theorists have offered to analyze the unequal conditions of women's and men's lives. Students taking this course will develop an understanding of how theory functions as a way to know, understand and change the world. They will also be provided with a lens for comparing the assumptions and implications of alternative theoretical perspectives. A particular emphasis of this course is on theorizing the interrelationships among gender, race, class, sexuality and nationality. Course material includes applications of feminist theory to issues such as gender identity formation; sexuality; gender, law and citizenship; women and work; and the history and politics of social movements. Students will not receive credit for both SOC 409 and SOC 509. Additional reading assignments or projects will distinguish this course from its undergraduate version.

SOC 510  Quantitative Research
4.000 Credits
Prerequisite(s): SOC 200 or SOC 201

An introduction to methods of data collection and analysis. Also a discussion of research design and the philosophy of social sciences. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 410. Students cannot receive credit for both SOC 410 and SOC 510. (F,W,S)

SOC 511  Program Evaluation
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201 or PSYC 170 or PSYC 171 or POL 101

The application of social research procedures in assessing whether a human service program is needed, likely to be used, conducted as planned and actually helps people in need. The course will cover research and measurement as well as issues of how to get research findings utilized. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 411. Students cannot receive credit for both SOC 411 and SOC 511. (YR)

SOC 522  Structure of American Society
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

An analysis of the institutional structure of American society, with a view of determining the degree of its integration. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 422. Students cannot receive credit for both SOC 422 and SOC 522. (YR)

SOC 523  American Social Classes
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

Stratification of American communities and society; a review of the findings of major studies and an introduction to methodology. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 423. Students cannot receive credit for both SOC 423 and SOC 523. (YR)
SOC 526  Society and Aging  
3.000 Credits  
Prerequisite(s): SOC 200 or SOC 201  
Personal, interpersonal, and institutional significance of aging and age categories. Sociological dimension of aging based on social, psychological, and demographic factors. Attention to social networks and institutionalization. Additional assignments or projects will distinguish this course from its undergraduate version SOC 426. Students cannot receive credit for both SOC 426 and SOC 526. (YR)

SOC 535  Urban Sociology  
3.000 Credits  
Prerequisite(s): SOC 200 or SOC 201  
A descriptive study of the form and development of the urban community with respect to demographic structure, spatial and temporal patterns, and functional organization. The relationship of city and hinterland. Social planning and its problems in the urban community. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 435. Students cannot receive credit for both SOC 435 and SOC 535. (YR)

SOC 540  Medical Sociology  
3.000 Credits  
Prerequisite(s): SOC 200 or SOC 201  
An analysis of health and illness behavior from the point of view of the consumer, as well as the medical professionals, the structure, strengths, and weaknesses of the medical care delivery system in the U.S.; the impact of culture and personality on illness behavior; and a study of the institution of medicine and activities of health care professionals. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 440. Students cannot receive credit for both SOC 440 and SOC 540. (F,W,S)

SOC 541  Sociology of the Auto Industry  
3.000 Credits  
Prerequisite(s): SOC 200 or SOC 201  
The American auto industry is examined in its relationship to the economic and political structures of 20th century U.S. This includes a focus on the social history of the industry as well as a discussion of the nature of auto work. Proposals for changing social relations at work are also examined. The course concludes with an examination of the industry on a local community (Detroit). Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 441. Students cannot receive credit for both SOC 441 and SOC 541. (F,W)

SOC 542  Sociology of Work  
3.000 Credits  
Prerequisite(s): SOC 201 or SOC 200  
The study of work roles in modern society. The impact of industrialization, professionalization, and unionization on the conditions of work, worker motivation and job satisfaction. Career choice processes and career patterns, occupational status and prestige, and occupational associations are among the topics to be considered. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 442. Students cannot receive credit for both SOC 442 and SOC 542.

SOC 543  Gender Roles  
3.000 Credits  
Prerequisite(s): PSYC 170 or PSYC 171 or SOC 200 or SOC 201  
This course will investigate the development of gender roles in childhood and adolescence due to either innate physiological differences or sociological patterning, the effect of gender roles upon male-female relationships within our society, and the possibility of transcending sociological gender roles in alternate modes of living. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 443. Students cannot receive credit for both SOC 443 and SOC 543. (YR)

SOC 545  The Family  
3.000 Credits  
Prerequisite(s): SOC 200 or SOC 201  
The family is an institution shaped by other aspects of society, as a social system with its own dynamics, and as a primary group affecting the lives of its members. Historical and contemporary materials from the United States and other cultures. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 445. Students cannot receive credit for both SOC 445 and SOC 545. (YR)

SOC 546  Marriage and Family Problems  
3.000 Credits  
Prerequisite(s): SOC 200 or SOC 201  
A sociological analysis of problems encountered within the institution of marriage with particular reference to such issues as choosing a marriage partner, sexual adjustment, occupational involvement, conflict resolution, child rearing, divorce and readjustment. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 446. Students cannot receive credit for both SOC 446 and SOC 546. (YR)

SOC 547  Family Violence  
3.000 Credits  
Prerequisite(s): SOC 200 or SOC 201 or SOC 301 or SOC 443 or PSYC 405 or WST 405 or PSYC 505 or WST 505 or SOC 543  
Sociological analyses of various forms of family violence which occur disproportionately in the lives of girls and women. Topics such as incest, sexual abuse, date rape, wife battering, and elder abuse will be situated within the social and cultural context of contemporary gender relationships. Social and political responses to the phenomena will be examined. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 447. Students cannot receive credit for both SOC 447 and SOC 547. (YR)

SOC 548  Comparative Health Care System  
3.000 Credits  
Prerequisite(s): SOC 200 or SOC 201  
An introduction and overview of the English, Swedish, and People's Republic of China health care systems. Focus on cultural and other organizational characteristics, unique features,
approaches and ability to solve problems. Emphasis on how the three systems help us understand the American health care system. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 448. Students cannot receive credit for both SOC 448 and SOC 548.

SOC 550  Political Sociology
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

Examines how society affects the distribution and exercise of power through analyzing linkages between power, participation, and perspectives. Studies of political participation and social organization, ideology, and social conflict, as well as political socialization, represent some of the major parameters. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 450. Students cannot receive credit for both SOC 450 and SOC 550. (YR)

SOC 553  Sociology of Law
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

Various aspects of the relationship between law and society are explored. After a look at processes of law-making, attention is turned to the administration of law. This involves a study of the activities of legislatures, courts, police and correctional agents. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 453. Students cannot receive credit for both SOC 453 and SOC 553. (YR)

SOC 554  Mental Health and the Law
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

Courts and legislatures now control much of the work of mental health professionals such as social workers, counselors, therapists, and psychologists. This course looks at problems encountered in putting laws and policies into effect. These implementation problems are much the same in other areas of government action, such as poverty programs and pollution control. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 454. Students cannot receive credit for both SOC 454 and SOC 554. (YR)

SOC 555  Sociology of Religion
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

Religion as a social institution; its purposes, methods, structures, and beliefs, and its relation to other institutions. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 455. Students cannot receive credit for both SOC 455 and SOC 555. (YR)

SOC 556  Health Care and the Law
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201 or POL 364

Sociological study of legal issues in health care, including regulation of hospitals, consent for treatment, confidentiality, experimentation, family planning, children's rights, access to health care and other topics. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 456. Students cannot receive credit for both SOC 456 and SOC 556. (AY)

SOC 558  Sociology of Education
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

Education as a social institution; its purpose, methods, structure, and philosophy, and its relation to other institutions, particularly in the urban setting. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 458. Students cannot receive credit for both SOC 458 and SOC 558. (YR)

SOC 560  America in a Global Society
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

Social studies in America are studied from an internal and an external perspective. The internal dynamics of social change emphasize the role of social movements, e.g. the impact of the civil rights movement on American culture and politics. The external perspective sees America as part of a changing global society. The development of the capitalist world system from its origins in Western Europe to its present global reach is examined. Contemporary American social problems are examined in relation to America's position in a rapidly changing world. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 460. Students cannot receive credit for both SOC 460 and SOC 560. (OC)

SOC 565  Deviant Behavior/Soc Disorganz
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

A general analysis of the concept of social deviance and social disorganization: factors producing each condition, the effects of social control measures on the course of deviance and disorganization, consequences for the social system, and the relationship between the two. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 465. Students cannot receive credit for both SOC 465 and SOC 565. (YR)

SOC 568  Criminology
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

The analysis of criminal behavior in relationship to the institutional framework of society. Emphasis on society. Emphasis upon the more routinized and persistent forms of criminality along with the joint roles played by victims, the criminal, the police, and any other relevant parties. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 468. Students cannot receive credit for both SOC 468 and SOC 568. (YR)

SOC 569  Juvenile Delinquency
3.000 Credits
Prerequisite(s): SOC 200 or SOC 201

The analysis of juvenile delinquent behavior in relationship to the institutional framework of society. Emphasis on the extent,
causes, and methods of treatment of juvenile delinquency in the United States. Additional reading assignments or projects will distinguish this course from its undergraduate version, SOC 469. Students cannot receive credit for both SOC 469 and SOC 569.

SOC 570  Current Iss in Criminal Justic  
3.000 Credits  
Prerequisite(s): SOC 200 or SOC 201

Current issues in the field of criminal justice and law enforcement in the US and other countries. Topics include an evaluation of police activities, problems of apprehensions and prosecution, the courts and the correctional system, and the efficacy of the legal structure in its social context. Additional reading assignments or projects will distinguish this course from its undergraduate version, SOC 470. Students cannot receive credit for both SOC 470 and SOC 570. (F, W, S).

SOC 571  Comp Criminal Justice Systems  
3.000 Credits  
Prerequisite(s): SOC 200 or SOC 201

Description, analysis, and evaluation of selected criminal justice systems throughout the world. Course focuses on the various systems, theories, structures, methods, and functions, including common law systems and socialist law systems. Additional reading assignments or projects will distinguish this course from its undergraduate version, SOC 471. Students cannot receive credit for both SOC 471 and SOC 571. (YR).

SOC 572  Corrections  
3.000 Credits  
Prerequisite(s): SOC 200 or SOC 201

Analysis of the legal, social, and political issues affecting contemporary correctional theory and practice. Topics covered include the history of corrections; the nature of existing institutions; the functions and social structure of correctional institutions; and alternatives to institutional incarceration; probation and parole. Additional reading assignments or projects will distinguish this course from its undergraduate version, SOC 472. Students cannot receive credit for both SOC 472 and SOC 572. (OC).

SOC 579  Comparative Hlth Systems:Trip  
3.000 Credits  
Prerequisite(s): SOC 200 or SOC 201

A unique combination of lectures, field trips, visits with general practitioners, specialists, hospital observations, talks with health policy planners, researchers, and many others. Personal experience in two health care systems. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 479. Students cannot receive credit for both SOC 479 and SOC 579. (AY)

SOC 581  Gender and Globalization  
3.000 Credits

Mass media, politics, and academia are full of references to globalization, and a future "world without borders." This interdisciplinary course considers the implication of globalization for women's lives, gender relations, and feminism. Topics covered include the global factory, cross-cultural consumption, human rights, global communications, economic restructuring, nationalism, and environmental challenges. Rather than survey international women's movements, this course explores how globalization reformulates identities and locations and the political possibilities they create. Students cannot receive credit for both SOC 481 and SOC 581. (AY).

SOC 583  Images of Organizations  
3.000 Credits  
Prerequisite(s): SOC 200 or SOC 201

Formal bureaucratic organizations such as government agencies, hospitals, and colleges are distinctive features of modern industrialized societies. Analysis of types of formal organizations, their goals, structure, and consequences for intra- and inter-organizational behavior helps to understand how to deal with a complex world. Additional reading assignments or projects will distinguish this course from its undergraduate version SOC 483. Students cannot receive credit for both SOC 483 and SOC 583. (YR)

SOC 590  Advanced Topics in Sociology  
3.000 Credits

A seminar in which selected topics pertaining to sociology are studied in depth. (YR).

SOC 598  Independent Study  
1.000 TO 6.000 Credits

Analytical assignments in sociology.

SPANISH (SPAN)

SPAN 521  Advanced Translation  
3.000 Credits  
Prerequisite(s): SPAN 303 and SPAN 420

The course will continue to apply the translation theory and techniques introduced in Spanish 420, and it will continue to focus on English-to-Spanish and Spanish-to-English non-literary translation. Emphasis will be placed on materials selected from the fields of business, advertising, and legal discourse. Class projects will include translation of advertisements, legal documents, and business brochures. (AY,W).

SPEECH (SPEE)

SPEE 500  Speech Skills for Professional  
3.000 Credits  
Prerequisite(s): SPEE 101

Course concentrates on aspects of organizational communication theory and specific speech skills useful for professionals in education, government, business and industry. Representative topics include formal and informal presentations, interviewing, dealing with media and public, audience analysis, use of graphics, negotiation and conflict resolution, non-verbal skills, listening, instructional techniques. (AY)

SOC 530  Small Group Communications  
3.000 Credits
Prerequisite(s): SPEE 101

A survey of small group behavior from the perspectives of theory, research, and practice. Activities and discussion will emphasize skills in leadership, problem solving, policy making, and the development of consensus. (F,W,S)

STATISTICS (STAT)

STAT 530 Applied Regression Analysis
3.000 Credits
Prerequisite(s): STAT 425

Topics include single variable linear regression, multiple linear regression and polynomial regression. Model checking techniques based on analysis of residuals will be emphasized. Remedies to model inadequacies such as transformation and weighted least squares will be covered. Statistical packages will be used. Additional reading assignments or projects will distinguish this course from its undergraduate version, STAT 430. Students cannot receive credit for both STAT 430 and STAT 530. (OC).

STAT 535 Data Analysis and Modeling
3.000 Credits

Linear models including models with factors associated with both fixed and random effects together with covariates. Models containing more complex covariance structure including repeated measures and time dependence. The statistical processing package SAS will be used extensively to analyze data associated with such models. The SAS procedures Proc GLM, Proc REG, and Proc Mixed will be used extensively in examples, assignments, and projects. (OC).

STAT 545 Reliability & Survival Analysis
3.000 Credits

Parametric and nonparametric modeling of reliability data from industrial experiments and survival data from biological experiments where the data may be censored. This includes models where covariates are present and where the data may be from the Weibull, log-normal, or the gamma distribution and also the nonparametric proportional hazards model and Cox regression. The statistical processing package SAS will be used extensively to analyze data associated with such models. The SAS procedure Proc LIFEREG will be used to analyze parametric regression models and the procedure Proc LIFETEST will be used to analyze nonparametric regression models in examples, assignments, and projects. (OC).

STAT 555 Environmental Statistics
3.000 Credits

A wide variety of statistical tests important in environmental sciences will be covered through the use of case studies. Theory and applications of datasets, data displays, and formal statistical inference will be discussed. Students will obtain direct experience with the study and analysis of data, do projects, and write reports. (W, AY)

STAT 590 Topics in Applied Statistics
3.000 Credits

A course designed to offer selected topics in applied statistics. The specific topic will be announced together with the prerequisites when offered. Course may be repeated for credit when specific topic differs. (OC)

WOMEN’S AND GENDER STUDIES (WGST)

WGST 504 Dissed: Differ, Power, Discrim
3.000 Credits

Have you ever been dissed? Why are some people targets of disrespect? This class examines the unequal distribution of power - social, economic, and political - in the United States and other countries that results in favor for privileged groups. We will examine a variety of institutional practices and individual beliefs that contribute to disrespect. We’ll look at ways that beliefs and practices, like viewing inequality as consequence of a ‘natural order’, obscure the processes that create and sustain social discrimination. We will engage in the intellectual examination of systems, behaviors, and ideologies that maintain discrimination and the unequal distribution of power and resources. Students will not receive credit for both WGST 404 and WGST 504. This course is distinguished from its 400-level counterpart by the requirement of additional assignments, including a required additional paper.

WGST 505 Gender Roles
3.000 Credits
Prerequisite(s): PSYC 170 or PSYC 171 or SOC 200 or SOC 201

This course will investigate the development of gender roles in childhood and adolescence due to either innate physiological differences or sociological patterning, the effect of gender roles upon male-female relationships within our society, and the possibility of transcending sociological gender roles in alternate modes of living. Additional reading assignments or projects will distinguish this course from its undergraduate version WGST 405. Students cannot receive credit for both WGST 405 and WGST 505. (YR)

WGST 506 Culture and Sexuality
3.000 Credits
Prerequisite(s):

The study of women, men, children, socialization practices, and the genesis of sex roles cross-culturally. Additional reading assignments or projects will distinguish this course from its undergraduate version WST 406. Students cannot receive credit for both WST 406 and WGST 506. (YR)

WGST 507 Sexual Praxis and Theory
3.000 Credits
Prerequisite(s): WST 275 or WGST 275 or SOC 443 or PSYC 405 or ANTH 406 or ANTH 101 or PSYC 275 or ANTH 275 or HUM 275

This course will offer an overview of sexual differences including: the socio-cultural construction of gender, sexual behavior, and orientation; sex and sexualities in language and
literature; and diversity by race, class, and cultural heritage. These topics will enable students to understand human sexuality within and across a continuum removing notions of duality or polarity, in sexual behaviors and orientations. Examples both from within Western society and from non-Western societies may be used to further this position. Theoretical perspectives may encompass sociological and anthropological work, literary theory and criticism, queer theory, and multi-disciplinary discussions/discourse. Texts may include: Sex and the Machine: Readings in Culture, Gender and Technology, The Anatomy of Love, The Lesbian and Gay Studies Reader, Second Skins, The Body of Narratives of Transsexuality, and Lesbian and Gay Marriage.

WGST 509 Feminist Theories
3.000 Credits
Prerequisite(s): LIBS 560

This course examines the different perspectives that feminist theorists have offered to analyze the unequal conditions of women's and men's lives. Students taking this course will develop an understanding of how theory functions as a way to know, understand and change the world. They will also be provided with a lens for comparing the assumptions and implications of alternative theoretical perspectives. A particular emphasis of this course is on theorizing the interrelationships among gender, race, class, sexuality and nationality. Course material includes applications of feminist theory to issues such as gender identity formation; sexuality; gender, law and citizenship; women and work; and the history and politics of social movements. Students will not receive credit for both WGST 409 and WGST 509. Additional reading assignments or projects will distinguish this course from its undergraduate version.

WGST 516 Earl Mod Jpn Paint&Wood Prnts
3.000 Credits
Prerequisite(s): ARTH 101 or ARTH 102 or ARTH 103

Painting and woodblock prints of the Edo/Tokugawa (1600-1868) and Meiji (1868-1912) periods are considered in light of competing developments that on the one hand looked to Japan's classical tradition and on the other to the influence of Italian and France such as Veronica Gambara, Isabella di Morra, Vittoria Colonna, Christine de Pizan, Louise Labe, and Marguerite de Navarre. At issue will be women's role and women's images in city and court culture during the early modern period, and the interaction of their writings with the literary canons of Italy and France. (OC).

WGST 520 Kinship and Marriage
3.000 Credits
Prerequisite(s): ANTH 101 or ANTH 201

A study of the diversity of kinship and marriage systems, and of the history of kinship theory which has played a seminal role in the development of general anthropological theory. Additional reading assignments or projects will distinguish this course from its undergraduate version WGST 420. Students cannot receive credit for both WGST 420 and WGST 520. (OC)

WGST 525 Women in Classical Antiquity
3.000 Credits
Prerequisite(s): ARTH 101

This course examines the evidence for the lives of women in Greek, Etruscan, and Roman Antiquity, from the Bronze Age through the Imperial Period. Special emphasis will be placed on the archaeological evidence, especially works of art which illustrate women's lives and their relationships with men. Documents such as dedicatory and funerary inscriptions, the poetry of Sappho and Sulpicia, and selections from the writings of Homer, Hesiod, Aristotle, Pliny, Juvenal, and other ancient authors, will also be examined critically, particularly in relationship to the works of art. (AY).

WGST 533 Writing Women in Renaissance
3.000 Credits

This course will be taught in English, and will focus on the influence of Italian literary models for the construction of female literary types as well as female voices in France and Italy from 1300 to about 1600. Italian authors studied include three very influential Florentines, Dante, Petrarch and Boccaccio, as well as Castiglione and Ariosto. We will read women poets, patrons, prostitutes and queens from Italy and France such as Veronica Gambara, Isabella di Morra, Vittoria Colonna, Christine de Pizan, Louise Labe, and Marguerite de Navarre. At issue will be women's role and women's images in city and court culture during the early modern period, and the interaction of their writings with the literary canons of Italy and France. (OC).

WGST 545 20C/21C Women Authors
3.000 Credits
Prerequisite(s): (COMP 106 or CPAS 40 or COMP 220 or COMP 270) and (ENGL 230 or ENGL 231 or ENGL 233 or ENGL 235 or ENGL 236 or ENGL 237 or ENGL 239 or ENGL 200)

An analysis of images and problems of women as defined by significant British and American women writers of the 20th and 21st centuries. Style and narrative techniques will also be closely examined. Students cannot receive credit for both WGST 445 and WGST 545.

WGST 547 Family Violence
3.000 Credits
Prerequisite(s): SOC 201 or SOC 200 or SOC 443 or PSYC 405 or WST 405 or WST 505 or PSYC 505

Sociological analyses of various forms of family violence which occur disproportionately in the lives of girls and women. Topics such as incest, sexual abuse, date rape, wife battering, and elder abuse will be situated within the social and cultural context of contemporary gender relationships. Social and political responses to the phenomena will be examined. Additional reading assignments or projects will distinguish this course from its undergraduate version WGST 447. Students cannot receive credit for both WGST 447 and WGST 547. (YR)

WGST 555 Gender and Media Studies
3.000 Credits

The course will focus on several feminist approaches used in understanding the media and attempting to create social change through the media. The role of media in the definition and
reproduction of gender-based hierarchies and in the renegotiation of gender boundaries will both be explored. To this end, both mainstream and women's media will be examined. The course will take a multicultural and international perspective, incorporating concerns of class, race, ethnicity, and nation as these intersect with the study of gender and media. Mainstream and alternative media will be analyzed through readings, films, case studies, in-class collaborative exercises and longer term projects. News, entertainment, and advertising genres will be examined in a variety of media, such as the printed press, television, video, film, and the Internet.

**WGST 573 Arab American Women Writers**
3.000 Credits

Examines the literary and cultural contributions of Arab and Arab American women novelists, poets, and artists to the development and consolidation of the cultures of understanding and coexistence; explores the tensions between citizenship and belonging, race and the politics of fear, gender and geographical mobility, and ethnic minorities and mainstream consciousness; discerns how Arab women writers and artists retool their various artistic endeavors to channel socio-political disenchantment, critique and civil disobedience; stresses how literary and artistic productions of heterogeneous number of Arab American women writers and artists can indeed foster alternative visions of socio-cultural coexistence, dialogue, and hospitality via artistic commitments to technical and stylistic experimentation and renovation. Additional reading assignments or projects will distinguish this course from its undergraduate version WGST 473. Students cannot receive credit for both WGST 473 and WGST 573.

**WGST 581 Gender and Globalization**
3.000 Credits

Mass media, politics, and academia are full of references to globalization, and a future “world without borders.” This interdisciplinary course considers the implication of globalization for women’s lives, gender relations, and feminism. Topics covered include the global factory, cross-cultural consumption, human rights, global communications, economic restructuring, nationalism, and environmental challenges. Rather than survey international women’s movements, this course explores how globalization reformulates identities and locations and the political possibilities they create. Students cannot receive credit for both WGST 481 and WGST 581. (AY).

**WGST 590 Topics in Women’s Studies**
3.000 Credits
Prerequisite(s): WGST 275 or WST 275 or LIBS 580

Examination of problems and issues related to Women and Gender Studies. Title as listed in Schedule of Classes will change according to specific content.

**WGST 599 Independent Studies**
1.000 TO 3.000 Credits

Provides opportunity for qualified Women and Gender Studies students to pursue independent research under the direction of a qualified faculty member. Project must be defined in advance, in writing and must be in a subject not currently offered in the regular curriculum.
COLLEGE OF ENGINEERING AND COMPUTER SCIENCE

Administration

Subrata Sengupta, PhD, Dean, College of Engineering and Computer Science
Keshav S. Varde, PhD, Associate Dean, College of Engineering and Computer Science
Ben Q. Li, PhD, Chair, Department of Mechanical Engineering
William I. Grosky, PhD, Chair, Department of Computer and Information Science
Swatantra K. Kachhal, PhD, Chair, Department of Industrial and Manufacturing Systems Engineering
Pankaj K. Mallick, PhD, Director, Interdisciplinary Programs
Qi Lu Murphey, PhD, Chair, Department of Electrical and Computer Engineering
Laura Beer, Student Advisor
Reinaldo Pérez, Director of Academic Services
Sandra L. Scott, Administrative Assistant
Anthony DeLarosa, Cooperative Education Office
Armen Zakarian, PhD, Director, Engineering Computer Services
M. Jeanne Girard, Director, Engineering Professional Development

Faculty (Full-Time)

Computer and Information Science

Hasina Abdu, PhD, University of Western Ontario, Assistant Professor of Computer and Information Science
Kiumi Akingbehin, PhD, Wayne State University, Professor of Computer and Information Science
Brahim Medjahed, PhD, Virginia Tech, Assistant Professor of Computer and Information Science
Bruce Elenbogen, PhD, Northwestern University, Associate Professor of Computer and Information Science
William I. Grosky, PhD, Yale University, Professor Computer and Information Science
Jinhua Guo, PhD, University of Georgia, Assistant Professor of Computer and Information Science
Roberto Kampfner, PhD, University of Michigan, Associate Professor of Computer and Information Science
Bruce Maxim, PhD, University of Michigan, Associate Professor of Computer and Information Science
Nilesh Patel, PhD, Wayne State University, Assistant Professor of Computer and Information Science
Jie Shen, PhD, Beijing University of Agricultural Engineering and University of Saskatchewan, Assistant Professor of Computer and Information Science
Yuqing Song, PhD, SUNY at Buffalo, Assistant Professor of Computer and Information Science
Louis Tsui, PhD, University of Michigan, Associate Professor of Computer and Information Science
David Yoon, PhD, Wayne State University, Associate Professor of Computer and Information Science
Qiang Zhu, PhD, University of Waterloo, Professor of Computer and Information Science

Electrical and Computer Engineering

Selim Saad Awad, PhD, Polytechnic Institute of Grenoble, Professor of Electrical and Computer Engineering
Ali ElKateeb, PhD, Concordia University, Associate Professor of Electrical and Computer Engineering
Sergey Gladyshev, PhD, Chelyabinsk Polytechnical Institute, Assistant Research Scientist of Electrical and Computer Engineering
Herbert Kaufman, PhD, University of Windsor, Lecturer of Electrical and Computer Engineering
Taejung Kim, PhD, Texas A & M, Assistant Professor of Electrical and Computer Engineering
Srividhar Lakshmanan, PhD, University of Massachusetts, Amherst, Associate Professor of Electrical and Computer Engineering
Allen Meitzler, PhD, Lehigh University, Lecturer of Electrical and Computer Engineering
Chunting “Chris” Mi, PhD, University of Toronto, Associate Professor of Electrical and Computer Engineering
John Miller, PhD, University of Toledo, Associate Professor of Electrical and Computer Engineering
Qi Lu Murphey, PhD, University of Michigan, Professor of Electrical and Computer Engineering
Narasimhamurthi “Natu” Natarajan, PhD, University of California-Berkeley, Associate Professor of Electrical and Computer Engineering
Paul Richardson, PhD, Oakland University, Associate Professor of Electrical and Computer Engineering
Adnan Shaout, PhD, Syracuse University, Professor of Electrical and Computer Engineering
Malayappan Shridhar, PhD, University of Aston in Birmingham, England, Professor of Electrical and Computer Engineering
Mark Steflka, MS, Indiana Wesleyan University, Lecturer of Electrical and Computer Engineering
Timothy J. Talty, PhD, University of Toledo, Lecturer of Electrical and Computer Engineering
Joseph Tolkacz, MS, University of Michigan, Lecturer of Electrical and Computer Engineering
Paul Watta, PhD, Wayne State University, Associate Professor of Electrical and Computer Engineering
Weidong Xiang, PhD, Tsinghua University, Assistant Professor of Electrical and Computer Engineering
Dongming Zhao, PhD, Rutgers University, Associate Professor of Electrical and Computer Engineering

Industrial and Manufacturing Systems Engineering

Vivek Bhise, PhD, Ohio State University, Professor of Industrial and Manufacturing Systems Engineering
Charu Chandra, PhD, Arizona State University, Associate Professor of Industrial and Manufacturing Systems Engineering
Chia-hao Chang, PhD, Oregon State University, Professor of Industrial and Manufacturing Systems Engineering
Yubao Chen, PhD, University of Wisconsin-Madison, Professor of Industrial and Manufacturing Systems Engineering
Swatantra K. Kachhal, PhD, University of Minnesota, Professor of Industrial and Manufacturing Systems Engineering
James W. Knight, PhD, Ohio State University, Associate Professor of Industrial and Manufacturing Systems Engineering
Mechanical Engineering

Alan Argento, PhD, University of Michigan, Professor of Mechanical Engineering
John G. Cheng, PhD, University of Tennessee, Professor of Mechanical Engineering
Chi L. Chow, PhD, DSc, University of London, Professor of Mechanical Engineering
Hugh Huntley, PhD, University of Michigan, Associate Professor of Mechanical Engineering
Hong Tae Kang, PhD, University of Alabama, Assistant Professor of Mechanical Engineering
Ben Q. Li, PhD, University of California at Berkeley, Professor of Mechanical Engineering
Robert E. Little, PhD, University of Michigan, Professor of Mechanical Engineering
Pankaj K. Mallick, PhD, Illinois Institute of Technology, William E. Stirton Professor of Mechanical Engineering
Carole Mei, PhD, University of Auckland, Assistant Professor of Mechanical Engineering
William J. Mitchell, MS, University of Michigan, Assistant Professor of Mechanical Engineering
Pravansu Mohanty, PhD, McGill University, Assistant Professor of Mechanical Engineering
Eric Ratts, PhD, Massachusetts Institute of Technology, Associate Professor of Mechanical Engineering
German Reyes-Villanueva, PhD, University of Liverpool, UK, Assistant Professor of Mechanical Engineering
Subrata Sengupta, PhD, Case Western Reserve University, Professor of Mechanical Engineering
Tariq Shamim, PhD, University of Michigan, Associate Professor of Mechanical Engineering
Taehyun Shim, PhD, University of California-Davis, Associate Professor of Mechanical Engineering
Keshav S. Varde, PhD, University of Rochester, Professor of Mechanical Engineering
Yi Zhang, PhD, University of Illinois at Chicago, Associate Professor of Mechanical Engineering
Oleg Zikanov, PhD, Moscow State University, Assistant Professor of Mechanical Engineering

Post-Baccalaureate Programs

The post-baccalaureate programs in engineering at the UM-D are geared to the demands of the student and the desires of society to further the technical background of the practicing engineer. Working students are accommodated by course offerings late in the afternoon and evening. Master's level study is offered in automotive systems engineering, computer and information science, computer engineering, electrical engineering, engineering management, industrial and systems engineering, mechanical engineering, manufacturing systems engineering, and software engineering. Each of these programs and their specific requirements are discussed in the sections that follow.

Graduate Programs

While the undergraduate program in engineering offers a challenging basic education, a program of graduate studies provides the opportunity for advanced or special studies in particular areas of interest. Particularly in an era of rapid technological and scientific advancement, many students find continued study a decided advantage. It offers an attractive opportunity to pursue their special interests and to acquire a more thorough preparation for their professional careers.

The graduate faculty at UM-D is authorized by the Rackham School of Graduate Studies to conduct approved programs leading to master's degrees. Presently, Master of Science in Engineering degree programs, with specialization in automotive systems engineering, computer engineering, mechanical, electrical, industrial and systems engineering, and manufacturing systems engineering, are offered. Master of Science degrees in Computer and Information Science, Engineering Management, and Software Engineering are also offered. A dual degree program leading to both a Master of Business Administration and
a Master of Science in Engineering-Industrial and Systems Engineering is also available. Students admitted to the Rackham School of Graduate Studies, pursuing degree programs elsewhere in the University (i.e., at another campus), may elect to take a portion of their coursework at UM-D.

Many graduate programs and courses are offered using distance learning technologies. Students interested in this flexible and convenient course option should visit [http://dln.engin.umd.umich.edu](http://dln.engin.umd.umich.edu) or call 313-593-4000 for additional information.

**Rules and Procedures**

Since all programs in graduate studies in engineering at the University of Michigan are offered through the Rackham School of Graduate Studies, Ann Arbor, and all graduate students in engineering are registered in the graduate school, it is the responsibility of each graduate student to read the rules and procedures that are available on the Rackham School of Graduate Studies website: [http://www.rackham.umich.edu/StudentInfo/Publications/GSH/html/contents.html](http://www.rackham.umich.edu/StudentInfo/Publications/GSH/html/contents.html)

**Doctor of Engineering in Manufacturing (DEng in Mfg)**

(Ann Arbor Campus Program with Participation by UM-D)

The Doctor of Engineering in Manufacturing (DEng in Mfg) is motivated by the need for technical leaders in the manufacturing arena who have depth in their own engineering disciplines, breadth across engineering disciplines, basic management and business skills, the ability to lead project teams, and the skills to carry out high quality engineering research and development.

The DEng in Mfg aims to simultaneously achieve the following educational goals:

1) provide additional depth in the student’s engineering discipline;
2) provide breadth across engineering disciplines, and a systems engineering perspective;
3) provide breadth beyond engineering by stressing management and business skills;
4) provide a significant and industrially relevant engineering research experience through the D Eng Dissertation;

The DEng in Mfg degree is awarded by the Program in Manufacturing (PIM) at the College of Engineering on the Ann Arbor campus. The degree can also be pursued in part through the UM-D campus.

**ADMISSION**

Applicants must:

1) Have a relevant master’s degree (e.g., master’s in engineering or business).
2) Have at least one degree (BS or MS) in engineering (exceptions to this requirement must be approved by the PIM council).
3) Have at least two (2) years of full-time relevant industrial experience. (Students with outstanding qualifications who do not have two years of full-time industrial experience can be considered for admission if they have a combination of full-time experience, relevant summer internships, or co-op experience totaling two years.)
4) Submit their scores for the general portion of the Graduate Record Examination (GRE). Applications are accepted for both Fall and Winter terms.

**ADVANCED STANDING**

Up to six graduate credit hours (grade of B or better) may be transferred from another accredited institution as specified in the Rackham School of Graduate Studies regulations. Students may transfer up to one-half (1/2) the minimum number of credit hours required for their master’s or professional degree from U-M/non-Rackham departments and programs (including Dearborn and Flint).

**DEGREE REQUIREMENTS**

1) Students must complete at least 50 credits hours, of which at least 24 credit hours is due to coursework.
2) Students must maintain a cumulative GPA of 6.0/9.0 (B+ or better).
3) Residency requirement: at least 18 graduate credit hours must be completed on the Ann Arbor campus. Courses elected for “visitor” status and 990 or 995 elections cannot be used to fulfill the residency requirement.

Minimum fees: each student must accumulate the required number of fee credits, exactly as outlined in the most recent edition of the Rackham student handbook found online at [http://www.rackham.umich.edu/StudentInfo/Publications/GSH/html/feesexpenses.html](http://www.rackham.umich.edu/StudentInfo/Publications/GSH/html/feesexpenses.html).

Except for those explained herein, the requirements are exactly the same as for the Rackham PhD degree.

**COURSE REQUIREMENTS**

Coursework emphasizes breadth in various engineering and business areas related to manufacturing. Students, as with other doctoral programs, select their specific courses in consultation with their advisor and their dissertation committee, and according to the requirements described in this section.

Each student must successfully complete a minimum of 24 letter-graded (A-E) credit hours at the University of Michigan beyond his or her master’s degree. At least 18 of the above 24 credit hours must be at the 500 level and above. In order to be applied towards the above 24-credit-hour requirement, a 400-level course must be accepted for graduate credit by the department or unit that teaches the course.

**QUALIFYING EXAMINATION**

The Qualifying Examination must be taken in four areas related to manufacturing, from a variety of examination areas offered by various departments. The proposed four examination areas must be approved by the Director of PIM. One area, designated as the major
area, will require both a written and an oral examination. The other three areas, designated as minor areas, will require only written examinations.

PRELIMINARY EXAMINATION

Following the successful completion of required coursework, the student is required to take a Preliminary Examination to test his/her knowledge of the primary and supporting fields. The structure of the preliminary exam should be such as to test the student’s breadth in and beyond engineering, as well as depth in his or her primary field. The Preliminary Examination will be an oral examination administered by the dissertation committee at its first meeting, and following a presentation (in both written and oral forms) of the student’s dissertation proposal. A student is not permitted to take the Preliminary Examination before he/she passes the Qualifying Examination.

All students (full or part time) must be in good academic standing, i.e., they must possess a cumulative GPA of 6.0/9.0 (B+ or better) in order to be able to take the Preliminary Examination. A student who does not meet the above criteria will not be allowed to take the Preliminary Examination and will be encouraged to leave the program.

DISSERTATION

An industrially relevant, engineering practice-oriented dissertation is a requirement of the degree and is supervised by a dissertation committee consisting of at least four members. Exactly one member of the committee should be from industry and others are regular faculty in the University of Michigan. The dissertation committee is charged with the supervision of a student’s dissertation activities, including the Preliminary Examination and the dissertation defense.

The student must submit a dissertation comprised of practice-oriented, original work with industrial relevance. The dissertation must be published. This is typically met by publication in University Microfilm form. Legibility and conformity with the regulations of University Microfilms International are the only format requirements. Conformity with format requirements must be checked by the Office of the Associate Dean for Graduate Studies in the College of Engineering. The work must be defended orally at a final oral examination open to the public. At least four of the committee members must be present at the dissertation defense.

Concluding Remarks

Additional information on the DEng in Mfg degree can be requested from:

Dearborn Campus: Ms. Sherry Boyd, Administrative Assistant, Interdisciplinary Programs, College of Engineering and Computer Science, University of Michigan-Dearborn, 116 MSEL, 4901 Evergreen Road, Dearborn, MI 48128-2406; telephone 313-593-5582; FAX 313-593-5386. E-mail: sjboyd@umd.umich.edu.

Ann Arbor Campus: Ms. Henia Kamil, Administrative Associate, Partners in Manufacturing (PIM) Kathy Bishar, 1542 H.H. Dow, 2300 Hayward Street Ann Arbor, MI 48109-2136 telephone 734-764-3312; FAX 734-647-0079. E-mail: pim@umich.edu.

MASTER OF SCIENCE IN ENGINEERING (MSE) AND MASTER OF SCIENCE (MS) PROGRAMS

The programs in industrial systems, information systems and technology, computer and information science, automotive systems, electrical, computer, mechanical, manufacturing systems engineering, software as well as engineering management, are designed to provide a thorough and vigorous educational experience both for the student who plans to enter the engineering profession after completing the requirements and for the student who wishes to pursue the PhD. This is accomplished by the curricula, which provides appropriate breadth, while at the same time permitting the students considerable freedom in the selection of both engineering science and professionally oriented courses in their special interests, and through an environment in which faculty and graduate students may work together on a broad spectrum of research projects.

At the present time, the size of the student body, together with the breadth and depth of the instructional programs to be given, require that specific course offerings be spaced appropriately throughout the three-term year on which UM-D operates. The present schedule of courses in the four engineering disciplines and CIS provides opportunity for both full-time and part-time students.

Students who wish to pursue engineering or CIS programs on a full-time basis may enter in fall, winter, or summer terms. The usual full load program of graduate studies varies from none to 12 credit hours each term. For mechanical, electrical and computer, industrial and systems, manufacturing systems, or automotive systems engineering, qualified students entering in the fall for continuous study can plan to complete their studies in one year. Normally they will complete an average of 24 credit hours in the first two terms, and can satisfy the remaining credit hours of the minimum 30-hour requirement on a part-time basis through courses that span the complete spring-summer term, or in some cases on a full-time basis during the spring half-term. Students in the engineering management program must complete 36 credit hours. Students in the automotive systems engineering program must undertake a capstone project or a master’s thesis, which will span two terms. Full-time students should be able to complete their automotive systems engineering degree program in four terms.

Students planning part-time study can begin their work during any of the three terms. Class schedules are arranged to accommodate part-time, later afternoon, and evening students from local industrial firms. Information on this kind of program, which provides many advantages to both employer and student, can be obtained from the graduate program advisor.

Students may also pursue an alternative type of participation (similar in timing to a cooperative program but without University control over the work periods) when continuous participation is not feasible for financial or other reasons.

This degree program is available both on campus and via the Internet.
Requirements for the MSE in Automotive Systems Engineering

The Automotive Systems Engineering degree program aims to achieve the following educational goals:
1) Provide depth in the area of automotive systems engineering.
2) Provide breadth across the engineering disciplines of electrical, industrial, mechanical, materials, and manufacturing engineering and provide this breadth from an engineering systems perspective.
3) Provide a significant and industrially relevant engineering design experience through a capstone group project or a master's thesis.

A candidate for the Master of Science in Engineering in Automotive Systems Engineering must meet the requirements for the Bachelor of Science degree at this campus or the equivalent of these requirements. Undergraduate degrees must be from an accredited program, and for regular admission must be with an average of B or better. Each applicant should present two complete, official transcripts of all prior college work. The candidate must then complete at least 30 semester hours of graduate work approved by the program advisor/graduate advisory committee with a grade of at least a B covering all courses elected. Further, a grade below B in any course will not be accepted for graduate credit unless, after review of the credit circumstances, the acceptance of the credit is recommended by the program director. No more than one B- will be allowed under any circumstances. These 30 hours must include six hours of a capstone project or a master's thesis. Applicants who meet the general admission criteria but do not have adequate preparation in required areas of engineering would be asked to take appropriate undergraduate courses as a condition for full admission to the program. Such courses, when elected, will not count towards the degree requirements.

The automotive systems engineering degree program is made up of three components:

1) Core courses of 12 credit hours.
2) Concentration courses of 12 credit hours.
3) Capstone design or master's thesis of 6 hours.

Core courses......................................................... 12 hrs

The core is intended to provide a unified graduate-level preparation in interdisciplinary topics that will allow students to elect courses in departmental, systems, or general concentrations. It consists of six credit hours of required courses and six credit hours of electives based on the applicant's background.

Required courses

AENG 500  The Automobile-An Integrated System........ 3 hrs
AENG 587  Automotive Manufacturing Processes ......... 3 hrs

Electives

AENG 502  Automotive Systems Modeling............... 3 hrs
AENG 505  Digital Systems and Microprocessors .......... 3 hrs
(not open to students with EE/ECE degree)
AENG 510  Vehicle Electronics I......................... 3 hrs
(not open to students with EE/ECE degree)
AENG 541  Introduction to Automotive Dynamics ....... 3 hrs
(not open to students with ME degree)
AENG 545  Vehicle Ergonomics I.......................... 3 hrs
AENG 547  Automotive Powertrains I..................... 3 hrs
AENG 581  Materials Selection in Automotive Design ... 3 hrs
AENG 583  Project Management and Concurrent Engineering .................................................. 3 hrs
AENG 596  Internal Combustion Engines I............... 3 hrs

Concentration courses........................................... 12 hrs

The program offers several concentrations to meet the needs of the individual students. The student will be required to select one concentration based on his/her interest and background. The following concentrations are currently offered. Each student is required to take at least four courses in the following concentration areas.

Electrical and Computer

ECE 515  Vehicle Electronics II............................ 3 hrs
ECE 531  Intelligent Vehicle Systems...................... 3 hrs
ECE 532  Automotive Sensors and Actuators ............ 3 hrs
ECE 533  Active Automotive Safety Systems ............. 3 hrs
ECE 536  All Weather Automotive Vision ................. 3 hrs
ECE 546  Electric Vehicles .................................... 3 hrs
ECE 5462  Electric Aspects of Hybrid Electric Vehicles ............................................. 3 hrs
ECE 565  Digital Control Systems ......................... 3 hrs

Industrial and Manufacturing

IMSE 513  Robust Design .................................... 3 hrs
IMSE 538  Intelligent Manufacturing Systems ............ 3 hrs
IMSE 561  Total Quality Management ...................... 3 hrs
IMSE 569  System Simulation in Automotive Engineering .................................................. 3 hrs
IMSE 593  Vehicle Package Engineering .................... 3 hrs
AENG 546  Vehicle Ergonomics II......................... 3 hrs

Mechanical

ME 537  Automotive Air Conditioning Systems ........... 3 hrs
ME 545  Acoustics and Noise Control Systems ......... 3 hrs
ME 548  Automotive Powertrains II ....................... 3 hrs
ME 583  Mechanical Behavior of Materials .............. 3 hrs
ME 597  Internal Combustion Engines II ................. 3 hrs
ME 598  Automotive Emissions ............................. 3 hrs
AENG 550  Design of Automotive Chassis and Body Systems .................................................. 3 hrs
AENG 565  Vehicle Acoustic Interior System Design .... 3 hrs
AENG 598  Energy Systems for Automotive Vehicles .... 3 hrs

Automotive Materials

AENG 584  Lightweight Automotive Alloys ............... 3 hrs
AENG 585  Powertrain Materials and Design .......... 3 hrs
AENG 586  Design and Manufacturing with Lightweight Automotive Materials .................................. 3 hrs
AENG 588  Design and Manufacturing for Environment .................................................. 3 hrs
ME 582  Injection Molding .................................... 3 hrs
ME 584  Mechanical Behavior of Polymers ............... 3 hrs
ME 587 Automotive Composites.............................. 3 hrs
ME 591 Environmental Degradation of Materials...... 3 hrs

General

With the approval of the advisor, a general concentration of twelve credit hours may be satisfied by selecting courses in more than one concentration.

Capstone Project or Thesis ................................. 6 hrs

All students are required to elect either a capstone project or a thesis option. Capstone projects are designed to be team oriented which further emphasizes the interdisciplinary nature of the program.

All students admitted into the program will be required to meet with the program director/advisor to plan for their concentrations and program of study.

Requirements for the MS in Computer and Information Science

Students pursuing the MS degree in Computer and Information Science must meet the general requirements of the Rackham School of Graduate Studies. Additional requirements for the program are described below.

Admission

In addition to meeting Rackham requirements for admission, applicants for the MS in Computer and Information Science are required to meet the following requirements:

1) A bachelor's degree from an accredited institution with a grade point average of B or better. Applicants with lower GPAs may be granted conditional or probationary admission consistent with Rackham guidelines. Preference will be given to students with a background in Computer and Information Science, engineering, math and science.

2) Satisfactory completion of the following:
   Calculus (1 year)
   Probability and Statistics (1 course)
   Data Structures with Algorithm Analysis (1 course)
   Computer Architecture (1 course)
   Operating Systems (1 course)
   Programming Language (preferably C/C++)

Note: Students may be admitted provisionally to make up the deficiencies in item 2. In this case, the applicant will be required to complete appropriate courses within two years from the date of entrance. These courses may not be used to satisfy degree requirements.

3) Three letters of recommendation, with at least one from a person familiar with the candidate’s academic performance, are required. Copies of the applicant’s undergraduate transcripts and degree must be submitted.

Degree Requirements

To satisfy the requirements for the MS degree in CIS, all students admitted to the program are expected to complete a minimum of 30 semester hours of graduate coursework, with a cumulative grade point average of B or better. The program of study consists of core courses, concentration courses, cognates, electives and a thesis or a project.

Advanced Standing

Up to six graduate credit hours (grade of B or better) may be transferred from another accredited institution as specified in the Rackham School of Graduate Studies regulations. Students may transfer up to one-half the minimum number of credit hours required for their master’s or professional degree from U-M/non-Rackham departments and programs (including Dearborn and Flint).

Specific Course Requirements

The 30 semester hours of required graduate work are as follows:

Project Option

Core Courses ...................................................... 9 hrs
Two Concentration Areas ..................................... 12 hrs
Cognate Courses .................................................. 6 hrs
Project .............................................................. 3 hrs

Thesis Option

Core Courses ...................................................... 9 hrs
One Concentration Area ........................................ 6 hrs
Cognate Courses .................................................. 6 hrs
CIS elective ....................................................... 3 hrs
Thesis .............................................................. 6 hrs

Core

All students are required to take one course from each of the following three categories:

Category 1
CIS 505 Algorithm Design and Analysis............... 3 hrs
or
CIS 510 Computer Interfacing......................... 3 hrs

Category 2
CIS 527 Computer Networking ............................ 3 hrs
or
CIS 550 Object-Oriented Programming and Its Applications ................ 3 hrs

Category 3
CIS 574 Compiler Design................................. 3 hrs
or
CIS 578 Advanced Operating Systems................ 3 hrs
or
ECE 578 Advanced Operating Systems................ 3 hrs

Concentration

Each student is required to take at least four courses from two of the following concentration areas:
## Computer Graphics and Geometric Modeling

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 515</td>
<td>Computer Graphics</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 551</td>
<td>Advanced Computer Graphics</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 552</td>
<td>Computer Animation</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

## Computer Networks

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 527</td>
<td>Computer Networks</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 537</td>
<td>Advanced Networking</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 544</td>
<td>Computer and Network Security</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 547</td>
<td>Advanced Topics on Networking</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

## Database Management

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 556</td>
<td>Database Systems</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 560</td>
<td>Electronic Commerce</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 568</td>
<td>Data Mining</td>
<td>3 hrs</td>
</tr>
<tr>
<td>or ECE 537</td>
<td>Data Mining</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 576</td>
<td>Database Security</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 586</td>
<td>Advanced Database Systems</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

## Information Systems

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 527</td>
<td>Computer Networks</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 544</td>
<td>Computer and Network Security</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 550</td>
<td>Object-Oriented Programming and Its Applications</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 554*</td>
<td>Information Systems Analysis and Design</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 555</td>
<td>Decision Support and Expert Systems</td>
<td>3 hrs</td>
</tr>
<tr>
<td>or IMSE 555</td>
<td>Decision Support and Expert Systems</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 556</td>
<td>Database Systems</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 560</td>
<td>Electronic Commerce</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 563</td>
<td>Modeling of Computer-Based Systems</td>
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</table>

## Software Engineering

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>CIS 525</td>
<td>Multimedia Web Design</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 550</td>
<td>Object-Oriented Programming and Its Applications</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 553</td>
<td>Software Engineering</td>
<td>3 hrs</td>
</tr>
<tr>
<td>or IMSE 553</td>
<td>Software Engineering*</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 565</td>
<td>Software Quality Assurance</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 566</td>
<td>Software Architecture and Design Patterns</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 575</td>
<td>Software Engineering Management</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 577</td>
<td>Software User Interface Design and Analysis</td>
<td>3 hrs</td>
</tr>
<tr>
<td>ECE 554</td>
<td>Embedded Systems</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 587</td>
<td>Computer Game Design I</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 588</td>
<td>Computer Game Design II</td>
<td>3 hrs</td>
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</table>

## System Software

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 505</td>
<td>Algorithm Analysis and Design*</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 510</td>
<td>Computer Interfacing*</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 527</td>
<td>Computer Networks*</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 550</td>
<td>Object-Oriented Programming and Its Applications*</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 574</td>
<td>Compiler Design*</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 578</td>
<td>Advanced Operating Systems*</td>
<td>3 hrs</td>
</tr>
<tr>
<td>or ECE 578</td>
<td>Advanced Operating Systems*</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

*May not be used as concentration courses if they are counted as core courses.

## Cognate

- Any graduate-level courses, approved by the student’s advisor and not in the student’s area of specialization, as described in the Rackham requirements for graduation.

## Electives

- These are CIS electives and must be CIS graduate courses.

## Thesis Option

- A student may elect this option for up to 6 credit hours. In this case, the student is required to elect one concentration area.

## Master’s Thesis Committee

- A Master’s Thesis committee consists of three full-time CIS faculty members, one of whom is the thesis advisor, and requires the approval of the CIS graduate committee. When deemed appropriate, the chair of the graduate committee may request, in the committee, the presence of an additional member from outside the department.

## Requirements for the MSE in Computer Engineering

The ECE Department offers, through the Rackham School of Graduate Studies, an evening program of 30 credit hours, leading to the degree of Master of Science in Engineering (Computer Engineering). Students desiring admission to the program must have earned a Bachelor's degree in Electrical and/or Computer Engineering with an overall GPA of 3.0 or higher. Students whose undergraduate background is in a field other than Electrical or Computer Engineering may be given conditional admission and would be required to take preparatory courses in electrical and/or computer engineering as described in section V. Students admitted to the program are required to take courses as specified below. Students must earn a B or better in every graduate course to be credited toward the degree requirements. However, a maximum of two grades of B- will be accepted. In addition, students must maintain a cumulative GPA of 5.0 or higher in every semester. Students may be placed on probation if their cumulative GPA falls below 5.0. Finally, a cumulative GPA of 5.0 or higher is
required in order to be eligible to receive the MSE (CE) degree. All students should be familiar with the Rackham School of Graduate Studies Handbook.

Specific course requirements are described next.

This degree program is available both on campus and via the Internet.

### Specific Course Requirements

#### Core Courses

Three courses from the following list)

- ECE 554  Embedded Systems (Required) ………………… 3 hrs
- ECE 570  Computer Networks…………………………… 3 hrs
- ECE 571  Switching Theory…………………………….. 3 hrs
- ECE 575  Computer Architecture I …………………….. 3 hrs
- ECE 578  Advanced Operating Systems………………… 3 hrs

#### Concentration Courses

Select three-five courses from one or more of the concentrations areas*

1. **Computer Architecture and Design***

   - ECE 514  VLSI Design ................................……… 3 hrs
   - ECE 572  Sequential Machines………………………… 3 hrs
   - ECE 575  Computer Architecture (Required)……….. 3 hrs
   - ECE 5751 Advanced Computer Design ……………….. 3 hrs
   - ECE 5721 Reconfigurable Computing (pending) …….. 3 hrs
   - ECE 675  Advanced Computer Architecture………….. 3 hrs

2. **Networks and Multimedia***

   - ECE 537  Data Mining …………………………………… 3 hrs
   - ECE 552  Fuzzy Systems ………………………………… 3 hrs
   - ECE 579  Intelligent Systems (Required)……………… 3 hrs
   - ECE 583  Neural Networks ……………………………… 3 hrs
   - ECE 585  Pattern Recognition…………………………. 3 hrs
   - ECE 588  Applied Machine Vision…………………..… 3 hrs

3. **Intelligent Systems***

   - ECE 570  Computer Networks (Required)……………. 3 hrs
   - ECE 576  Information Engineering……………………. 3 hrs
   - ECE 577  Engineering in Virtual World……………….. 3 hrs
   - ECE 580  Digital Signal Processing…………………..... 3 hrs
   - ECE 5701 Wireless Communications………………….. 3 hrs
   - ECE 5702 High-speed and Advanced Networks……….. 3 hrs

4. **Advanced Software Techniques***

   - CIS 553  Software Engineering (Required)…………… 3 hrs
   - CIS 573  Software Reliability and Safety……………… 3 hrs
   - ECE 537  Data Mining …………………………………… 3 hrs
   - or
   - CIS 568  Data Mining …………………………………… 3 hrs
   - ECE 5721 Reconfigurable Computing………………….. 3 hrs
   - ECE 574  Adv. Software Tech. in Engineering Applications …………………… 3 hrs

*These are partial lists and will be expanded and updated from time to time.

### Professional Electives

To meet the professional elective requirement students must elect two courses at least one of which will be a ECE course. Students desiring to obtain research or project experience are encouraged to elect the thesis ECE 699 (6 hours) or directed studies (ECE 591) and work under the supervision of a faculty advisor. The ECE courses are described in this Graduate Catalog. Students may choose either directed studies for a maximum of six hours or elect the thesis option.

### Cognate Courses

Two courses should be selected from another discipline from an approved list of courses. Some courses from outside ECE may not qualify for graduate credit. Please check with the ECE Department, prior to registering.

### Preparatory Courses

Students with inadequate background in Electrical or Computer Engineering may be required to meet with the department graduate advisor to determine the need for preparatory courses.

For further information please contact:

Mariann Nader, Graduate Secretary, Department of Electrical and Computer Engineering, University of Michigan-Dearborn, 4901 Evergreen Road, Room 206 ELB, Dearborn, MI 48128-2406 Tel: (313) 593-5420 Fax: (313) 583-6336 E-mail: ece-grad@umich.edu

### Requirements for the MSE in Electrical Engineering

The ECE Department offers, through the Rackham School of Graduate Studies, an evening program of 30 credit hours, leading to the degree of Master of Science in Engineering (Electrical Engineering). Students desiring admission to the program must have earned a Bachelor's degree in Electrical and/or Computer Engineering with an overall GPA of 3.0 or higher. Students whose undergraduate background is in a field other than Electrical or Computer Engineering may be given conditional admission and would be required to take preparatory courses in electrical and/or computer engineering as described in section V. Students admitted to the program are required to take courses as specified below. Students must earn a B or better in every graduate course to be credited toward the degree requirements. However, a maximum of two grades of B- will be accepted. In addition, students must maintain a cumulative GPA of 5.0 or higher in every semester. Students may be placed on probation, if their cumulative GPA falls below 5.0. Finally, a cumulative GPA of 5.0 or higher is required, in order to be eligible to receive the MSE (CE) degree. All students should be familiar with the Rackham School of Graduate Studies Handbook.
Specific Course Requirements

Core......................................................... 9 hrs
ECE 500 ...... Mathematical Methods in EE and CE* ... 3 hrs
ECE 550 Communication Systems..................... 3 hrs
ECE 560 ...... Modern Control Theory .................. 3 hrs
ECE 580 ...... Digital Signal Processing ............... 3 hrs

*Required unless waived. Must be taken in the first year

Concentration

Select three to five courses from one or more of the concentration areas below.

Control Systems

ECE 552 Fuzzy Systems..................................... 3 hrs
ECE 560 Modern Control Theory (Required) ......... 3 hrs
ECE 565 Digital Controller Design..................... 3 hrs
ECE 567 Nonlinear Control Systems ................. 3 hrs
ECE 583 Neural Networks ............................... 3 hrs
ECE 661 System Identification and Adaptive Control 3 hrs
ECE 665 Optimal Control.................................. 3 hrs

Digital Signal Processing

ECE 512 Active Filter Design............................ 3 hrs
ECE 580 Digital Signal Processing (Required) ....... 3 hrs
ECE 581 Architectures for DSP ......................... 3 hrs
ECE 582 Statistical Signal Processing .............. 3 hrs
ECE 583 Neural Networks ................................ 3 hrs
ECE 584 Speech Processes ................................ 3 hrs
ECE 589 Multidimensional Signal Processing ....... 3 hrs

Intelligent Systems

ECE 570 Computer Networks (Required) ............. 3 hrs
ECE 576 Information Engineering .................... 3 hrs
ECE 577 Engineering in Virtual World ............... 3 hrs
ECE 580 Digital Signal Processing .................... 3 hrs
ECE 5701 Wireless Communications ................. 3 hrs
ECE 5702 High-speed and Advanced Networks ...... 3 hrs

Vehicle Electronics

ECE 514 VLSI Design .................................... 3 hrs
ECE 515 Vehicle Electronics-II (Required) ......... 3 hrs
ECE 516 Electronic Materials & IC Processes ....... 3 hrs
ECE 517 Advanced Industrial Electronics .......... 3 hrs
ECE 532 Auto Sensors and Actuators ................. 3 hrs
ECE 546 Electric Vehicles ................................ 3 hrs

*These are partial lists and will be expanded and updated from time to time. For a complete list of ECE courses please view the “Course Descriptions” later in this Catalog.

Professional Electives..................................... 6 hrs

To meet the professional elective requirement students must elect two courses at least one of which will be an ECE course.

Students desiring to obtain research or project experience are encouraged to elect the thesis ECE 699 (6 hours) or directed studies (ECE 591) and work under the supervision of a faculty advisor. The ECE courses are described in this Catalog. Students may choose either directed studies for a maximum of six hours or the thesis option for six hours.

Cognates....................................................................6 hrs

Two courses eligible for graduate credit should be selected from another discipline. Some courses from outside ECE may not qualify for graduate credit. Please check with the ECE Department prior to registering.

Preparatory Courses

Students with inadequate background in Electrical/Computer Engineering may be required to meet with the department graduate advisor to determine the need for preparatory courses.

For further information contact:

Mariani Nader, Graduate Secretary, Department of Electrical and Computer Engineering, University of Michigan-Dearborn, 4901 Evergreen Road, Room 206 ELB, Dearborn, MI 48128-2406 Tel: 313-593-5420 Fax: 313-583-6336 E-mail: ece-grad@umd.umich.edu

Requirements for the MS in Engineering Management

For general master's degree requirements at the Rackham School of Graduate Studies, see Section 7:1 of the University of Michigan Bulletin Graduate Student Handbook for general regulations.

This degree program is available both on campus and via the Internet.

Admission

Admission to the program as a regular student requires a BS degree in engineering, or a degree in math, computer science, or a physical science earned from an accredited program with an average of B or better coupled with extensive experience in engineering. Each applicant will be required to present official, complete transcripts of prior college work. Three letters of recommendation are required for admission. At least one letter must be from someone familiar with the candidate's academic performance. An entering student should have completed one course in probability and statistics. Deficiencies in prerequisites may be made up after entrance to the Graduate School; however, credits received in courses elected to make up the deficiencies do not count toward the degree.

Advanced Standing

Up to six graduate credit hours (grade of B or better) may be transferred from another accredited institution as specified in the Rackham School of Graduate Studies regulations. Students may transfer up to one-half (1/2) the minimum number of credit
hours required for their master's or professional degree from U-M/non-Rackham departments and programs (including Dearborn and Flint).

Degree Requirements

The Master of Science in Engineering Management requires a minimum of 36 graduate credit hours.

Specific Course Requirements

The program of study must satisfy the following distribution and course requirements:

1) 31 credit hours of the following engineering management core courses, designed primarily for graduate students:

- EMGT 500 Managing the Engineering Function ........... 2 hrs
- EMGT 505 Systems Engineering ........................................ 3 hrs
- EMGT 510 Managerial Finance and Economics .......... 2 hrs
- EMGT 515 Strategic Technology Management .......... 2 hrs
- EMGT 520 Production Management .................................... 3 hrs
- EMGT 525 Total Quality Management and Six Sigma ...... 3 hrs
- EMGT 530 Information Systems for Engineering Management ........................................ 3 hrs
- EMGT 535 Marketing Management and Policy .............. 2 hrs
- EMGT 541 Managerial Accounting ................................. 3 hrs
- EMGT 545 Organization Behavior and Human Resource Management ........................................ 2 hrs
- EMGT 550 Business Ethics/Law ...................................... 2 hrs
- EMGT 560 Engineering Management at Upper Levels ...... 1 hr
- EMGT 580 Management of Product and Process Design ........................................ 3 hrs

2) A master's thesis for five credit hours or Project Seminar, EMGT 591 (2 hrs), and three hours of elective coursework with the approval of the graduate advisor.

3) Work Experience requirement—minimum of five years in an engineering job function for students with an undergraduate degree in a field other than engineering.

4) Thesis or Research Essay—students, with the approval of their graduate advisor, may elect a master's thesis for no more than five credit hours.

5) There is no foreign language requirement and no final exam.

Requirements for the MSE in Industrial and Systems Engineering

For general master's degree requirements at the Rackham School of Graduate Studies, see Section 7:1 of the University of Michigan Bulletin Graduate Student Handbook. Specific requirements of the program are described below.

This degree program is available both on campus and via the Internet.

Admission

Admission to the program as a regular student requires a BS degree in Engineering, a physical science, computer science, or applied mathematics earned from an accredited program with an average of B or better. Each applicant will be required to present a complete transcript of prior college work. An entering student should have already completed at least one course in probability and statistics, one course in operations research, one course related to human performance, and a course in computer programming. Deficiencies in prerequisites may be made up after entering the graduate school; however, credits received in courses elected to make up the deficiencies do not count toward a degree. Students who have not fulfilled the requirements of the BS in Industrial and Systems Engineering should communicate with the program advisor regarding the requirements to be met.

Three letters of recommendation are required for admission. At least one letter of recommendation must be from the applicant's undergraduate academic institution.

Degree Requirements

The degree MSE in I&SE requires a minimum of 30 credit hours. No comprehensive final examination is required.

Advanced Standing Provision

Up to six graduate credit hours (grade of B or better) may be transferred from another accredited institution as specified in the Rackham School of Graduate Studies regulations. Students may transfer up to one-half (1/2) the minimum number of credit hours required for their master's or professional degree from U-M/non-Rackham departments and programs (including Dearborn and Flint).

Specific Course Requirements

The program of study must satisfy the following distribution and course requirements:

Core ................................................................. 9 hrs
- IMSE 511 Design and Analysis of Experiments .......... 3 hrs
- IMSE 554 Management Information Systems .......... 3 hrs
- IMSE 580 Production Management ............................. 3 hrs

Concentration ............................................. 12 hrs

A minimum of 12 credit hours from the three concentration areas. All four courses can be taken from one concentration area or any combination of the three concentration areas.

1) Industrial Systems Engineering Concentration

Human Factors and Ergonomics

- IMSE 543 Industrial Ergonomics .............................. 3 hrs
- IMSE 545 Vehicle Ergonomics I ................................ 3 hrs
- IMSE 546 Safety Engineering ................................. 3 hrs
- IMSE 548 Human Factors ........................................ 3 hrs
- IMSE 593 Vehicle Packaging Engineering .............. 3 hrs
- AENG 546 Vehicle Ergonomics II ............................ 3 hrs

Operations Research & Management Science

- IMSE 505 Applied Optimization .............................. 3 hrs
- IMSE 506 Stochastic Models .................................. 3 hrs
IMSE 514 Multivariate Statistics .........................3 hrs
IMSE 520 Managerial Decision Analysis ..................3 hrs
IMSE 521 Manufacturing Cost Estimation and Control 3 hrs
IMSE 555 Decision Support and Expert Systems..........3 hrs
IMSE 559 System Simulation ..............................3 hrs
IMSE 659 Advanced System Simulation ........................3 hrs

2) Integrated Design and Manufacturing
    Engineering Concentration

Manufacturing & Quality Systems Design

IMSE 513 Robust Design..................................3 hrs
IMSE 561 Total Quality Management .........................3 hrs
IMSE 567 Reliability Analysis ................................3 hrs
IMSE 581 Production Planning and Scheduling ...........3 hrs

Product Development and Concurrent Engineering

AENG 583 Project Management and Concurrent
    Engineering..................................................3 hrs
EMGT 580 Management of Product and Process Design 3 hrs

Advanced Manufacturing & Automation

IMSE 502 Computer-Integrated Manufacturing ............3 hrs
IMSE 532 Information for Manufacturing ..................3 hrs
IMSE 538 Intelligent Manufacturing .........................3 hrs
IMSE 5655 Supply Chain Management ........................3 hrs

3) Information Systems Concentration

Information Systems Management

IMSE 553 Software Engineering...........................3 hrs
IMSE 556 Database Systems ................................3 hrs
IMSE 557 Computing Networks and Communication ...3 hrs

Enterprise Information Systems

IMSE 532 Information for Manufacturing ...............3 hrs
IMSE 555 Decision Support and Expert Systems ..........3 hrs
IMSE 558 Electronic Commerce ............................3 hrs
IMSE 564 ABAP/4 Programming .............................3 hrs
IMSE 570 Enterprise Information Systems ................3 hrs
IMSE 5715 Modeling of Integrated Information Systems 3 hrs
IMSE 5725 Object Oriented Systems Design .............3 hrs
IMSE 574 IS Based Production Planning and Control ...3 hrs
IMSE 579 Software Integrated Manufacturing and Logistics Management ..................3 hrs

At least two graduate-level cognate courses for a minimum of six credit hours each in departments other than IMSE must be elected. The remaining credit hours may be selected with the approval of the graduate advisor.

With the approval of their graduate advisor, students may substitute a master’s thesis for no more than six credit hours of graduate coursework. Students choosing the thesis option are required to elect a minimum of 9 credit hours from the concentration electives, rather than the 12 credit hours stipulated above for the concentration areas. Students must complete 2 of the courses from one of the concentration areas.

Requirements for the Dual
Program for the MSE in
Industrial and Systems Engineering
and the Master of Business
Administration

The School of Management and the College of Engineering and Computer Science, through the Rackham School of Graduate Studies, offers an innovative dual degree program awarding both an MBA and a Master of Science in Engineering in Industrial and Systems Engineering degree (MBA & MSE-IS&E). The dual program requires 66 credit hours of specified coursework to earn both degrees.

This unique dual degree program has been carefully developed in direct response to an increasing need among employers in southeast Michigan, for professionals who are prepared for careers that require expertise in both technology and management.

This degree program is available both on campus and via the Internet.

Students who wish to pursue the dual MBA/MSE-I&SE degree must meet the entrance requirements of, and gain admission to, each unit independently-both Industrial and Systems Engineering (see Admission section under Requirements for the MSE in Industrial and Systems Engineering) and the School of Management (see School of Management Admission section in this Catalog). For further information, contact each department.

Specific Course Requirements

MBA Core Courses........................................27 hrs

Dual degree students may receive exemptions for required MBA core courses if they have had prior equivalent coursework, but must make up the credits by taking additional MBA Managerial Applications courses.

ACC 505 Developing and Interpreting Financial Information ..........................3 hrs
OB 510 Organizational Behavior ................................3 hrs
MKT 515 Marketing Management ...........................3 hrs
MIS 525 Computer and Information Systems ............3 hrs
LE 523 Legal Environment of Business ..................3 hrs
BE 530 Economic Analysis: Firm and Consumer .....3 hrs
BE 580 Economic Analysis: National and International ..................3 hrs
FIN 531 Financial Management I ........................3 hrs
BPS 535 Strategic Planning and Decision Making ......3 hrs

Dual degree students may receive exemptions for required MBA core courses if they have had prior equivalent coursework, but must make up the credits by taking additional MBA Managerial Applications courses.
MBA Managerial Applications Courses...6 hrs

Dual degree students are required to complete one course each from Group A and Group B.

Group A (choose one course)

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 555</td>
<td>Cost Management</td>
<td>3 hrs</td>
</tr>
<tr>
<td>OM 571</td>
<td>Global Operations Management</td>
<td>3 hrs</td>
</tr>
<tr>
<td>FIN 581</td>
<td>Financial Management II</td>
<td>3 hrs</td>
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</table>

Group B (choose one course)

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>OB 560</td>
<td>Management Skills Development</td>
<td>3 hrs</td>
</tr>
<tr>
<td>HRM 561</td>
<td>Human Resource Management</td>
<td>3 hrs</td>
</tr>
<tr>
<td>MKT 565</td>
<td>Advanced Marketing Management</td>
<td>3 hrs</td>
</tr>
<tr>
<td>MIS 575</td>
<td>Information Management</td>
<td>3 hrs</td>
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</table>

MBA Capstone Course...3 hrs

BPS 585 Managing Strategic Information and Change...3 hrs

Industrial & Systems Engineering Requirements...24 hrs

Core...12 hrs

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
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<tbody>
<tr>
<td>IMSE 505</td>
<td>Optimization</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 511</td>
<td>Design and Analysis of Experiments</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 514</td>
<td>Multivariate Statistics</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 580</td>
<td>Production Management</td>
<td>3 hrs</td>
</tr>
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Concentration...12 hrs

The four required courses may be taken from one concentration area, or any combination of the following three areas:

Area 2: Integrated Design and Manufacturing & Engineering Concentration

Manufacturing & Quality Systems Design

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSE 513</td>
<td>Robust Design</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 561</td>
<td>Total Quality Management and Six Sigma</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 567</td>
<td>Reliability Analysis</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 581</td>
<td>Product Planning and Scheduling</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

Product Development and Concurrent Engineering

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>AENG 583</td>
<td>Project Management and Concurrent Engineering</td>
<td>3 hrs</td>
</tr>
<tr>
<td>EMGT 580</td>
<td>Management of Product and Process Design</td>
<td>3 hrs</td>
</tr>
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Advanced Manufacturing & Automation

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSE 502</td>
<td>Computer-Integrated Manufacturing</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 532</td>
<td>Information for Manufacturing</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 538</td>
<td>Intelligent Manufacturing</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 5655</td>
<td>Supply Chain Management</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

Area 3: Information Systems Concentration

Information Systems Management

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSE 553</td>
<td>Software Engineering</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 556</td>
<td>Database Systems</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 557</td>
<td>Computing Networks and Communication</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

Enterprise Information Systems

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSE 532</td>
<td>Information for Manufacturing</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 555</td>
<td>Decision Support and Expert Systems</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 5585</td>
<td>Electronic Commerce</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 564</td>
<td>ABAP/4 Programming</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 570</td>
<td>Enterprise Information Systems</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 5715</td>
<td>Modeling of Integrated Information Systems</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 5725</td>
<td>Object Oriented System Design</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 574</td>
<td>IS Based Production Planning and Control</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 579</td>
<td>Software Integrated Manufacturing and Logistics Management</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

Electives...6 hrs

At least two graduate-level cognate courses for a minimum of six credit hours from departments other than IMSE must be elected.

The remaining credit hours may be selected with the approval of the graduate advisor.

With the approval of their graduate advisor, students may substitute a master’s thesis for no more than six credit hours. Students choosing the thesis option are required to elect a minimum of 9 credit hours from the concentration electives, rather than the 12 credit hours stipulated above for the concentration areas. Students must complete 2 of the courses from one of the concentration areas.
Requirements for the MSE in Information Systems and Technology

For general master’s degree requirements at the Rackham School of Graduate Studies, see Section 7:1 of the University of Michigan Bulletin Graduate Student Handbook. Specific requirements of the program are described below.

Admission

Admission to the program as a regular student requires a BS in engineering, a physical science, computer science, applied mathematics, business administration, or liberal arts earned from an accredited program with an average of B or better. An applicant with a lower GPA may be granted conditional/probationary admission consistent with Rackham guidelines. Each applicant will be required to present a complete transcript of prior college work. An entering student should have already completed at least a course each in calculus; probability and statistics; object-oriented programming in C++; data structures; and information systems analysis and design, respectively. Deficiencies in prerequisites may be made up after entering the graduate school; however, credits received in courses elected to make up the deficiencies do not count towards a degree.

Three letters of recommendation with at least one from someone familiar with the candidate’s academic performance are also required for admission.

Degree Requirements

The degree MS in IS&T requires a minimum of 30 credit hours.

Advanced Standing

Up to six graduate credit hours (grade of B or better) may be transferred from another accredited institution as specified in the Rackham School of Graduate Studies regulations. Students may transfer up to one-half (1/2) the minimum number of credit hours required for their master’s or professional degree from U-M/non-Rackham departments and programs (including Dearborn and Flint).

Specific Course Requirements

The program of study must satisfy the following distribution and course requirements:

Core courses…………………………………15 hrs
IMSE 557 Computer Networks and Data Communications…………………………3 hrs
or
CIS 527 Computer Networks…………………………3 hrs
IMSE 556 Database Management Systems………………3 hrs
or
CIS 556 Database Management System………………3 hrs

IMSE 570 Enterprise Information Systems………………3 hrs
IMSE 5715 Modeling of Integrated Systems………………3 hrs
IMSE 572 Object-Oriented Systems Design………………3 hrs
or
CIS 572 Object-Oriented Systems Design………………3 hrs

Courses in an area of specialization…………………9 hrs

A minimum of 9 credit hours from courses in one of the following two specialization areas:

Manufacturing Information Systems

At least 3 credit hours should be taken from the following courses:
IMSE 564 ABAP/4 Programming………………3 hrs
IMSE 574 IS Based Production and Control………………3 hrs
IMSE 579 Software Integrated Manufacturing and Logistics Management………………3 hrs

The remaining credits can be taken from any of the following:
IMSE 532 Information for Manufacturing Systems……3 hrs
IMSE 538 Intelligent Manufacturing………………3 hrs
IMSE 555 Decision Support and Expert Systems……3 hrs
or
CIS 555 Decision Support & Expert Systems………………3 hrs
IMSE 559 System Simulation………………3 hrs
IMSE 564 ABAP/4 Programming………………3 hrs
IMSE 565 Supply Chain Management………………3 hrs
IMSE 574 IS Based Production Planning and Control……3 hrs
IMSE 579 Software Integrated Manufacturing and Logistics Management………………3 hrs

Service Information Systems

At least 3 credit hours should be taken from the following courses:
EMGT 510 Managerial Finance and Economics………………2 hrs
and
IMSE 525 Finance and Economics Software Appl……………1 hr
EMGT 535 Marketing Management and Policy………………2 hrs
and
IMSE 526 Marketing Software Application………………1 hr
EMGT 541 Managerial Accounting………………3 hrs
and
IMSE 5275 Managerial Accounting Software Application1 hr
EMGT 545 Organization Behavior and Human Resource Management………………2 hrs
and
IMSE 5285 Human Resource Software Application……………1 hr
IMSE 564 ABAP4/Programming………………3 hrs
The remaining credits can be taken from any of the following courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMSE 555</td>
<td>Decision Support and Expert Systems</td>
<td>3 hrs</td>
</tr>
<tr>
<td>or</td>
<td>Decision Support and Expert Systems</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 555</td>
<td>Decision Support and Expert Systems</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 5585</td>
<td>Electronic Commerce</td>
<td>3 hrs</td>
</tr>
<tr>
<td>or</td>
<td>Electronic Commerce</td>
<td>3 hrs</td>
</tr>
<tr>
<td>EMGT 510</td>
<td>Managerial Finance and Economics</td>
<td>2 hrs</td>
</tr>
<tr>
<td>IMSE 525</td>
<td>Finance and Economics Software Application</td>
<td>1 hr</td>
</tr>
<tr>
<td>EMGT 535</td>
<td>Marketing Management and Policy</td>
<td>2 hrs</td>
</tr>
<tr>
<td>and</td>
<td>Marketing Software Application</td>
<td>1 hr</td>
</tr>
<tr>
<td>EMGT 541</td>
<td>Managerial Accounting</td>
<td>3 hrs</td>
</tr>
<tr>
<td>and</td>
<td>Managerial Accounting Software Application</td>
<td>1 hr</td>
</tr>
<tr>
<td>EMGT 545</td>
<td>Organization Behavior and Human Resource Management</td>
<td>2 hrs</td>
</tr>
<tr>
<td>IMSE 525</td>
<td>Human Resource Software Application</td>
<td>1 hr</td>
</tr>
<tr>
<td>IMSE 564</td>
<td>ABAP/4 Programming</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

Students with BA and/or MBA degrees can take higher level business courses with the appropriate labs to replace above listed EMGT courses per advisor approval.

Electives .................................................................................. 6 hrs

A minimum of 6 credit hours from courses in one of the following electives:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIS 537</td>
<td>Advanced Networking</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 563</td>
<td>Modeling of Computer-Based Systems</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 564</td>
<td>Principles of Organizational Information Systems</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 569</td>
<td>Advanced Client/Server Systems and Distributed Processing</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 576</td>
<td>Database Security</td>
<td>3 hrs</td>
</tr>
<tr>
<td>CIS 577</td>
<td>Software User Interface Design and Analysis</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 560</td>
<td>Data Warehousing and Data Mining</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 562</td>
<td>Computer and Network Security</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 564</td>
<td>ABAP/4 Programming</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

Other CIS, ECE, IMSE and business graduate courses may be taken per advisor approval.

A thesis may be substituted for six hours of electives, on approval by the program director.

Requirements for the MSE in Manufacturing Systems Engineering

General requirements for the master's degree are presented in the University of Michigan Bulletin Graduate Student Handbook:

“Information for Graduate Students and Application for Admission.” Specific requirements are outlined below.

Admission

Admission to the program as a regular student requires a BS degree in Engineering or a physical science. Students with a degree in computer science or engineering can be admitted provisionally and must take certain undergraduate courses to pave the way for graduate work. Undergraduate degrees must be from an accredited program, and for regular admission must be with an average of B or better. Each applicant should present two complete, official transcripts of all prior college work. In special cases, it may be necessary for applicants to schedule an interview with the program director to review completeness of undergraduate preparation and other qualifications.

In addition to the above admissions requirements, the following are also required.

1) The entering student must have a background in probability and statistics. Otherwise, a student will be required to take an undergraduate-level statistics course (equivalent to IMSE 317) within the two semesters after his admission. No credit will be given for this course.

2) The entering student must have a background in engineering materials. Otherwise, a student will be required to take either ENGR 250 (or equivalent) as a prerequisite to AENG 587 or ECE 385 (or equivalent) as a prerequisite to ECE 539. No credit will be given for the undergraduate courses.

Degree Requirements

The MSE in Manufacturing Systems Engineering requires a minimum of 30 credit hours.

The accumulated grade point average in the program must be at least a B to receive the degree. Further, a grade below B in any course will not be accepted for graduate credit unless, after review of the credit circumstances, the acceptance of the credit is recommended by the program director. No more than one B- will be allowed under any circumstances.

Advanced Standing

Up to six graduate credit hours (grade of B or better) may be transferred from another accredited institution as specified in the Rackham School of Graduate Studies regulations. Students may transfer up to one-half (1/2) the minimum number of credit hours required for their master's or professional degree from U-M/non-Rackham departments and programs (including Ann Arbor, Dearborn and Flint).

Specific Course Requirements

Core ...................................................................................... 15 hrs

The following courses are required:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>AENG 587</td>
<td>Automotive Manufacturing Processes</td>
<td>3 hrs</td>
</tr>
<tr>
<td>or</td>
<td>Automotive Manufacturing Processes</td>
<td>3 hrs</td>
</tr>
<tr>
<td>ECE 539</td>
<td>Production of Electrical Products</td>
<td>3 hrs</td>
</tr>
<tr>
<td>IMSE 580</td>
<td>Production Management</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>
EM 580  Management of Product and Process Design .................................................. 3 hrs
IMSE 561 Total Quality Management and Six Sigma ........................................... 3 hrs
IMSE 5215 Program Budget, Cost Estimation and Control ............................................... 3 hrs

**Electives** .................................................................................................................................................... 15 hrs

Select any five courses from the list below:

AENG 590 Design and Manufacturing for Environment ........................................ 3 hrs
ECE 516 Electronic Materials and Processing .......................................................... 3 hrs
EM 541 Financial and Managerial Accounting ....................................................... 3 hrs
IMSE 5025 Computer Aided Process Design and Manufacturing ................................. 3 hrs
IMSE 538 Intelligent Manufacturing ........................................................................... 3 hrs
IMSE 5655 Supply Chain Management ..................................................................... 3 hrs
IMSE 588 Building High Performance Learning Organization ........................................ 3 hrs
ME 582 Injection Molding ............................................................................................ 3 hrs
ME 585 Cast Metals in Engineering Design ............................................................... 3 hrs
ME 586 Materials Consideration in Manufacturing ................................................ 3 hrs
ME 587 Automotive Composites ................................................................................ 3 hrs
HRM 561 Human Resource Management ................................................................. 3 hrs
OM 571 Global Operations Management ................................................................... 3 hrs
OB 510 Organization Behavior .................................................................................... 3 hrs

A thesis may be submitted for six hours of electives, on approval by the program director. The thesis work may be a company project if it meets certain requirements.

**Requirements for the MSE in Mechanical Engineering**

A candidate for the Master of Science in Engineering (Mechanical Engineering) must meet the requirements for the Bachelor of Science in Engineering (Mechanical Engineering) degree at this campus, or the essential equivalent to these requirements. The candidate must then complete at least 30 credit hours of graduate work approved by the program advisor/graduate advisory committee with an average grade of at least B covering all courses elected. These 30 credit hours must include two graduate-level cognate courses for a minimum of three credit hours each in a department other than Mechanical Engineering. Students are not permitted to elect more than two courses outside Mechanical Engineering.

Students who have not fulfilled the requirements of the bachelor's degree in Mechanical Engineering should communicate with the department graduate committee regarding the requirements to be met.

Within the broad framework given above, the student must elect courses to fulfill the following distribution requirements:

1) ME 518, Advanced Engineering Analysis (must be taken by the second semester after enrollment), 3 credit hours
2) Two courses (6 hrs) from Group A
3) Two courses (6 hrs) from Group B
4) One mathematics or math-related cognate course (3 hrs) (i.e. IMSE 510, IMSE 511, or any 500 level MATH or STAT course)
5) One Non-ME 500 level cognate course (3 hrs)
6) Three ME graduate courses as Electives (9 hrs)
7) Thesis is optional. Maximum 6 hrs in lieu of two ME electives

**Group A: Mechanical Sciences**

ME 510  Finite Element Methods ................................................................. 3 hrs
ME 512  Structural Analysis .................................................................................. 3 hrs
ME 514  Advanced Stress Analysis ....................................................................... 3 hrs
ME 515  Advanced Mechanics of Solids ............................................................... 3 hrs
ME 516  Special Topics in Mechanical Engineering ........................................... 3 hrs
ME 519  Basic Computer Methods in Engineering .............................................. 3 hrs
ME 540  Mechanical Vibrations ............................................................................ 3 hrs
ME 542  Advanced Dynamics ................................................................................ 3 hrs
ME 543  Vehicle Dynamics .................................................................................... 3 hrs
ME 545  Acoustics and Noise Control .................................................................... 3 hrs
ME 547  Automotive Power Train Systems I ......................................................... 3 hrs
ME 548  Automotive Power Train Systems II ......................................................... 3 hrs
ME 554  Theory of Gearing and Applications ..................................................... 3 hrs
ME 556  Stress and Strength Considerations in Design ....................................... 3 hrs
ME 558  Fracture and Fatigue Considerations in Design ....................................... 3 hrs
ME 560  Experimental Methods in Design ......................................................... 3 hrs
ME 563  Advanced Instrumentation and Control .................................................. 3 hrs
ME 565  Mechatronics ............................................................................................ 3 hrs
ME 567  Reliability Consideration in Design ......................................................... 3 hrs
ME 580  Advanced Engineering Materials ............................................................. 3 hrs
ME 581  Materials for Manufacturing .................................................................... 3 hrs
ME 582  Injection Molding ...................................................................................... 3 hrs
ME 583  Mechanical Behavior of Materials ............................................................ 3 hrs
ME 584  Mechanical Behavior of Polymers and Ceramics ....................................... 3 hrs
ME 585  Cast Metals in Engineering Design ........................................................... 3 hrs
ME 586  Materials Consideration in Manufacturing ................................................ 3 hrs
ME 587  Automotive Composites ............................................................................ 3 hrs
ME 588  Production of Mechanical Products .......................................................... 3 hrs
ME 589  Composite Materials ................................................................................ 3 hrs
ME 591  Degradation of Materials .......................................................................... 3 hrs
ME 600  Study or Research in Selected Mechanical Engineering Topics .................. 1-3 hrs
ME 601  Experimental Research in Mechanical Engineering .................................. 1-3 hrs
ME 602  Guided Study in Mechanical Engineering .............................................. 1-3 hrs
ME 699  Master's Thesis ......................................................................................... 1-6 hrs

**Group B: Thermal/Fluid Science Courses**

ME 516  Special Topics in Mechanical Engineering .............................................. 1-3 hrs
ME 521  Dynamics and Thermodynamics of Compressible Flow .......................... 3 hrs
ME 522  Advanced Fluid Mechanics ....................................................................... 3 hrs
ME 525  Computational Fluid Mechanics and Heat Transfer .............................. 3 hrs
ME 531  Statistical Thermodynamics ....................................................................... 3 hrs
ME 532  Combustion Processes .............................................................................. 3 hrs
ME 535  Advanced Thermodynamics ....................................................................... 3 hrs
ME 537  Automotive Air Conditioning ..................................................................... 3 hrs
ME 571  Conduction Heat Transfer .......................................................................... 3 hrs
ME 572  Convection Heat Transfer .......................................................................... 3 hrs
ME 573  Radiative Transport of Heat ......................................................................... 3 hrs
ME 596  Internal Combustion Engines I .................................................................. 3 hrs
ME 597  Internal Combustion Engines II ................................................................ 3 hrs
ME 598  Engine Emission ....................................................................................... 3 hrs
ME 600  Study or Research in Selected Mechanical Engineering ............................ 1-3 hrs
The accumulated grade average in the master’s program must be at least a B to receive the degree. Further, a grade below B in any course will not be accepted for graduate credit unless, after review of the credit circumstances, the acceptance of the credit is recommended by the graduate committee.

In order to be admitted as an applicant for the master’s degree, students must satisfy the graduate committee of the department that they have completed preparation equivalent to the undergraduate degree requirements in this department and that they are prepared to undertake the advanced courses. In general, the applicants must have maintained B averages as undergraduates. Students will not be given graduate credit for courses equivalent to any which they have been required to take for the bachelor’s degree or for courses required in the undergraduate curriculum of this department.

Requirements for the MS in Software Engineering

Students pursuing the MS degree in Software Engineering must meet the general requirements of the Rackham School of Graduate Studies. Additional requirements for the program are described below.

This degree program is available both on campus and via the Internet.

Admission

In addition to meeting the Rackham requirements for admission, applicants for the MS in Software Engineering are required to meet the following requirements:

1) A bachelor’s degree from an accredited institution with a grade point average of B or better. An applicant with a lower GPA may be granted conditional or probationary admission consistent with Rackham guidelines. Preference will be given to applicants with backgrounds in computing, engineering, mathematics, or science.

2) Satisfactory completion of the following:
   a) General Prerequisites:
      Calculus (1 year)
      Linear Algebra (1 course)
   b) Software Engineering Prerequisites:
      Probability and Statistics, (1 course)
      Programming Language, (preferably C/C++ or Visual Basic)
      Computer Architecture
      Computer Networks
      Databases
      Operating Systems

   Note: Students may be admitted provisionally to make up deficiencies in items 2a or 2b. The software engineering prerequisites may be completed after admission into the program on a “conditional lack of preparation” basis or substituted by two or more years of full-time professional experience in sizeable software development projects. The program committee will determine any decision on substitutions. The applicant will be required to complete the appropriate courses within two years from the date of entrance. Prerequisite courses will not earn credit towards the MS – Software Engineering degree.

3) Three letters of recommendation, with at least one from a person familiar with the candidate’s academic performance, are required. Copies of the applicant’s undergraduate transcripts and degree must be submitted.

Degree Requirements

The MS degree in Software Engineering is a 30-credit hour graduate program. Students admitted to the program are required to complete the approved graduate courses with an average of B (5/9) or better. The program of study consists of core courses, elective concentrations, a thesis/project requirement (part of which may be satisfied by additional coursework), and electives.

Advanced Standing

Up to six graduate credit hours (grade of B or better) may be transferred from another accredited institution as specified in the Rackham School of Graduate Studies regulations. Students may transfer up to one-half (1/2) the minimum number of credit hours required for their master's or professional degree from U-M/non-Rackham departments and programs (including Dearborn and Flint).

Specific Course Requirements

The 30 semester hours of required coursework are distributed as follows:

Core Courses .......................................................... 15 hrs
Application courses ................................................. 9 hrs
Project/Thesis option .................................................. 6 hrs

I. Required Core Courses ........................................... 15 hrs

   CIS 553 Software Engineering ................................. 3 hrs
   CIS 565 Software Quality Assurance ......................... 3 hrs
   CIS 576 Software Architecture and Design Patterns ....... 3 hrs
   ECE 554 Embedded Systems ................................... 3 hrs
   ECE 574 Advanced Software Techniques in Engineering Applications ........................................ 3 hrs

II. Application Courses ............................................. 9 hrs

   Choose three courses from one of the following application areas

Web Technology

   CIS 525 Web Technology .......................................... 3 hrs
   CIS 562 Web Information Management ....................... 3 hrs
   CIS 590 Service-Oriented Computing ......................... 3 hrs

Game Design

   CIS 515 Computer Graphics ..................................... 3 hrs
   CIS 552 Computer Animation .................................... 3 hrs
III. Thesis/Project Option

A student must choose one of the two options:

(i) Project: For this option, a student must take the project course (CIS/ECE 695) for three credits and an additional course from the following: CIS 505, 515, 525, 527, 550, 552, 556, 562, 575, 577, 586, ECE 537, 552, 553, 576, 579, 583, 585.

(ii) Thesis: A student must take CIS/ECE 699 for six credits.

Master’s Thesis Committee

A Master’s thesis committee consists of three full-time CIS or ECE faculty members, one of whom is the thesis advisor and requires the approval of the Software Engineering graduate committee. When deemed appropriate, the chair of the graduate committee may request the presence of an additional member from outside CIS or ECE.

ADDITIONAL ACADEMIC INFORMATION

Academic Advising

The graduate student's program of study is arranged through individual counseling to meet career objectives based on prior preparation. The student will be given the opportunity to indicate an area of interest and will be advised by a graduate advisor.

New and continuing students are encouraged to take advantage of scheduled early registration days.

Admission to the Programs at UM-D

In general, admission to the graduate degree programs is limited to students who have completed their undergraduate work in an ABET-accredited institution with an average grade not less than B. However, in order that each qualified student be granted admission, each application is considered individually by the graduate committee of the program. Specific deficiencies in undergraduate preparation do not necessarily prevent enrollment in the programs, but the work necessary to fill such deficiencies cannot be used to meet the credit hour requirements for the graduate degree.

Students admitted to graduate school and contemplating a master’s degree should at the earliest opportunity, certainly before registering for their first course, apply to the graduate advisor for assistance in planning their programs.

Application for admission forms may be obtained from the respective departments of the College of Engineering and Computer Science, University of Michigan-Dearborn, Dearborn, Michigan 48128-2406 or the Office of Graduate Student Services, Rackham School of Graduate Studies, University of Michigan, Ann Arbor, Michigan 48109-1070. Such applications are individually reviewed by the departmental graduate committee in question. The resulting recommendation is transmitted to the graduate school, which communicates with the applicant. Complete application information including fees is available at: http://www.umd.umich.edu/grad_admissionsreq/

The applicant should arrange for certified copies of previous academic records to be sent directly to the department. The completed application form, and official transcripts showing all the college and university work completed, should be received in the Rackham School of Graduate Studies in Ann Arbor or the department not later than the following dates:

<table>
<thead>
<tr>
<th>Semester and Semester Type</th>
<th>For</th>
<th>By</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall Semester (beginning approximately September 1)</td>
<td>August 1</td>
<td></td>
</tr>
<tr>
<td>Winter Semester (beginning approximately January 1)</td>
<td>November 15</td>
<td></td>
</tr>
<tr>
<td>Spring-Summer Semester (beginning approximately May 1)</td>
<td>April 1</td>
<td></td>
</tr>
</tbody>
</table>

International students should apply four to six months before the term begins.

Tentative Admission

Applicants deficient in some of the admission requirements of the graduate school or of the department or program of specialization, who nevertheless show promise of being able to satisfy these requirements, may be granted tentative admission for a limited period to enable them to make up these deficiencies. Any credits earned under tentative admission will be considered for possible use as graduate credits only when the student has achieved regular admission status.

1) Graduates of an unaccredited institution may be granted tentative admission on the condition that they complete one semester of 12 credit hours of additional qualifying work at the University of Michigan before completing the normal degree requirements.

2) Graduates of foreign or American institutions whose previous preparation cannot be adequately evaluated, and graduates who received any part of their qualifying education more than seven years before their application to the graduate school, may be granted tentative admission. Such applicants are permitted one semester of study before regular admission and may be required to complete additional qualifying work.
beyond the normal degree requirements. A second semester of study may be approved for these applicants by the department or program chairperson (or designate).

4) Undergraduate students in their final year of work toward a bachelor's degree may be granted tentative admission on the basis of academic credentials to date and pending the receipt of official transcripts indicating satisfactory completion of all coursework and award of the bachelor's degree.

5) Undergraduate students at the University of Michigan who at the beginning of a full semester are within six credit hours or at the beginning of a half-semester are within four credit hours of graduation may be granted tentative admission to the graduate school for that term or half-term.

Grading

The method of grading graduate students conforms in general to that used in undergraduate colleges. No student will be given a higher grade in a course because of the fact that the student is a graduate student. Although a B average is required, no greater leniency in grading on that account is expected, even in courses taken only by graduate students. Hours of D and E grades are used to determine the average grade for each student, but are not included in the number of hours required for the degree. Whenever such fineness of discrimination is possible, plus and minus signs are affixed to the letter grades. If at the end of a term the student's work in a course is not complete, a grade of I (for incomplete) may be used. Such a grade may be changed to a letter grade only if the incomplete work is made up by the end of the second full term beyond the term for which the grade of I was given. If the I has stood for the two full succeeding terms, credit can be earned only by retaking the course. The record of each student will carry a cumulative total of credit hours for which the grade of I has been made up, although the grade point average will be based on hours of completed work. Departments will periodically be furnished with listings of students with grades of I outstanding. The letter S (satisfactory), if warranted, may be used to report progress on these. This grade is not used in determining averages.

Because of the greater maturity and generally shorter programs of graduate students, it is assumed that their performance in mixed classes will on the average be better than that of undergraduates. Instructors also should expect more substantial work from graduate students. The process of grading graduate students in mixed classes should not, however, reflect these assumptions, i.e., these students should be given marks that indicate their standing in the class as a whole. No marks below C- carry credit points for graduate students.

Grade averages are computed according to the numerical table of honor points below:

\[ A+ = 9 \text{ pts.} \quad B+ = 6 \text{ pts.} \quad C+ = 3 \text{ pts.} \quad D, E = 0 \text{ pts.} \]
\[ A = 8 \text{ pts.} \quad B = 5 \text{ pts.} \quad C = 2 \text{ pts.} \]
\[ A- = 7 \text{ pts.} \quad B- = 4 \text{ pts.} \quad C- = 1 \text{ pt.} \]

Course Descriptions

The following lists include all courses normally offered at UM-D. However, not all courses are offered every year and periodically courses are added and deleted. For details, students should consult the Schedule of Classes for each term.

AUTOMOTIVE ENGINEERING (AENG)

AENG 500 Automobile: An Integrated Syst
3.000 Credits

Factors external to engineering such as markets, financing, and sales; the customers and their perceptions as influenced by marketing and performance; volume markets; international. An abe of engineering factors in all the components and sub-systems areas and in the plant, labor, and supplies area. Vehicle characteristics and dynamic interactions.

AENG 502 Modeling of Automotive Systems
3.000 Credits
Prerequisite(s): ME 265 or ME 345

This course will first introduce systems modeling approach and then develop mathematical models for ride, vibration, handling control, etc. of automobiles. The models will then be used to examine the design and performance of an automobile from a systems point of view. (F, YR).

AENG 505 Digital Systems & Microprocessors
3.000 Credits

Introduction to modern digital computer logic. Numbers and coding systems; Boolean algebra with applications to logic systems; combinational and sequential logic design; examples of digital logic circuits; simple machine language programming; microprocessors-programming, input/output, interrupts, and system design. (Not open to students with EE/ECE degree.)

AENG 510 Vehicle Electronics I
3.000 Credits
Prerequisite(s): ECE 305

Semiconductor diodes, junction transistors, FETS, rectifiers and power supplies, small signal amplifiers, biasing considerations, gain-bandwidth limitations, circuits models, automotive applications and case studies. (Not open to students with EE/ECE degree.)

AENG 534 Fundmntls of Thermal/Fluid Sci
3.000 Credits

Thermodynamics with emphasis on first and second laws; gas mixtures; introduction to cycles. Kinetics and dynamics of fluid flow; conservation laws of momentum and energy; flow and friction in conduits. Mechanism of heat transfer; introduction to convection and radiative heat transfer. (Not open to students with ME degree.)

AENG 541 Intro to Automotive Dynamics
3.000 Credits

An introduction to dynamics and vibrations. Overview of dynamics and vibration of automotive components and suspension systems. Automotive maneuvering and vehicle response. (Not open to students with ME degree.)

AENG 545 Vehicle Ergonomics I
3.000 Credits
Prerequisite(s): IMSE 442

Course Descriptions

The following lists include all courses normally offered at UM-D. However, not all courses are offered every year and periodically courses are added and deleted. For details, students should consult the Schedule of Classes for each term.

AENG 546 Vehicle Ergonomics II
3.000 Credits
Prerequisite(s): AENG 545

This course covers advanced human factors engineering and ergonomics topics related to incorporation and integration of new display, information, lighting and sensor technologies to improve driver convenience, performance, safety, and to reduce driver distractions. The students will learn new evaluation methodologies, driver performance models, and use research equipment to measure driver performance, and evaluate usability issues. Some advanced topics to be covered include: driver workload, evaluation and design of new in-vehicle devices, advanced vehicle lighting, and driver vision systems, models to predict and evaluate field of view, target detection, disability and discomfort glare, legibility, etc. Three lecture hours including laboratory projects and demonstrations. Prerequisite: Graduate standing. (W).

AENG 547 Automotive Powertrains I
3.000 Credits
Prerequisite(s): ME 265

Topics in kinematics and dynamics including engine output and balance; mechanisms and machine theory. Force analysis and design of gears and shaft systems. Analysis of planetary gear trains. Design and analysis of automotive gear boxes.

AENG 550 Design of Automotive Chassis and Body
3.000 Credits

This course provides a systems approach to the design of automotive chassis and body components and examines the influence of their design on the overall structural performance of the automobile. Design issues related to structural rigidity, ride comfort, safety and crash-worthiness, durability and assembly are covered. Applications of advanced materials and joining techniques are discussed. Analytical tools used in automotive structural design are also discussed.

AENG 551 FEM in Auto Structure Design
3.000 Credits
Prerequisite(s): ME 345 and ME 3601

This course is designed to introduce the applications of finite element method in automotive structure design. It includes specific design examples of vehicle NVH and durability with commercial pre-processor and FEA solver. The course also provides theoretical knowledge of FEA and vehicle design.

AENG 555 Vehicle Stability & Control
3.000 Credits
Prerequisite(s): ME 345 and ME 442

Introduction to static and dynamic stability characteristics of vehicles. Study on directional vehicle responses and stability in small disturbance maneuver. Design, numerical simulation, and analysis of vehicle control systems (ABS, active suspension, and yaw stability). Prerequisite: Dynamics (ME 345), Control Systems Design and Analysis (ME 442) or equivalent.

AENG 581 Materials Sel in Auto Design
3.000 Credits

This course develops an understanding of the properties of modern engineering materials and explains the role of the materials selection process in product design, development, and manufacturing. Materials selection/design problems and case studies involving automotive and other commercial products are discussed. The role of environmental regulations, societal pressures and customer wants on the selection of alternate materials is discussed. (YR)

AENG 582 Materials I
3.000 Credits

Mechanical behavior of engineering materials such as metals, ceramics, glasses, polymers, and composites. In the metals area, emphasis will be on phase diagrams, transformations, light alloys, carbon steels, alloy steels, and forming and joining of metals.

AENG 583 Project Mgmt and Concurr Eng
3.000 Credits
Prerequisite(s): IMSE 317

Project management emphasis including project scope management, time management, cost management, quality management, human resource management, etc. Concurrent engineering and project leadership. Applications to automotive projects using Superproject computer package.

AENG 584 Lightweight Automotive Alloys
3.000 Credits

This course introduces structure-processing-property relationships in the lightweight automotive alloys that are candidates for automotive applications such as aluminum, titanium, and magnesium. Metal matrix composite and intermetallic materials are also discussed. Emphasis will be placed on the processing and design of these materials in future automotive applications. (YR).

AENG 585 Ceramics for Auto Applications
3.000 Credits

This course will present physical, thermal and mechanical properties of structural ceramics, ceramic coatings and ceramic matrix composites. Design and processing issues for these materials are emphasized. Automotive applications of ceramics are discussed. Thermoelectric and other propulsion materials are also discussed. (YR).

AENG 586 Design & Mfg: Ltwt Auto Mat
3.000 Credits
Prerequisite(s): AENG 581 and AENG 587

This course will address the design issues and manufacturing considerations for various lightweight automotive structural
materials. Design issues will include stiffness, fatigue, vibrations, dent resistance, crush resistance, etc. Methods of producing lightweight automotive structures are discussed. Design for manufacturing, assembly, disassembly and recycling are emphasized. (YR).

AENG 587  Automotive Manuf Processes
3.000 Credits
Manufacturing processes, including casting, forging, forming, machining, molding, etc., are examined specifically in the context of their applications in the automotive industry. Quality control and techniques, process selection and methods are emphasized.

AENG 588  Design&Manufac for Environment
3.000 Credits
This is a course focused on the effects of product design and manufacturing on the environment, with special emphasis on automobiles. The fundamental principles of life cycle engineering will be introduced. The importance of environmental improvement will be considered. Design and material selection for recycling, reuse and disposal will be illustrated. Furthermore, it will cover the elementary relationships between design and manufacturing for the development of future environmentally friendly vehicles.

AENG 590  Selected Topics
1.000 TO 3.000 Credits
Individual or group study of an automotive systems engineering topic of contemporary interest.

AENG 596  Internal Combustion Engines I
3.000 Credits
Prerequisite(s): ME 330
Comparison of several forms of internal combustion engines including Otto and diesel-type piston engines; performance parameters and testing; thermodynamic cycles and fuel-air cycles; combustion in SI and Diesel engines; charge formation and handling; ignition; elements of exhaust emissions. (Not available to students with ME 496 or equivalent background.)

AENG 598  Energy Sys for Auto Vehicles
3.000 Credits
Prerequisite(s): ME 496 or AENG 596
This course will discuss the current and future energy systems for automotive vehicles. Topics include liquid and gaseous fuels, direct energy conversion systems and fuel cells. Characteristics of various energy systems are discussed with respect to their performance, cost, reliability and environmental concerns. Fuel cell analysis and design is covered in detail. (W, AY).

AENG 698  Capstone Proj(Case Stud/Design)
3.000 TO 6.000 Credits
Individual or team design or case study of interest to the students. Topics may be chosen from any of the areas of automotive engineering. The student (or the team) will submit a project report and give an oral presentation at the end of the second term. The project spans two terms. (Permission of advisor required before registration.)

AENG 699  Master's Thesis
3.000 TO 6.000 Credits
Research for master's thesis under the direction of a faculty member. (Permission of advisor required.)

COMPUTER & INFORMATION SCIENCE (CIS)

CIS 505  Algorithm Analysis and Design
3.000 Credits
Prerequisite(s): CIS 350
This course investigates how to design efficient algorithms. Topics covered include: asymptotic analysis, average-case and worst-case analysis, recurrence analysis, amortized analysis, classical algorithms, computational complexity analysis, NP-completeness, and approximation algorithms. In addition, the course investigates approaches to algorithm design including: greedy algorithms, divide and conquer, dynamic programming, randomization, and branch and bound.

CIS 510  Computer Interfacing
3.000 Credits
Prerequisite(s): CIS 310
This course covers fundamentals of computer interfacing to the external world through the following: parallel and serial interfaces, timers, interrupts, Uart, and Duart. Programming aspects will be emphasized. Knowledge of an assembly language required. (YR).

CIS 515  Computer Graphics
3.000 Credits
Prerequisite(s): (CIS 350 or IMSE 350 or CCM 350) and ( MATH 217 or MATH 227 ) and ( MATH 205 or MATH 215 )
Basic geometrical concepts, graphics primitives, two-dimensional transformations, segmented files, windowing and clipping, camera models, and 3-D viewing transformations.

CIS 525  Web Technology
3.000 Credits
Prerequisite(s): CIS 553*
This course deals with the study of the technologies used to design and implement multimedia web sites. Topics include web servers, HTML, CGI, scripting languages, Java applets, back-end database connectivity, web security, multimedia, XML, web services,.NET, semantic web. (YR).

CIS 527  Computer Networks
3.000 Credits
Prerequisite(s): CIS 450 or IMSE 450 or ECE 478
To study the technical and management aspects of computer networks and distributed systems. Topics include:
communication hardware, communication protocols, network architectures, local area networks, distributed database systems. Case studies and research project will be assigned for additional insight.

CIS 537  Advanced Networking
3.000 Credits
Prerequisite(s): CIS 427 or CIS 527

Performance models in networking, analysis of ARQ and MAC protocols, routing algorithms, flow and congestion control. All of the above topics should be covered in depth. The approach should be rigorous.

CIS 544  Computer and Network Security
3.000 Credits
Prerequisite(s): CIS 450 or IMSE 450 or ECE 478

The course will provide a broad spectrum introduction of the fundamental principles of computer and network security. Topics will include security policies, models and mechanism for confidentiality, integrity and availability, access control, authorization, cryptography and applications, threats and vulnerabilities in computer networks, key management, firewalls and security services in computer networks.

CIS 547  Advanced Topics in Networking
3.000 Credits
Prerequisite(s): CIS 537

Covers one or more advanced topics in the area of networking. For example the instructor may choose to cover wireless network or ISDN or multimedia networking. Topic should be covered with a depth for graduate students and canonical research in the area should be introduced.

CIS 550  Obj-Oriet Prog and Its Applic
3.000 Credits
Prerequisite(s): CIS 350

This course covers advanced programming techniques using objects and classes, including programming windows, menus, toolbars, and drawing in windows. Further applications include distributed computing in which client and server communicate with each other by sending messages.

CIS 551  Advanced Computer Graphics
3.000 Credits
Prerequisite(s): CIS 451


CIS 552  Computer Animation
3.000 Credits
Prerequisite(s): CIS 451

This course covers the fundamentals of computer animation, animation systems and animation hardware. As applications, car crashes, robot motion, and manufacturing systems will be simulated and virtual reality will be introduced.

CIS 553  Software Engineering
3.000 Credits
Prerequisite(s): CIS 375

Program design methodologies; control flow and data flow in programs; program measurement. Software life cycle; large program design, development, testing, and maintenance. Software reliability and fault tolerance. Evolution dynamics of software. (YR).

CIS 554  Info Sys Analysis and Design
3.000 Credits
Prerequisite(s): CIS 350

To analyze the information needs of organizations and design suitable information systems to meet their needs. Topics include: systems analysis and design techniques related to analyzing and determining information needs, feasibility studies, designing input/processing/output systems, and hardware/software development and evaluation.

CIS 555  Dec Support and Expert System
3.000 Credits
Prerequisite(s): CIS 350 or IMSE 350 or CCM 350

To study the application of artificial intelligence in building decision support and expert systems for management and other applications. Topics include: fundamentals of artificial intelligence, knowledge representation and knowledge processing, tools for building expert systems and decision support system design. (YR).

CIS 556  Database Systems
3.000 Credits
Prerequisite(s): CIS 350 or IMSE 350 or CCM 350

An examination of the database approach to data management in computer systems. Topics include database fundamentals, the relational, network, and hierarchical database models, normalization of data, distributed databases, and current trends and issues. (YR).

CIS 560  Electronic Commerce
3.000 Credits
Prerequisite(s): CIS 564 and IMSE 571

This course examines how new information technologies and networks affect the exchange of goods and services between buyers and sellers in firms. What are economics of different electronic commerce models for firms? The course combines critical evaluation of business strategies with hands-on experience in building supporting electronic commerce systems utilizing electronic data interchange (EDI) software. (YR).

CIS 562  Web Information Management
3.000 Credits
Prerequisite(s): CIS 556* or CIS 421*

This course provides an in-depth examination of advances in web information management, retrieval and applications.
Topics covered include: web interfaces to databases, XML standards, web database design, web database architectures, web query languages, web data restructuring, web information integration, semantic web and ontologies, and web mining. (YR)

**CIS 563**  
**Modeling of Computer-based Sys**  
3.000 Credits

The purpose is to expose the students to modeling and simulation concepts and methodologies to use modeling and simulation as a tool for both the analysis of systems and the development of their information systems support.

**CIS 564**  
**Prin of Organizational Inf Sys**  
3.000 Credits

The purpose of this course is to provide a foundation for the analysis, design and implementation of enterprise information systems. Topics include systems and organization theories, and information systems planning and evaluation. Students will be also introduced to various systems development life cycle phases of an enterprise information system. Students will acquire an understanding of the flow of information (forecasts, financial, accounting and operational data) within an enterprise and the factors that should be considered in designing an integrated enterprise information system. This includes all systems in the business cycle from revenue forecasts, production planning, inventory management, logistics, manufacturing, accounts payable, sales, accounts receivable, payroll, general ledger and report generation. Specifications for some of these systems will be developed utilizing ERP software such as SAP R/3 applications development software suite. (YR).

**CIS 565**  
**Software Quality Assurance**  
3.000 Credits  
Prerequisite(s): CIS 553

This course focuses on the processes, methods, and techniques for developing quality software, and maintaining quality software. Software testing processes at the unit, module, subsystem, and systems levels are discussed. Testing methods covered include: automatic and manual generation of test data, static vs. dynamic analysis, functional testing; inspections; and reliability assessment.

**CIS 566**  
**Software Arch and Des Patterns**  
3.000 Credits  
Prerequisite(s): CIS 375*

A design pattern is a catalogued solution that has been applied and tested in multiple situations to produce well-designed reusable object-oriented software. This course covers both architectural and software design patterns in theory and in practice, with various applications. The course will end with a case study and design exercise demonstrating identification and utilization of architectural design patterns in real world application. The students will test their understanding by completing three projects utilizing popular design patterns and a term project utilizing multitude of patterns. Class presentation of published advanced patterns may be required.

**CIS 568**  
**Data Mining**  
3.000 Credits  
Prerequisite(s): ECE 479 or CIS 479

Advances in computer information systems, machine learning, statistics, and intelligent systems and methodologies for the automatic discovery of knowledge from large high-dimensional databases. This course also uses engineering development tools such as neural networks, fuzzy logic, and genetic algorithms.

**CIS 571**  
**Web Services**  
3.000 Credits  
Prerequisite(s): CIS 350 or ECE 370

A study of the major concepts and techniques for enabling web service-based interactions on the web. The objective is to familiarize students with the recent trends in industry and academia to address web service research issues. The course will address various aspects of web services, including the reference model for web services (UUDI, SOAP, WSDL), web service composition, semantic web services, security/privacy issues in web services and an overview of web service standards (BPEL4WS, WS-Security, etc). Students will participate in a major project.

**CIS 572**  
**Object Oriented Systems Design**  
3.000 Credits

Students will be introduced to fundamental concepts and methods of object design and development. Topics that will be covered include object database concepts, data models, schema design (conceptual schema and physical schemas), query languages, physical storage of objects and indexes on objects, version management, schema evolution and systems issues such as concurrent control and recovery from failure. For application programming, a programming language such as C++ will be used for database design and query language. (YR).

**CIS 574**  
**Compiler Design**  
3.000 Credits  
Prerequisite(s): CIS 350 or CIS 3501 or IMSE 350 or (ECE 370 and MATH 276)

Lexical analysis and symbol table; syntactical analysis of expressions and statements; error detection; translation into intermediate code and its correctness. (YR).

**CIS 575**  
**Software Engineering Mgmt**  
3.000 Credits  
Prerequisite(s): CIS 553

Quantitative models of the software lifecycle; cost-effectiveness; uncertainty and risk analysis; planning and modeling a software project; software cost estimation (COCOMO, Function points); software engineering metrics; software project documentation. Special emphasis on emerging software process standards such as the Capability Maturity Model of the Software Engineering Institute, and other international ones.

**CIS 5761**  
**Adv Topics in Inf Sci**  
3.000 Credits

Advanced topics in computer, network, and database security.
CIS 577  S/W User Interface Dsgn&Analys  
3.000 Credits  
Prerequisite(s): CIS 553*  

Current theory and design techniques concerning how user interfaces for computer systems should be designed to be easy to learn and use. Focus on cognitive factors, such as the amount of learning required, and the information-processing load imposed on the user. Emphasis will be on integrating multimedia in the user interface.

CIS 578  Advanced Operating Systems  
3.000 Credits  
Prerequisite(s): CIS 450 or IMSE 450 or ECE 478  

Advanced techniques used in operating system design. Distributed operating systems. Message-based operating systems. Operating systems for parallel architectures. Layered techniques in operating systems. Formal models of operating systems. Current trends in operating system design. (YR).

CIS 579  Artificial Intelligence  
3.000 Credits  
Prerequisite(s): CIS 350 or CIS 3501 or IMSE 350 or (ECE 370 and MATH 276)  

This course introduces students to basic concepts and methods of artificial intelligence from a computer science perspective. Emphasis of the course will be on the selection of data representations and algorithms useful in the design and implementation of intelligent systems. The course will contain an overview of one AI language and some discussion of important applications of artificial intelligence methodology. A student project may be required. (YR).

CIS 586  Advanced Database Systems  
3.000 Credits  
Prerequisite(s): CIS 556 or CIS 421  

This course provides an in-depth examination of some advanced database technologies. Topics are selected from: object-relational databases, active databases, distributed databases, parallel databases, deductive databases, fuzzy databases, data warehousing and data mining, spatial and temporal databases, multimedia databases, advanced transaction processing, and database security.

CIS 587  Computer Game Design and Impl  
3.000 Credits  
Prerequisite(s): CIS 553*  

This course deals with the study of the technology, science, and art involved in the creation of computer games. The focus of the course will be hands-on development of computer games. Students will study a variety of software technologies relevant to computer game design, including: programming languages, scripting languages, operating systems, file systems, networks, simulation engines, and multi-media design systems. Lecture and discussion topics will be taken from several areas of computer science: simulation and modeling, computer graphics, artificial intelligence, real-time processing, game theory, software engineering, human computer interaction, graphic design, and game aesthetics. (YR)

CIS 588  Computer Game Design II  
3.000 Credits  
Prerequisite(s): CIS 587  

This course is a continuation of the material studied in CIS 587. The focus of the course will be hands-on development of computer game development tools (e.g. game engines). Students will study a variety of software technologies relevant to computer game design, including: 3D graphics, computer animation, data-driven game design, multiplayer game programming, and game AI. Lecture topics will be taken from several areas of computer science: simulation and modeling, computer graphics, artificial intelligence, game theory, software engineering, human computer interaction, and game content development, and game aesthetics.

CIS 590  Selected Topics  
1.000 TO 3.000 Credits  

In-depth study of a CIS topic of contemporary interest. Topic varies from semester to semester.

CIS 591  Directed Research Project  
1.000 TO 3.000 Credits  

Special projects for laboratory or library investigation with the intent of developing initiative and resourcefulness. The student will submit a report of the project and give an oral presentation to a panel of faculty members at the close of the term.

CIS 695  Master's Project  
3.000 Credits  
Prerequisite(s): CIS 553  

Application of the methodologies, tools and theory of software engineering to produce a specific validated software product. Projects can be faculty-generated, self-generated, and/or work related. All projects must be undertaken with one or more students under the supervision of the instructor. Prior to enrollment, a project proposal must be prepared and approved by the instructor and department chair. Standard software engineering documents must be prepared and approved at each phase of the project, and an oral presentation of the project is required. Course includes lectures and case studies. Permission of instructor required.

CIS 699  Master's Thesis  
1.000 TO 6.000 Credits  

Graduate students electing this course, while working under the general supervision of a member of the department faculty, are expected to plan and carry out the work themselves and submit a thesis for review and approval, and also present an oral defense of the thesis.
ELECTRICAL&COMPUTER
ENGIN (ECE)

ECE 500    Math Mthds for Elec & Comp Eng
3.000 Credits
Prerequisite: Permission of Instructor

Topics include: Transform Techniques using Fourier series, Fourier transforms, Laplace transforms and Sampling Theorem. Linear Algebra using eigen expansions, polynomial functions and matrices and determinants. Random Variables using probability density and distribution functions, functions of a random variable, and conditional and joint probabilities.

ECE 505    Dig Sys and Microprocessors
3.000 Credits

Introduction to modern digital computer logic. Numbers and coding systems; Boolean algebra with applications to logic systems; examples of digital logic circuits; simple machine language programming; microprocessors programming input/output, interrupts, and system design. (May not be available to students with EE or CE degrees.)

ECE 510    Vehicle Electronics I
3.000 Credits

Semiconductor diodes, junction transistors, FETS, rectifiers and power supplies, small signal amplifiers, biasing considerations, gain-bandwidth limitations, circuit models, automotive applications and case studies. (Not open to students with EE or CE degrees.) (YR).

ECE 512    Active Filter Design
3.000 Credits
Prerequisite(s): ECE 314

Introduction, OP AMP circuits and applications, bilinear transfer functions and frequency characteristics, first order and biquad circuits, Butterworth lowpass and bandpass filters, Chebyshev and Cauer filter, delay filter, frequency transformation, ladder design with simulated elements, leapfrog simulation, full and partial impedance scaling simulations, switched capacitor filters, sensitivity analysis.

ECE 5121   Mod & Des of Electronic Cir&Sys
3.000 Credits

Modeling and application of semiconductor devices in detail from a circuit design aspect including diodes, bipolar junction transistors, MOS FET transistors and operational amplifiers. Practical applications will be discussed and the designing of electronic circuits. Students will acquire hands-on experience in terms of designing, simulating and implementing electronic circuits. They will learn how to use software tools to verify their designs and will also be assigned group projects.

ECE 513    Computer-Aided Network Design
3.000 Credits
Prerequisite(s): ECE 410

Numerical methods required for circuit analysis and design using digital computers are investigated. These techniques include matrix analysis of linear systems; network graphic theory, tolerance analysis, transient analysis, numerical integration, nonlinear circuit analysis, network optimization, and device modeling. Practical examples are given requiring the construction of computer subroutines and use of general analysis programs such as ECAP and CIRAN. Three lecture hours.

ECE 514    VLSI Design
3.000 Credits
Prerequisite(s): ECE 413

Topics relevant to the design and analysis of VLSI circuits are investigated. These include an introduction to CMOS circuits, their characterization and performance estimation. Logic design and testing of VLSI circuits. Analysis of layout and the design of subsystems. VHDL and commercial CAD packages for VLSI design.

ECE 515    Vehicle Electronics II
3.000 Credits
Prerequisite(s): AENG 510

CD ignition, high speed switching, motor drive control, inverters, PWM controllers, active filters, signal conditioners, power electronics, voltage regulators. Selected topics: ASICS, RF amplifiers, battery chargers, solar cells. Project may be required.

ECE 516    Electronic Materials & IC Proc
3.000 Credits


ECE 517    Advanced Industrial Electronic
3.000 Credits
Prerequisite(s): ECE 415

Switching mode DC power supplies; motor drives including DC, induction and synchronous; industrial and residential application of power electronics; practical aspects of the design of power electronics devices including snubber circuit, gate drives, heat sink design and magnetic components design. A project will be assigned.

ECE 518    Mat Selec for Commercial Prod
3.000 Credits

Impact of modern materials on commercial product performance; representative illustrations from product areas such as automotive vehicles, commercial aircraft, recreational equipment, and electronic products.
ECE 531  Intelligent Vehicle Systems  
3.000 Credits  
Prerequisite(s): ECE 371

The course covers important technologies relevant to intelligent vehicle systems including systems architecture, in-vehicle electronic sensors, traffic modeling and simulation. Students will design and implement algorithms and simulate driver-highway interactions.

ECE 532  Auto Sensors and Actuators  
3.000 Credits

Study of automotive sensory requirements; types of sensors; available sensors and future needs. Study of functions and types of actuators in automotive systems. Dynamic models of sensors and actuators. Integrated smart sensors and actuators. Term project.

ECE 533  Active Automotive Safety Systems  
3.000 Credits

Studies of the next generation of active automotive safety systems--intelligent cruise control, lane departure warning, virtual camber, and back-up and blind spot warning systems. Topics include active safety system architecture, enabling technologies for such systems, and future directions.

ECE 536  All Weather Automotive Vision  
3.000 Credits

Sensors for automotive vision enhancement and collision avoidance needs, requirements, simulation, and performance. The course includes study of infrared, video, and mm-wave sensors. Lectures and laboratory experiments.

ECE 537  Data Mining  
3.000 Credits  
Prerequisite(s): ECE 479 or CIS 479

Advances in computer information systems, machine learning, statistics, and intelligent systems and methodologies for the automatic discovery of knowledge from large high-dimensional databases. This course also uses engineering development tools such as neural networks, fuzzy logic, and genetic algorithms. (F, W, S).

ECE 539  Production of Electronic Products  
3.000 Credits

Manufacturing discrete components; silicon integrated circuits; hybrid circuits; printed circuit boards; power supplies; magnetic devices; wires, cables, harnesses and connectors; components for optical communication systems. Assuring product reliability. Specifying and using automated test equipment. Performing machine and system capability studies. Maintaining plant and equipment. Operating safely with respect to employees, customers, and the plant environment.

ECE 546  Electric Vehicles  
3.000 Credits

Fundamental concepts and specifications; energy sources; motors for electric vehicles; controllers and power electronics; engineering impact of electric vehicles.

ECE 5462  Hybrid Electric Vehicles  
3.000 Credits

This course will introduce the electrical aspects of HEV, including the fundamentals, design, control, modeling, battery and other energy storage, electric propulsion systems. It will cover vehicle dynamics, energy sources, electric propulsion systems, regenerative braking, parallel and series HEV design and practical design considerations. (F, YR)

ECE 550  Communication Theory  
3.000 Credits  
Prerequisite(s): ECE 450

The basic limitations and alternatives for communications and signal processing are studied, using appropriate mathematical tools. The topics include: review of information measure; random process and vector description of signals and noise; optimum receiver principles; signaling alternatives; channel capacity; block and convolutional coding; waveform estimation concepts. Practical system examples are stressed.

ECE 552  Fuzzy Systems  
3.000 Credits  
Prerequisite(s): IMSE 317

A study of the concept of fuzzy set theory including operations on fuzzy sets, fuzzy relations, fuzzy measures, fuzzy logic, with an emphasis on engineering application. Topics include fuzzy set theory, applications to image processing, pattern recognition, artificial intelligence, computer hardware design, and control systems.

ECE 553  Software/Hardware Rapid Prototyping  
3.000 Credits

Rapid prototyping technology is primarily aimed at reducing the lead times and costs associated with new product development. Rapid prototyping requires a good quality 3D CAD system. This course will cover the software and hardware widely used in the rapid prototyping, including Stereolithography (SLA) and virtual reality software and hardware used for rapid prototyping. (YR)

ECE 554  Embedded Systems  
3.000 Credits


ECE 555  Stochastic Processes  
3.000 Credits  
Prerequisite(s): IMSE 317
Review of probability and random variables. Introduction to stochastic processes; stationarity, ergodicity; auto correlation and cross correlation, linear systems with random inputs, spectral analysis, Wiener filtering, Kalman filtering. Applications to smoothing, parameters estimation, prediction, system identification.

ECE 560  Modern Control Theory  
3.000 Credits  
Prerequisite(s): ECE 460

Introduction to linear spaces and operators; mathematical description of multiple input-output systems; state variables and state transition matrix; controllability and observability and its application to irreducible realization of transfer function matrices; state variable estimation; controller synthesis by state feedback; stability of linear systems; analysis of composite systems.

ECE 565  Digital Control Systems  
3.000 Credits  
Prerequisite(s): ECE 460

Mathematical representation of digital control systems; z-transform and difference equations; classical and state space methods of analysis and design; direct digital control of industrial processes.

ECE 566  Mechatronics  
3.000 Credits  
Prerequisite(s): ME 442 or ECE 365

Mechatronics, an engineering discipline, is the synergistic combination of mechanical engineering, electrical engineering, control engineering, and computer science, all integrated through the design process. The course is to establish a working familiarity with the key engineering elements in the design and control of electro-mechanical systems in general and automotive systems in particular. The key engineering elements include microprocessor technology, electronics, sensors and actuators, data communication and interface, control algorithms, and mechanisms of machine elements. The course is to introduce a design methodology in an integrated system environment through case studies and design projects. (AY.)

ECE 567  Nonlinear Control Systems  
3.000 Credits  
Prerequisite(s): ECE 460

Nonlinearities in control systems; phase plane analysis; isoclines, equilibrium points, limit cycles, optimum systems; heuristic methods; harmonic balance, describing function, frequency response and jump phenomena, oscillations in relay systems; state space; optimum relay controls; stability; Liapunov's method.

ECE 569  Computer-Based Automation  
3.000 Credits  
Prerequisite(s): ME 588 or ECE 539


ECE 570  Computer Networks  
3.000 Credits  
Prerequisite(s): ECE 471

Review of Data Communications Fundamentals: Transmission Media, Channel Impairments, Signal Types, Propagation Delays, Modulation, Public Carriers, Data Transmission, Error Control, Data Compression, Flow Control, L ink Layer Protocols; LAN: Media Arbitration, Logical Link Control, Case Studies; WAN: Packet & Circuit Switching; TCP/IP Protocol Stack; Introduction to Cellular Phones: Infrastructure, 2nd & 3rd Generation Architectures, Challenges and Obstacles, Multi Access (CDMA, TDMA, FDMA, OFDM), Channel Allocation (FDD, TDD), Signaling Issues (match filters, encoding techniques, synchronization issues); Introduction to In-Vehicle Networks: device control, temporal behavior, fault tolerance.

ECE 5701  Intro to Wireless Comm  
3.000 Credits  
Prerequisite(s): ECE 550 or ECE 570

This course provides an introduction to modern wireless communication principles and architectures. The focus of this course is on the underlying issues and infrastructures of modern wireless communications, such as cellular phone systems and wireless local area networks (WLANs). The first part of the course will study the large scale and small scale effects of the wireless channel on radio signals. Next the course will examine linear and non-linear modulation techniques and their performance in different environments. The fundamentals and rationale for wideband transmission techniques such as direct sequence spread spectrum (DSSS) and orthogonal frequency division multiplexing (OFDM) will be presented. Various performance issues will be studied regarding the fundamental trade-off between overall delay for transmitting information vs. power consumption. These include use of diversity, forward error control, and adaptive equalizers. Several existing wireless protocols will be studied including the IEEE 802.11 family and GSM cellular system. (W)

ECE 5702  High-Speed and Adv Networks  
3.000 Credits

Communications concepts, traditional telecommunications networks, ISDN, SONET, Frame relay, the converged voice/data networks, ATM concepts, the ATM physical layer, the ATM adaptation layer, the ATM applications, IPv 6 protocol, Internetworking, SS7.

ECE 571  Switching Theory  
3.000 Credits  
Prerequisite(s): ECE 273

Combinational and sequential logic design, minimization of combinatorial and sequential circuits, functional decomposition, reliable design and fault diagnosis; incompletely specified sequential machine design, asynchronous sequential circuits and interactive methods.

ECE 572  Sequential Machines  
3.000 Credits  
Prerequisite(s): ECE 571

**ECE 574**  
Advis Technq in Eng Applications  
3.000 Credits  
Prerequisite(s): ECE 474

Topics relating to Software Development for engineering applications will be discussed. These include data structures, algorithm complexity and personal software development process.

**ECE 575**  
Computer Architecture I  
3.000 Credits  
Prerequisite(s): ECE 375

In-depth study of the structure and organization of contemporary digital computers. Operational characteristics of the CPU and ALC units. Memory organization. Input/output techniques. Interrupt and virtual memory strategies. Case studies include micro-, mini- and mainframe computers.

**ECE 572**  
Reconfigurable Computing  
3.000 Credits  
Prerequisite(s): ECE 475

Introduction to Reconfigurable Computing, Fundamentals of FPGA, System-On-Chip(SOC), Programming Languages for RC, CAD Tools, RC design for general-purpose computing, RC design for special purpose applications, Case Studies and design projects. (F)

**ECE 576**  
Information Engineering  
3.000 Credits

This course will cover the fundamental concepts of information engineering including computation, storage, communication, and application. Examples of topics are multimedia data such as video, audio, image and text, multimedia transmission through local & wide area networks, multimedia data representations, storage & compression. Information engineering applications will be discussed and students are expected to complete a project in a selected application. (Y)

**ECE 577**  
Engineering in Virtual World  
3.000 Credits  
Prerequisite(s): ECE 273 and ECE 371

An in-depth study of selected topics in design and development of virtual systems in industrial environments. Topics include cyberspaces, techniques for generating virtual worlds in engineering applications, building blocks of virtual environments including hardware and software. Case studies.

**ECE 578**  
Advanced Operating Systems  
3.000 Credits  
Prerequisite(s): ECE 478 or CIS 450 or IMSE 450

Advanced techniques and uses in operating system design. Distributed operating systems. Message-based operating systems. Operating systems for parallel architectures. Layered techniques in operating systems. Formal models of operating systems. Current trends in operating system design.

**ECE 579**  
Intelligent Systems  
3.000 Credits  
Prerequisite(s): ECE 479

Representative topics include: Intelligent systems design, training and evaluation, decision trees, Bayesian learning, reinforcement learning. A project will be required.

**ECE 580**  
Digital Signal Processing  
3.000 Credits  
Prerequisite(s): ECE 300

Introduction to continuous and discrete time systems, z-transform, discrete Fourier transform, the fast Fourier and its implementation, fast convolution, design and implementation of digital signal processors, quantization efforts.

**ECE 5802**  
Multirate Sig Proc w/Appl  
3.000 Credits  
Prerequisite(s): ECE 580

This course provides an introduction to multirate digital signal processing and their typical applications in different fields of engineering (speech processing, communications, instrumentation, measurements, signal compression, etc).

**ECE 581**  
Arch for Digital Signal Proc  
3.000 Credits  
Prerequisite(s): ECE 580

Overview of digital electronics, digital signal processing, and VLSI design methods to design signal processing hardware from algorithms. Topics include: VLSI technology, algorithms, systolic arrays, wavefront arrays, mapping methods for formalizing specific algorithms to hardware implementations, classification schemes (SIMD/MISD/SIMD/ MIMD), associate processing, bit-serial pipelined architectures, DSP architectures, interconnection networks, related topics in wafer-scale integration and neural networks.

**ECE 582**  
Intro to Statistical DSP  
3.000 Credits  
Prerequisite(s): ECE 580*

Review of discrete-time signals and systems, introduction of discrete-time random signals and variables, linear signal models, nonparametric power spectrum estimation, least-squares filtering and prediction, signal modeling and parametric spectral estimation, selected topics. (W).

**ECE 583**  
Neural Networks  
3.000 Credits

Computational characteristics of the brain, learning, and self-organization; neural network architectures including single-layer networks, multilayer networks, recurrent neural networks, ART, Boltzman. Self-organizing feature maps; back-propagation, feed-forward, center-propagation, and other
learning techniques; hardware implementation examples and applications.

**ECE 584 Speech Processes**  
3.000 Credits  
Prerequisite(s): ECE 580

Basic physical principles, physiological model, speech analysis and synthesis models, linear prediction model, synthesis by analysis, synthesis by rule, spectral analysis. Format estimation, vocoders, speech coding, speech and speaker recognition.

**ECE 585 Pattern Recognition**  
3.000 Credits  
Prerequisite(s): IMSE 317

Introduction to pattern recognition (PR) as a process of data analysis. Representation of features in multidimensional space as random vectors. Similarity and dissimilarity measures in feature space. Bayesian decision theory, discriminant functions and supervised learning. Clustering analysis and unsupervised learning. Estimation and learning. Feature extraction and selection. Introduction to interactive techniques in PR. Applications of PR.

**ECE 586 Digital Image Processing**  
3.000 Credits  
Prerequisite(s): ECE 450

Monochrome and color vision in man and machines, image quantization edge detection, image enhancement, image restoration, color analysis and processing, multispectral image processing, texture analysis, image coding and compression, morphology, geometrical image modifications.

**ECE 587 Sel Top:Image Proc/Mach Vision**  
3.000 Credits  
Prerequisite(s): ECE 586

A special topics course providing an in-depth examination of one or several areas in image processing and/or machine vision. Possible areas include medical imaging, advanced concepts in morphology, stereovision, shape form shading, and active vision.

**ECE 588 Applied Machine Vision**  
3.000 Credits

Optics and lighting, sensor characteristics, image acquisition, image analysis, segmentation, connectivity and boundary following, shape description, hardware for vision applications, software considerations, applications including automatic inspection and metrology.

**ECE 589 Multidimen Digital Signal Proc**  
3.000 Credits  
Prerequisite(s): ECE 580

Multidimensional functions, Fourier transform, 2-D discrete Fourier transform and 2-D FFT algorithms, \((z,w)\) transform. Casualty; 2-D recursive and nonrecursive systems. Stability and stabilization methods. FIR and IIR 2-D filters; spatial design techniques; frequency domain design methods. Spectral transformation design, wave transformations; structure implementation of 2-D filters. Applications in image processing.

**ECE 590 Selected Topics**  
1.000 TO 3.000 Credits

Individual or group study, design, or laboratory research in a field of interest to the students. Topics may be chosen from any of the areas of electrical engineering. The student will submit a report on the project and give an oral presentation to a panel of faculty members at the close of the term.

**ECE 591 Directed Studies**  
1.000 TO 3.000 Credits

Special projects for laboratory or library investigation with the intent of developing initiative and resourcefulness. The student will submit a report of the project and give an oral presentation to a panel of faculty members at the close of the term.

**ECE 592 Directed Research**  
1.000 TO 3.000 Credits

Special problems centered on developing experimental skills. In consultation with a faculty advisor a student will prepare a proposal describing the work to be performed for approval by the department. An oral presentation and a final report on the research effort are required for completion. (F,W,S)

**ECE 650 Information Theory in Elec Comm**  
3.000 Credits  
Prerequisite(s): ECE 555

Source models and source coding, channel and channel models, information measure, mutual information and entropy, coding for discrete sources such as variable-length codes and optimum variable-length encoding procedure, discrete memoryless channels and capacity, techniques for coding and decoding such as parity-check codes, cyclic codes, and Hamming codes, quantization and error analysis, coding techniques such as DPCM, run-length coding, sub-band coding, transform coding.

**ECE 661 System Identification and Adaptive Control**  
3.000 Credits  
Prerequisite(s): ECE 560

Minimal state space models, on-line estimation schemes, parameter convergence for SISO and MIMO systems, direct and indirect adaptive prediction, minimum prediction error controllers (one-step ahead and model reference control), minimum prediction error adaptive controllers (direct and indirect approach), adaptive control algorithms for close-loop pole assignment, Kalman filter, extended Kalman filter.

**ECE 665 Optimal Control Systems**  
3.000 Credits  
Prerequisite(s): ECE 560

Parameter optimization; optimization problems for deterministic systems; calculus of variations on optimal control; maximum principle of Pontryagin; dynamic programming; numerical solution of optimal programming and
control problems; singular solutions.

ECE 675  Computer Architecture II
3.000 Credits
Prerequisite(s): ECE 575


ECE 699  Master’s Thesis
3.000 OR 6.000 Credits

Graduate students electing the thesis option, working under the general supervision of a member of the department faculty, are expected to plan and carry out the work themselves. The student will submit a report on the project and give an oral presentation to a panel of faculty members at the close of the term.

ENGINEERING MANAGEMENT (EMGT)

EMGT 500  Managing the Engin Function
2.000 Credits

This course provides the knowledge and skills required to manage an efficient and productive engineering organization within the company. Topics include: starting a new department; missions; planning; organizing the department; integrating and coordinating functions and projects; measuring performance; components of the engineering operation; technical forecasts; state-of-the-art surveys; proposals; managing innovation; ethics and leadership. (College of Engineering and Computer Science).

EMGT 505  Systems Engineering
3.000 Credits

Introduction to systems and systems engineering, tools in systems analysis, the system design process, design for operational feasibility and systems engineering management. (College of Engineering and Computer Science).

EMGT 510  Managerial Finance and Econ
2.000 Credits
Prerequisite(s): EMGT 540 or EMGT 541

This course covers foundation concepts in Financial Management, with emphasis on project evaluation. Topics include financial statement use and analysis, time value of money, valuation of stocks and bonds, capital budgeting and risk/return analysis. (School of Management).

EMGT 515  Corporate Strategy
2.000 Credits
Prerequisite(s): EMGT 510 and EMGT 535 and (EMGT 541 or EMGT 540)

This course seeks to develop an understanding of the management of technology as a strategic organization resource.

EMGT 520  Production Management
3.000 Credits
Prerequisite(s): EMGT 505

Forecasting, inventory, and scheduling activities in production systems are studied. Topics in forecasting include the regression method, exponential smoothing techniques, Winters’ seasonal model, and adaptive control models. Continuous and periodic review inventory models, deterministic and probabilistic cases are also included. Dynamic and static shop and flow shop scheduling problems are investigated using heuristic and mathematical models. Planning and scheduling for large-scale projects is studied. Material Requirements and Resources Planning (MRP I and II), and Aggregate Planning techniques are evaluated. Students are asked to select problems of interest and to present final project reports. (College of Engineering and Computer Science).

EMGT 525  Total Quality Management
3.000 Credits

This course covers implementing Total Quality Management (TQM), undertaking Six Sigma Projects, and applying Baldrige National Quality Award criteria and ISO 9000 principles to improve quality performances in an organization. Topics include Definitions and Importance of Quality, Quality Costs, Quality Function Deployment (QFD), Product Specification and Critical-to-quality Measures (CQM), Statistical Quality Control (SQC), Robustness Concepts, Quality System Design and Evaluation. Six Sigma and DMAIC Methodologies, Design for Six Sigma (DFSS) process, IDOV (Identity requirements, Deign alternatives, Optimize the design and Verify process capability) Methodology, and several other concepts and tools related to quality are also covered.

EMGT 530  Info Sys for Engin Management
3.000 Credits

This course covers the organizational foundations of information systems, their emerging strategic role, and the technical foundation for understanding computers and information systems. Topics include: introduction to management information systems; decision support systems; artificial intelligence and expert systems; end-user computing; data vs. information; data communication and connectivity; data management. (College of Engineering and Computer Science).

EMGT 535  Marketing Mgt and Policy
2.000 Credits

This course studies the salient features of technology-driven marketing and distinguishes technology-push from market-pull marketing. Highlights the technology-marketing interface in the context of strategy planning, market segmentation, product innovation, channels of distribution, promotional and pricing decisions. Particular attention will be paid to technology
inventor-user interactions, process of adoption, and technological innovation. (School of Management).

**EMGT 541**  
**Acct Fund for Decision Making**  
3.000 Credits

This course introduces fundamental accounting concepts and applications that are useful in the evaluation of financial information and decision tools relevant to project planning. Students will achieve an understanding of basic accounting and cost management tools that are essential to decision making. Emphasis will be placed on assessing financial statement information through an understanding of accounting practice, the relationship between business activities and an organization's cash flows.

**EMGT 545**  
**Org Beh and Hum Res Mgt**  
2.000 Credits  
Prerequisite(s): EMGT 500

This course encompasses key areas of human resources management and organization behavior as they relate to technical work environments. Organization design and theory will be discussed, along with motivation, leadership, employee selection skills, group and team processes, and managing diversity. Techniques for devising a personal career development plan are covered. (School of Management).

**EMGT 550**  
**Business Ethics/Law**  
2.000 Credits

This course provides students with an overview of the legal environment of business. Concepts including product liability, intellectual property, and contracts are introduced within the context of the legal system. Ethical consideration in personal, professional, and organizational decision making are integrated throughout this course. (School of Management).

**EMGT 560**  
**Engin Mgt at Upper Levels**  
1.000 Credits  
Prerequisite(s): EMGT 520 and EMGT 530 and EMGT 545

This course provides the knowledge and skills in leadership and management required to build and manage the company's technical resources toward the attainment of corporate objectives. Topics covered include: technological forecasts; corporate strategic planning; corporate portfolios of technical programs; group and strategic planning; project collection; management of institutional time; corporate computer facilities; proposals; introducing new products and processes; inventorying and upgrading; engineering audits; and the role of engineering in joint ventures. (College of Engineering and Computer Science).

**EMGT 580**  
**Mgt of Prod and Proc Design**  
3.000 Credits  
Prerequisite(s): EMGT 510 and EMGT 520 and EMGT 525

This course provides the knowledge and skills needed to manage the design of a product or process. Topics covered include: creativity, types of products, types of processes, generalized design process, identification and translation of customer needs into engineering specifications, designing for function and quality factors, design for manufacturability, life-testing, cost estimating, reporting on design projects, and concurrent engineering. (College of Engineering and Computer Science).

**EMGT 590**  
**Project Seminar**  
3.000 Credits  
Prerequisite(s): EMGT 560 and EMGT 580

Students will receive the opportunity and training to integrate and apply both the technical and managerial aspects acquired in various courses to an engineering project or problem. (College of Engineering and Computer Science).

**EMGT 591**  
**Capstone Project in EMGT**  
2.000 Credits  
Prerequisite(s): EMGT 580 and EMGT 560* and EMGT 515*

Students will receive the opportunity and training to integrate and apply both technical and managerial aspects acquired in various courses to an engineering project or problem.

**EMGT 699**  
**Master's Thesis**  
1.000 TO 6.000 Credits

Graduate students electing this course, while working under the general supervision of a member of the program faculty, are expected to plan and conduct the work themselves, to submit a thesis for review and approval, and to present an oral defense of the thesis.

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**INDUSTRIAL & MANUFACTURING SYSTEMS ENGINEERING (IMSE)**

**IMSE 500**  
**Models of Oper Research**  
3.000 Credits

The method of mathematical modeling and its application to decision-making problems in organizations. Some widely used models and techniques: linear programming, queuing, inventory, and simulation.

**IMSE 501**  
**Human Factors & Ergonomics**  
3.000 Credits  
Prerequisite(s): IMSE 317* or IMSE 510*

The analysis and prediction of human performance in industrial and other man-machine systems using work sampling, time-motion analysis, synthetic and standard time study, and learning curves, in the design of such systems. Lecture and laboratory. Cannot receive credit for both IMSE 442, and IMSE 501. This class may be scheduled at the same time as the undergraduate course IMSE 442. Graduate students will be required to do additional research paper and/or project.

**IMSE 502**  
**Computer-Integrated Mfg**  
3.000 Credits

This course provides basic knowledge of elements in Computer-Integrated Manufacturing Systems, with particular emphasis on Computer-Aided Design (CAD), Computer-Aided
Manufacturing (CAM), Computer-Aided Process Planning (CAPP), materials handling, and information flow in manufacturing systems. Hands-on experiments and course projects are required. Two lecture hours and three laboratory hours. Credit cannot be given for both IMSE 483 and IMSE 502. This class may be scheduled at the same time as the undergraduate course IMSE 483. Graduate students will be required to do additional research paper and/or project.

**IMSE 503 Computer-Aided M/C & Tool Desg**
3.000 Credits
Prerequisite(s): IMSE 382 or ME 381

Study of the fundamentals of machine tool design, cutting tools, metal forming dies, and jig fixtures for practical applications in machining and assembly. Principles of design for manufacture and assembly as applied to tool and machine design. Laboratory exercise and projects are required using computer-aided design software. Two lecture hours and three laboratory hours. Credit cannot be given for both IMSE 484 and IMSE 503. This class may be scheduled at the same time as the undergraduate course IMSE 484. Graduate students will be required to do additional research paper and/or project.

**IMSE 504 Metal Forming Processes**
3.000 Credits
Prerequisite(s): IMSE 382 or IMSE 381

This course focus is on fundamentals of metal forming processes; mechanics of metal forming; formability of manufacture; and economic aspect of the process. Emphasis is placed on analysis of bulk and sheet metal forming processes as applied to practical cases such as automobile manufacturing. Laboratory and course project are required. Credit cannot be given for both IMSE 488 and IMSE 504. This class may be scheduled at the same time as the undergraduate course IMSE 488. Graduate students will be required to do additional research paper and/or project.

**IMSE 505 Optimization**
3.000 Credits
Prerequisite(s): IMSE 305 or IMSE 500


**IMSE 506 Stochastic Models**
3.000 Credits
Prerequisite(s): IMSE 300 or IMSE 500

Discrete and continuous stochastic processes and their application. Queueing systems; description, performance measures, transient and steady state behavior, and applications.

**IMSE 508 Modeling of Large-Scale Sys**
3.000 Credits
Prerequisite(s): IMSE 505 and IMSE 506

The modern and classical concepts and tools required for modeling, analysis and synthesis of large-scale dynamic systems. Topics include system dynamics, interpretive structural modeling, cross-impact analysis, information theory, theory of hierarchical systems. Emphasis is on constructing models of real world problems taken from urban, industrial, transportation, and health care systems. Students are asked to select problems of interest and present final project reports.

**IMSE 510 Probability & Statistical Mod**
3.000 Credits
Prerequisite(s): IMSE 317


**IMSE 511 Design and Analysis of Exp**
3.000 Credits
Prerequisite(s): IMSE 510

One factor, two factor, and multifactor experiments. Fixed random and mixed models. Blocked confounding, incomplete blocks, factorial experiments, fractional factorial experiments. Introduction to response surface analysis.

**IMSE 512 Taguchi Method of Quality Eng**
3.000 Credits
Prerequisite(s): IMSE 510

Quality engineering methodology developed by Genichi Taguchi. Design and analysis of experiments using orthogonal arrays and linear graphs. Accumulation analysis for categorized data. Signal-to-noise ratio as a measure of quality characteristics. Simulation using orthogonal arrays. Parameter design for reducing variability around the target without cost increase. Tolerance design for reducing variability with minimum cost increase. Evaluation and improvement of measurement.

**IMSE 513 Robust Design**
3.000 Credits
Prerequisite(s): IMSE 510

Students will learn models and methods in the context of overall strategies to empirically study the design of products and manufacturing processes to reduce variability and to reduce sensitivity to parameter variation. Topics include: process capability studies and measures, basic DOE concepts, factorial experiments, evaluating sources of variation, evolutionary operation and adaptive statistical process control.

**IMSE 514 Multivariate Statistics**
3.000 Credits
Prerequisite(s): IMSE 510

Linear statistical models used in simple and multiple regression, and analysis of variation. Principles and techniques of principle component analysis are studied and applied to business and engineering problems using statistical computer software. (YR)

**IMSE 520 Managerial Decision Analysis**
3.000 Credits
Prerequisite(s): IMSE 510
Normative decision analysis, decisions, structures, and trees. Utility theory, game theory, and statistical decision theory are introduced. Applications of the theories to management studies in capital investment, bidding, purchasing, and risk analysis are discussed.

**IMSE 521 Mfg Cost Estimation & Control**  
3.000 Credits

In this course, concepts of strategic costing in product development and manufacturing are introduced. Engineering economy techniques are used in the study of life cycle cost elements. Equipment acquisition and replacement justification methods under risk and uncertainty are presented.

**IMSE 525 Fin & Econ Software Appl**  
1.000 Credits  
Prerequisite(s): IMSE 570 and IMSE 571  
Co-requisite(s): EMGT 510

This course applies concepts and techniques of financial management to business and engineering systems case studies. Specifications for some of these systems will be developed utilizing ERP software such as SAP R/3 application development software suite. (YR).

**IMSE 526 Marketing Software Application**  
1.000 Credits  
Prerequisite(s): IMSE 570 and IMSE 571  
Co-requisite(s): EMGT 535

This course applies concepts and techniques of marketing management to business and engineering systems case studies. Specifications for some of these systems will be developed utilizing ERP software such as SAP R/3 application development software suite. (YR).

**IMSE 5275 Managerial Acct Software Appl**  
1.000 Credits  
Prerequisite(s): IMSE 570 and IMSE 571  
Co-requisite(s): EMGT 540

This course applies concepts and techniques of managerial accounting to business and engineering systems case studies. Specifications for some of these systems will be developed utilizing ERP software such as SAP R/3 application development software suite. (YR).

**IMSE 5285 Human Resource Software Appl**  
1.000 Credits  
Prerequisite(s): IMSE 570 and IMSE 571  
Co-requisite(s): EMGT 545

This course applies concepts and techniques of human resource management to business and engineering systems case studies. Specifications for some of these systems will be developed utilizing ERP software such as SAP R/3 application development software. (YR).

**IMSE 532 Information for Manufacturing**  
3.000 Credits

Acquiring and organizing design and manufacturing information (including geometric modeling, group technology, and automated data acquisition). Identifying kinds needed, sources, and recipients. Ensuring information quality; establishing criteria for selecting processing modes and media. Designing, installing, commissioning, and operating information-handling systems. Handling information in production systems.

**IMSE 533 Manufacturing Systems**  
3.000 Credits

This course introduces methodologies and tools for modeling, design and operations planning of manufacturing systems. Topics include introduction to integrated manufacturing systems, manufacturing system and data modeling methodologies, process planning, group technology, manufacturing system layout, scheduling, push and pull production systems. Industrial case studies are presented and discussed.

**IMSE 534 Human Performance Engin in Mfg**  
3.000 Credits  
Prerequisite(s): IMSE 530

The human as a systems component in an information processing context emphasizing capabilities and limitations. The roles of sensing, perception, decision making, short term memory, long term memory, motivation, expectations and attention. An overview of Learning Organization concepts emphasizing personal mastery, mental models, and team learning. A strategy for design of the user-system interface. Analysis methods including functional analysis, traditional and object-oriented task analysis, and cognitive walk-through. Team design project and individual exercises. Emphasis on experiential learning.

**IMSE 536 Machinery Diagnostics**  
3.000 Credits  
Prerequisite(s): IMSE 510


**IMSE 537 Metal Machining Processes**  
3.000 Credits  
Prerequisite(s): ME 381 or IMSE 382 or AENG 587

Detailed study of the principles of conventional and non-traditional metal removing processes, machine tools accuracy, cutting fluids, and cutting tools. The course emphasis will be on the mechanics of metal cutting, machining processes, cutting tool materials and tool geometry, selection of cutting conditions, planning for machining and optimization of manufacturing process. Role of numerical control in improving machining process and productivity of manufacturing system.

**IMSE 538 Intelligent Manufacturing**  
3.000 Credits  
Prerequisite(s): IMSE 317
A comprehensive and integrated approach to topics associated with the science of artificial intelligence and their role in today's manufacturing environments. Design and management issues including information systems in an automated and integrated manufacturing environment.

IMSE 543 Industrial Ergonomics
3.000 Credits
Prerequisite(s): IMSE 442

Effective ergonomic interventions in industrial environment enhance productivity, safety and job satisfaction. This course introduces engineers and engineering students how to apply ergonomic principles in designing industrial and manufacturing operations in which people play a significant role, so that human capabilities are maximized, physical fatigue is minimized, and performance is optimized. Case studies and topics emphasize industrial applications.

IMSE 544 Industrial Biomechanics
3.000 Credits
Prerequisite(s): IMSE 442

This course introduces the mechanical behavior of the musculoskeletal systems as related to physical work activities. Fundamentals of human body mechanics (Kinetic and Kinematic aspects of locomotion, body link systems, muscle strength and performance), muscle fatigue and musculoskeletal injury mechanism are covered with application to design of physical work activities and equipment. (YR).

IMSE 545 Vehicle Ergonomics I
3.000 Credits
Prerequisite(s): IMSE 442


IMSE 546 Safety Engineering
3.000 Credits
Prerequisite(s): IMSE 442

Safety requirements for production processes, equipment, and plants; organization and administration of safety programs, current safety laws, current occupational safety research.

IMSE 548 Human Factors
3.000 Credits
Prerequisite(s): IMSE 442

Applying information about the capabilities and limitations of men and women to the design of man-machine systems.

IMSE 549 Product Design and Evaluation
3.000 Credits
Prerequisite(s): IMSE 442

Design approaches and processes used in developing customer/user-oriented products. Study of widely used product evaluation techniques: methods of observation, communication and experimentation; subjective (e.g., psychological scaling) and objective measurement methods. Review of product design and evaluation case studies. Laboratory projects to evaluate several products.

IMSE 550 Data Management
3.000 Credits

Topics in computer organization; principle data structures (stacks, trees, linked lists) and their use; searching and sorting; algorithm specification, and recursion. Programming assignments will deal with applications of these subjects.

IMSE 551 Compiler Construction
3.000 Credits
Prerequisite(s): IMSE 550

The design and construction of compilers and programming systems. Lexical scan; parsing techniques; code generation and optimization; storage allocation. Applications of formal language theory in compiler design. Translator writing systems; XPL.

IMSE 552 Design/Analysis of Algorithms
3.000 Credits
Prerequisite(s): IMSE 550

Design, evaluation, and communication of algorithms for solving problems using a digital computer. Topics include problem-solving approaches, algorithm notation, determination of algorithm correctness, measures of efficiency, improvement of algorithms. Examples and homework in designing algorithms for data processing, scheduling, combinatorial optimization, and elementary computer graphics, and numerical analysis.

IMSE 553 Software Engineering
3.000 Credits
Prerequisite(s): IMSE 550

Program design methodologies; control flow and data flow in programs; program measurement. Software life cycle; large program design, development, testing, and maintenance. Software reliability and fault-tolerance. Evolution dynamics of software.

IMSE 554 Management Info Systems
3.000 Credits
Prerequisite(s): IMSE 454

Basic systems concepts, role of a system analyst in an information system, systems investigation, feasibility study, output/input design, hardware/software evaluation and selection, data management, security considerations, systems implementation, information systems documentations, systems projects estimation and control. Students will be asked to develop a complete information system from case studies.

IMSE 555 Decision Support/Expert Sys
3.000 Credits
Prerequisite(s): IMSE 350

Decision support process and decision support systems, development tools, executive support systems, expert systems
and their development processes, expert shells, integration of decision support and expert systems.

**IMSE 556 Database Systems**  
3.000 Credits

Data structures and file processing; GUIDE and CODASYL reports; comparisons among the database management systems, relational, hierarchical, and network approaches; system design guidelines; DDL and Schema/Subschema; DML and Query language.

**IMSE 557 Comp Networks and Comm**  
3.000 Credits  
Prerequisite(s): IMSE 454

To study the nature of computing communication and distributing processing techniques, compare networking options, introduce specific business applications that require data communication and networks, and examine the role of communication software in the system, and discuss the related management issues.

**IMSE 5585 Electronic Commerce**  
3.000 Credits  
Prerequisite(s): IMSE 570 and IMSE 571

This course examines how new information technologies and networks affect the exchange of goods and services between buyers and sellers in firms. What are economics of different electronic commerce models for firms? The course combines critical evaluation of business strategies with hands-on experience in building supporting electronic commerce systems utilizing electronic data interchange (EDI) software. (YR).

**IMSE 559 System Simulation**  
3.000 Credits  
Prerequisite(s): IMSE 510

The modeling and simulation of discrete-change, continuous-change and combined-change stochastic systems. Conducting simulation studies using contemporary software such as SLAM II or random number generation, distribution sampling, and output analysis. Comparisons with analytical queuing models.

**IMSE 561 Tot Qual Mgmt and Six Sigma**  
3.000 Credits  
Prerequisite(s): IMSE 510

This course covers implementing Total Quality Management (TQM), undertaking Six Sigma Projects, and applying Baldrige National Quality Award criteria and ISO 9000 principles to improve quality performances in an organization. Topics include Definitions and Importance of Quality, Quality Costs, Quality Function Deployment (QFD), Product Specification and Critical-to-quality Measures (CQM), Statistical Quality Control (SQC), Robustness Concepts, Quality System Design and Evaluation. Six Sigma and DMAIC Methodologies, Design for Six Sigma (DFSS) process, IDOV (Identity requirements, Design alternatives, Optimize the design and Verify process capability) Methodology, and several other concepts and tools related to quality are also covered.

**IMSE 564 ABAP/4 Programming**  
3.000 Credits  
Prerequisite(s): IMSE 570 and (IMSE 556 or CIS 556)

Students will be introduced to programming concepts for building applications using SAP R/3 software suite. The course will offer an introduction to ABAP/4 development workbench, data warehouse reporting, data dictionary, data interfaces, data modeling and data warehouse dialogue programming. (YR)

**IMSE 565 Supply Chain Management**  
3.000 Credits

This course will be a review of theory, concepts, models, methodologies and techniques for managing a supply chain. Students will be introduced to a variety of models and their applications that, a) create appropriate structure and install proper controls in the enterprise, and b) implement optimization principles utilizing value engineering, methods engineering, and behavior prediction techniques to synchronize the supply chain. Examples of supply chain of prominent industries will be described to enhance understanding of this emerging, yet highly relevant concept of our interdependent global economy. (YR).

**IMSE 567 Reliability Analysis**  
3.000 Credits  
Prerequisite(s): IMSE 510

Statistics of reliability and life testing. Application of stochastic models for failure based on Poisson and related processes. Use of exponential and extreme value distribution in reliability. Use of Markov process in the areas of equipment reliability, maintenance and availability.

**IMSE 569 Sys Simulation in Auto Engin**  
3.000 Credits  
Prerequisite(s): IMSE 510

The modeling and simulation of discrete, continuous and combined change stochastic systems. Conducting simulation studies using contemporary software such as ARENA and WITNESS. Topics in simulation methodology include random number generation, distribution sampling, input and output analysis. Integration techniques for continuous simulation, application to design of manufacturing and automotive systems.

**IMSE 570 Enterprise Information Systems**  
3.000 Credits

The purpose of this course is to provide a foundation for the analysis, design and implementation of enterprise information systems. Topics include systems and organization theories, and information systems planning and evaluation. Students will be also introduced to various systems development life cycle phases of an enterprise information system. Students will acquire an understanding of the flow of information (forecasts, financial, accounting and operational data) within an enterprise and the factors that should be considered in designing an integrated enterprise in formation system. This includes all systems in the business cycle from revenue forecasts, production planning, inventory management, logistics, manufacturing, accounts...
Students will be introduced to fundamental concepts and methods of object oriented design and development. Topics that will be covered include object oriented database concepts, data models, schema design (conceptual schemas and physical schemas), query languages, physical storage of objects and indexes on objects, version management, schema evolution and systems issues such as concurrent control and recovery from failure. For application programming, a programming language such as C++ will be used for database design and query language. (YR).

IMSE 574 IS Based Prod Planning & Cont
3.000 Credits
Prerequisite(s): IMSE 510 and IMSE 570 and IMSE 571

Students will be introduced to theories, models, methods and techniques in demand forecasting, inventory management, capacity planning, production scheduling and management components, in production planning and control for an enterprise. Application systems to model information sharing between these components will be developed using ERP software such as the SAP R/3 application development software suite. (YR).

IMSE 579 Software Int Mfg & Logis Mgmt
3.000 Credits
Prerequisite(s): IMSE 510 and IMSE 570 and IMSE 571

Students will be introduced to theories, models and techniques in manufacturing, logistics components and their interaction within an enterprise. Topics that will be covered include production/shop order analysis and management, capacity planning, and materials planning and inventory management. Application systems to model information sharing between these components will be developed using ERP software such as the SAP R/3 application development suite. (YR).

IMSE 580 Production Management
3.000 Credits
Prerequisite(s): IMSE 500 and IMSE 510

Forecasting, inventory, and scheduling activities in production systems. Topics in forecasting include regression method, Bayesian method, Box-Jenkins models, and adaptive control models. Continuous and periodic review of inventory models, deterministic and probabilistic cases. Dynamic and static job shop and flow shop scheduling problems are investigated using integer programming, dynamic programming, branch and bound method, and heuristic models. Planning and scheduling for large-scale projects.

IMSE 581 Production Plan and Scheduling
3.000 Credits
Prerequisite(s): IMSE 500 and IMSE 510

Principles of planning and scheduling of production. Topics include aggregate planning, including product mix decisions and production and work force smoothing techniques, master production and short-term scheduling techniques, project scheduling, and assembly line balancing.

IMSE 5825 Industrial Controls
3.000 Credits
Prerequisite(s): ECE 305

This course introduces the principle aspects of computers and their applications in systems control, principles of automation, with emphasis on manufacturing industries. Discussion on the hardware and software associated with this task and other topics such as integrated systems modeling, sensor technologies, digital and analog signal processing and control, and information communication are also included. Laboratory exercises and projects are required. Credit cannot be given for both IMSE 482 and IMSE 5825. This class may be scheduled at the same time as the undergraduate course IMSE 482. Graduate students will be required to do additional research paper and/or project.

IMSE 583 Concurrent Design &Manufacture
3.000 Credits
Prerequisite(s): IMSE 382

This course will cover topics in manufacturing design and analysis with emphasis on the parallel design of product and processes. Topics include principles of design theory, concurrent engineering, group technology, cost estimating, assembly systems, and design for assembly and manufacture. Design projects using computer tools are required on a team-oriented basis.

IMSE 584 Logistical Systems
3.000 Credits
Prerequisite(s): IMSE 580

Introduction to concepts of physical distribution and logistics management. Quantitative treatment of topics in materials management, transportation, forecasting, warehouse location. Logistical system design techniques which synthesize the above topics in order to design a fundamental system.

IMSE 585 Material Handling Systems
3.000 Credits
Prerequisite(s): IMSE 500

Studies of material handling methods and equipment, study of techniques used in the analysis and design of material handling systems, study of storage and warehousing systems.
IMSE 587 Facilities Planning  
3.000 Credits  
Prerequisite(s): IMSE 500

Analysis, planning and design of physical facilities utilizing operations research, engineering and economic principles. Synthesis of physical plant equipment and man into an integrated system for either service or manufacturing activities. Design of material handling systems. Students are required to select problems of interest and present design project reports. Credit may not be given for both IMSE 474 and IMSE 587. This class may be scheduled at the same time as the undergraduate course IMSE 474. Graduate students will be required to do additional research paper and/or project.

IMSE 588 Bldg High Perf Learning Org  
3.000 Credits

The purpose of this course is to develop students' knowledge and skills to explore and experience how the disciplines of systems thinking, personal mastery, mental models, team learning and shared vision impact on organizational learning and influence management practices for building highly performing organizations.

IMSE 589 Prod Design&Rapid Prototyping  
3.000 Credits  
Prerequisite(s): IMSE 483

This course will offer topics in Product Design and Prototyping with emphasis on Direct Engineering, Geometric Modeling, Free Form Fabrication, Modular Design, Product Design for Life Cycle and Design Optimization. Team Laboratory activities in CAD and RP in the RP Lab.

IMSE 590 Grad Study in Sel Topics I  
1.000 TO 3.000 Credits

Individual or group of selected topics in industrial and systems engineering.

IMSE 591 Grad Study in Sel Topics II  
1.000 TO 3.000 Credits

Continuation of IMSE 590.

IMSE 593 Vehicle Package Engineering  
3.000 Credits  
Prerequisite(s): IMSE 442

Vehicle package specifications related to exterior and interior design reference points, dimensions and curboardings. Benchmarking package studies, ergonomic tools and design practices used in the automobile industry. Driver positioning considerations; seat height, heel points, hip points, steering wheel location, seat pan, and back angles. Pedal design issues, gear shift positioning. Visibility of instrument panel space. Armrest and console design considerations. Principles and considerations in selecting and location types and characteristics of controls and displays on instrument panels, doors, consoles, and headers. Engine compartment packaging issues, Perception of interior spaciousness and visibility of the road over cowl and hood.

IMSE 600 Research in IMSE  
1.000 TO 3.000 Credits

Individual or group study or research in a field of interest to the student. Topics may be chosen from any of the areas of industrial and systems engineering. The student will submit a project report and give an oral presentation at the close of the term.

IMSE 659 Advanced System Simulation  
3.000 Credits  
Prerequisite(s): IMSE 459 and IMSE 559

Simulation with animation packages using contemporary software such as SIMAN/CINEMA or SLAM/TESS. Topics in simulation methodology: random number generation and testing, distribution sampling, validation are reviewed. Emphasis on output analysis, design of simulation experiments, variance reduction techniques, expert systems in simulation.

IMSE 682 Seminar in Comp Proc Contl  
3.000 Credits  
Prerequisite(s): IMSE 582

Advanced treatment of the design of process control systems with emphasis on the modeling of a process of computer control and the design and analysis of a control strategy. Each student is expected to select a project and design and program the control strategy or support software on a mini-computer.

IMSE 699 Master's Thesis Project  
1.000 TO 6.000 Credits

Graduate students electing this course, while working under the general supervision of a member of the department faculty, are expected to plan and conduct the work themselves, to submit a thesis for review and approval, and to present an oral defense of the thesis.

MECHANICAL ENGINEERING (ME)

ME 510 Finite Element Methods  
3.000 Credits  
Prerequisite(s): ME 345 and ME 361

Overview and applications of FE theory in linear static and dynamic systems. Review of matrices, strain and stress tensors. Variational and energy principles in FEA. Applications in linear stress analysis; 1D, 2D and 3D. Transient solutions; modal analysis. Modeling concepts. Use of general purpose codes like ANSYS, NISA, ARIES. Project work. Graduate standing or special permission. (YR).

ME 512 Structural Analysis  
3.000 Credits  
Prerequisite(s): ME 345 and ME 361

Principles of structural theory, matrix and finite element methods of analysis. Dynamics of structures. Graduate standing or special permission. (YR).
ME 514 Advanced Stress Analysis  
3.000 Credits  
Prerequisite(s): ME 361  
Stresses and deformations in mechanical and structural elements and systems; theory, analysis and applications. Topics selected from among the following in applied elasticity and advanced mechanics of materials: stress and strain transformation; plane theory of elasticity and stress functions; energy methods; thick-walled cylinders and spinning disks; torsion of non-circular and hollow sections; unsymmetric bending and shear center; curved beams; beams on elastic foundations; plates and shells; elastic stability. Graduate standing or permission of instructor. (YR).

ME 515 Advanced Mechanics of Solids  
3.000 Credits  
Prerequisite(s): (MATH 450* or ME 518*) and ME 361  

ME 516 Special Topics in Mech Eng  
1.000 TO 3.000 Credits  
Selected topics pertinent to mechanical engineering. Graduate standing or special permission. (YR).

ME 518 Advanced Engineering Analysis  
3.000 Credits  
The course emphasizes the exact methods used in the solution of the partial differential equations that arise in advanced engineering problems. Examples are taken from heat transfer, fluid dynamics, solid mechanics, electromagnetic theory, vibrations, etc. Linear integral equations, time dependent boundary conditions, nonlinear boundary conditions, and other topics. Graduate standing or special permission. (YR).

ME 519 Basic Comp Methods in Eng  
3.000 Credits  
An introduction to basic numerical methods in engineering. Topics covered include solutions of linear and nonlinear algebraic equations, solution of initial and boundary value problems in engineering by shooting, finite-difference and transformation techniques, computer-aided perturbation, numerical inversion of Laplace transformation. Finite-element methods. Solutions of partial differential equations. Graduate standing or special permission. (YR).

ME 520 Viscous Flow Theory  
3.000 Credits  
Prerequisite(s): ME 371  
An introduction to the field of viscous flow theory. The flow of incompressible fluids through internal conduits (such as channels, pipes, bearings, etc.) and external surfaces (such as turbine blades, plane wings, etc.). Flow problems in both laminar and turbulent flow regimes. Emphasis on understanding of basic physical flow regimes and meaningful application of the theories to engineering problems. Graduate standing or special permission.

ME 521 Dyn and Therm of Comp Flow  
3.000 Credits  
Prerequisite(s): ME 371  
Review of basic equations of fluid mechanics and thermodynamics in control volume form. One-dimensional, compressible flow involving area change, normal shocks, friction, heat transfer, and combined effects. Two-dimensional supersonic flow including linearization, method of characteristics, and oblique shocks. One-dimensional, constant area, unsteady flow. Graduate standing or special permission. (YR).

ME 522 Advanced Fluid Mechanics  
3.000 Credits  
Prerequisite(s): ME 230 and ME 430  
Graduate level course of fluid mechanics. Review of fluid flow phenomena based on common principles of transfer of mass, momentum, and energy. Introduction of the fundamental concepts and methods of analysis of fluid flows in industrial and environmental settings. Navier Stokes equations; viscous and inviscid flows; laminar and turbulent flows; boundary layers; drag; thermal convection. Prerequisite: Full course of undergraduate thermodynamics, fluid dynamics, and heat transfer. Course is the equivalent of ME 520. Students who have already taken ME 520 with a grade of B or better will not receive additional credit for ME 522. (W,YR)

ME 525 Computational Fluid Mechanics & Heat Transfer  
3.000 Credits  
Prerequisite(s): ME 518  

ME 531 Statistical Thermodynamics  
3.000 Credits  
Introduction to statistical methods of evaluating thermodynamic and transport properties. Elements of quantum mechanics, statistical mechanics, and kinetic theory, as applied to engineering thermodynamics. Graduate standing or special permission. (YR).

ME 532 Combustion Processes  
3.000 Credits  
Introduction to combustion processes, equilibrium and reaction kinetics. Combustion of premixed gases, detonation and
deflagration flames. Laminar and turbulent flames. Ignition, flammability, and flame quenching. Application to spark, diesel and gas turbine engines. Combustion-generated pollution. Graduate standing or special permission. (YR).

**ME 535 Advanced Thermodynamics**
3.000 Credits
Prerequisite(s): ME 330

Advanced treatment of engineering thermodynamics as applied to producing mechanical power and refrigeration. Involves rigorous application of the first and second laws. Topics to be discussed are energy/entropy generation, thermodynamics relations, nonreacting mixtures, and reacting mixtures. Graduate standing or special permission. (YR).

**ME 537 Automotive Air Conditioning**
3.000 Credits
Prerequisite(s): AENG 534

Applications of HVAC fundamentals to analysis and design of automotive air conditioning systems. Topics include psychometrics, thermal comfort, refrigeration cycles and system design, heating system design, air flow circuits, air space diffusion, compact heat exchanger design, and instrumentation/controls.

**ME 540 Mechanical Vibrations**
3.000 Credits
Prerequisite(s): ME 345


**ME 542 Advanced Dynamics**
3.000 Credits
Prerequisite(s): ME 345

An advanced treatment of analytical mechanics for particles, systems of particles and rigid body motions with special emphasis on three-dimensional motion. Lagrange's equation of motion will be introduced and utilized in the analysis of multiple-mass systems. Computer methods will be covered. Graduate standing or special permission. (YR).

**ME 543 Vehicle Dynamics**
3.000 Credits
Prerequisite(s): AENG 541

A treatment of the response, ride, and maneuvering of motor vehicles. Road loads, suspension systems, mechanics of pneumatic tires.

**ME 545 Acoustics and Noise Control**
3.000 Credits
Prerequisite(s): ME 345

Fundamentals of acoustical waves, sound propagation and intensity, instruments for vibration and noise, HVAC system noise, automobile and aircraft noise, noise control techniques. Graduate standing or special permission. (YR).

**ME 547 Powertrains I**
3.000 Credits
Prerequisite(s): ME 265

Topics in vehicle powertrain kinematics and dynamics, engine output characteristics, vehicle road load analysis, engine-transmission matching, design and analysis of gears and gear systems, planetary gear trains, design of powertrain components, clutch design and analysis, transmission design and analysis, torque and ratio analysis of automatic transmissions. (YR).

**ME 548 Automotive Powertrains II**
3.000 Credits
Prerequisite(s): AENG 547 or ME 547

Simulation of vehicle performance; dynamics in gear shifting; engine balance, fuel economy, and performance related to powertrains; powertrain arrangements, manual and automatic transmissions, automotive axles, four-wheel-drive systems; design and manufacturing of gearing systems.

**ME 554 Theory of Gearing and Applications**
3.000 Credits

The course emphasizes the theory and methodology for the design, manufacturing and analysis of gears and other engineering surfaces. Topics include differential geometry, kinematics of conjugate motions, surface enveloping, curvatures, cutter design, machine tool settings, simulation of machining process, tooth contact analysis, geometry modeling and design of power transmissions. Graduate standing or special permission. (YR).

**ME 556 Stress and Stren Cons in Design**
3.000 Credits
Prerequisite(s): ME 361

Treatment of stress and strength aspects of machine design. Analytic and experimental determination of stresses in machine members. Evaluation of strength under steady and fatigue loadings. Post-yield behavior, residual stress, temperature and corrosion effects. Graduate standing or special permission. (YR).

**ME 558 Fracture and Fatig Cons in Design**
3.000 Credits
Prerequisite(s): ME 360

A comprehensive review of fracture and fatigue processes in engineering material with emphasis on mechanics instead of mechanisms of failure. Design methodology based on fracture toughness and fatigue crack propagation is presented. Laboratory test methods and data interpretations are also presented. Graduate standing or permission of instructor. (YR).

**ME 560 Experimental Methods in Design**
3.000 Credits
Prerequisite(s): IMSE 317
Planned experiments and their statistical analysis. Emphasis on application in life and strength testing. Graduate standing or special permission. (YR).

**ME 563  Advanced Instrumentation and Control**
3.000 Credits
Prerequisite(s): ME 348

Analysis of design techniques in modern control theory are presented. State space concepts, digital control, and adaptive control methods are covered, along with information on practical implementation problems experienced with these control techniques. Graduate standing or special permission. (YR).

**ME 565  Mechatronics**
3.000 Credits
Prerequisite(s): ME 442 or ECE 365

Mechatronics, as an engineering discipline, is the synergistic combination of mechanical engineering, electrical engineering, control engineering, and computer science, all integrated through the design process. The course is to establish a working familiarity with the key engineering elements in the design and control of electro-mechanical systems in general and automotive systems in particular. The key engineering elements include microprocessor technology, electronics, sensors and actuators, data communication and interface, control algorithms, and mechanisms of machine elements. The course is to introduce a design methodology in an integrated system environment through case studies and design projects. (AY).

**ME 567  Reliability Considerations in Design**
3.000 Credits
Prerequisite(s): ME 361

Theory and application of common statistical distributions to the analysis of both life and strength data for components. Introduction to system reliability. Emphasis on use of digital computer in reliability simulation and analysis. Graduate standing or special permission. (YR).

**ME 571  Conduction Heat Transfer**
3.000 Credits
Prerequisite(s): ME 371

Conduction heat transfer in steady and transient state, including heat sources. Analytical, numerical, graphical, and analog methods of solution for steady and fluctuating boundary conditions. Thermal stresses. Dynamics of thermal instrumentation and heat exchangers. Graduate standing or special permission. (YR).

**ME 572  Convection Heat Transfer**
3.000 Credits
Prerequisite(s): ME 371

The course is primarily concerned with the determination of the rate of heat transfer due to the transport of energy to or from surfaces by both molecular conduction processes and gross fluid movement inside channels and over external surfaces. Emphasis will be placed on basic understanding of the convection heat transfer phenomena and the necessary mathematical techniques for the solution of such problems along with engineering applications. Graduate standing or special permission. (YR).

**ME 573  Radiative Transport of Heat**
3.000 Credits
Prerequisite(s): ME 371


**ME 580  Advanced Engineering Materials**
3.000 Credits

A second course in materials which expands the philosophy that all materials possess common traits which allow: (1) interchange of classes of materials to perform the same function, e.g., metals, polymers, ceramics, composites, etc.; and (2) understanding of the mechanisms of property controls in new materials. There is an attempt to provide equal representation of the science and the phenomena of engineering materials. Greater emphasis is placed on thermodynamics, stress-strain relations, multicomponent phase equilibria, and such other areas as received minimal exposure in the first course in materials. As a result of present technology trends, more time is spent on composites and achievement of design specifications through synthesis. Graduate standing or special permission. (YR).

**ME 581  Materials for Manufacturing**
3.000 Credits
Prerequisite(s): ME 381


**ME 582  Injection Molding**
3.000 Credits
Prerequisite(s): ME 381

This is an in-depth course on injection molding processes, which include the conventional injection molding process, low pressure injection molding, structural sandwich molding, gas assisted injection molding, etc. Material, process and tool design parameters are emphasized. The roles of rheology and flow modeling are discussed. Design issues for injection molded products are also discussed. Injection molding applied to other materials, such as ceramics, is also described. (YR).

**ME 583  Mechanical Behavior of Materials**
3.000 Credits
Prerequisite(s): ME 361

Mechanical behavior of materials is covered in relation to their
Structures, deformation characteristics and failure mechanisms. Means of improving strength, fracture toughness and other mechanical properties are discussed. Environmental effects on mechanical behavior are also included. The emphasis is on metals; however, polymers and ceramics are also covered. Graduate standing or special permission. (YR).

ME 584 Mechanical Behavior of Polymer
3.000 Credits
Prerequisite(s): ME 361

Mechanical behavior of polymers and ceramics are considered in relation to their structures, processing and applications. Emphasis is given on their deformation, fatigue and fracture characteristics. Strengthening mechanisms for both materials are discussed. Graduate standing or special permission. (YR).

ME 585 Cast Metals in Eng Design
3.000 Credits
Prerequisite(s): ME 381 or ME 583

An understanding of the properties of the most important cast metals is obtained by melting, casting, and testing. In addition to measurement of mechanical properties, resistance to heat, wear, and corrosion is discussed. The application of these properties in the design of critical parts in the aircraft, automotive, chemical, mining, and railroad industries is presented by case histories and examination of castings. Graduate standing or special permission.

ME 586 Materials Consid in Manufactur
3.000 Credits
Prerequisite(s): ME 481 and ME 361

Manufacturability of materials and influence of processing variables on the properties of manufactured products are important considerations in materials selection and product design. These issues are addressed on the basis of mechanical deformation and thermal characteristics of materials during processing. Test methods to measure formability, castability, machinability, etc., are critically discussed. Defects in manufactured products including their origin and detection are also discussed. Graduate standing or special permission. (YR).

ME 587 Automotive Composites
3.000 Credits
Prerequisite(s): ME 360

The emphasis in this course is on automotive composites, such as SMC, SRIM and RTM. In addition to properties and applications of these materials, this course covers manufacturing processes, design considerations, test methods and quality control techniques used for automotive composites. The use of continuous fiber composites in automotive applications, such as leaf springs, drive shafts and energy absorbing structures, are also discussed. (YR).

ME 588 Production of Mech Products
3.000 Credits
Prerequisite(s): ME 381

Selecting and performing unit operations; processing metals and composites; adjusting composition and microstructure; assembling and joining; finishing and packaging. Material handling. Flexible systems. Machine and system capability studies. Maintaining plant and equipment. Safe operations. Graduate standing or special permission. (YR).

ME 589 Composite Materials
3.000 Credits

This course will consider four different aspects of composite materials; namely, materials, mechanics, manufacturing and design. Recent developments on fiber reinforced plastics and metals will be covered. Fundamental analytical concepts on micro and macro mechanics will be emphasized to create a better understanding of the design principles of composite materials. Graduate standing or special permission. (YR).

ME 591 Degradation of Materials
3.000 Credits
Prerequisite(s): ENGR 250 or CHEM 146

The course will introduce students to the fundamentals of corrosion and degradation behavior of materials. The degradation of metals, polymers and composites will be discussed. Monitoring and life prediction techniques will be covered. Preventive measures such as materials selection and design, protective coating, surface treatments, inhibitors, and electrochemical techniques are applied. Discussion of when they should be used, and how various techniques can be integrated to solve complex problems. (AY).

ME 596 Internal Combustion Engines I
3.000 Credits
Prerequisite(s): ME 330

Comparison of several forms of internal combustion engines including Otto and Diesel type piston engines; performance parameters and testing; thermodynamic cycles and fuel-air cycles; combustion in SI and Diesel engines; charge formation and handling; ignition; elements of exhaust emissions. (Not available to students with ME 496 or equivalent background.)

ME 597 Internal Combustion Engines II
3.000 Credits
Prerequisite(s): AENG 596 or ME 596

Fuel flow and air flow measurements and techniques; engine maps; fuel and ignition control and control strategies; combustion and burn rate considerations in engine design; intake and exhaust systems; emissions and control strategies; emission test procedures.

ME 598 Engine Emissions
3.000 Credits

This course introduces students to the fundamentals of engine exhaust emissions, including their formation mechanisms and abatement techniques. The students will be familiarized with the present emission control technologies and future challenges. The topics covered include: engine emissions and air pollution; review of emission regulations; catalyst fundamentals; catalyst aftertreatment techniques for gasoline, diesel, and lead-burn engines; discussion of cold start emission control and breakthrough catalytic technologies. (AY).
ME 600  Study or Res in Sel Mech Eng Topics
1.000 TO 3.000 Credits

Individual or group study or design in an area of Mechanical Engineering under the supervision of a member of the graduate faculty. The student will submit a report on the project and give an oral presentation to a panel of faculty members at the close of the term. Graduate standing or special permission.

ME 601  Exper Research in Mech Eng
1.000 TO 3.000 Credits

Laboratory investigation in an area of Mechanical Engineering under the supervision of a member of the graduate faculty. The student will submit a report on the project and give an oral presentation to a panel of faculty members at the close of the term. Graduate standing or special permission. (YR).

ME 602  Guided Study in Mech Eng
1.000 TO 3.000 Credits

Independent Study of specified material in an area of Mechanical Engineering under the guidance of a member of the graduate faculty. The student will submit a report on the project and give an oral presentation to a panel of faculty members at the close of the term.

ME 607  Adv Mechanical Engin Problems
3.000 Credits

A graduate-level analytical study of selected topics in mechanical engineering. The subjects of study in each term usually depend on student and instructor interest. Typical areas of study include vibrations of continuous or lumped systems, fluid mechanics, devices, thermodynamics, heat transfer, mechanics of solids, materials, or processing, etc. The course can be organized to meet the subject needs of a group of students with mutual interests.

ME 610  Finite Elem Methods--Nonlinear
3.000 Credits
Prerequisite(s): ME 510

Review of FE theory in linear static. FEA in dynamics. FEA in heat transfer. FEA in fluid mechanics. FEA in nonlinear problems; material and geometrical nonlinearities, total and updated Lagrangian formulations, solution techniques. Use of FE codes. Graduate standing or special permission. (YR).

ME 640  Advanced Vibration Theory
3.000 Credits
Prerequisite(s): ME 540

The course will emphasize the similarities between various types of continuous systems as well as common features of continuous and discrete systems. Variational principle will be introduced as a notion of natural modes of vibration for discrete systems is reviewed. Natural modes of vibration for continuous systems will be discussed using the boundary value formulation, the general formulation of the eigenvalue problem and orthogonality. These concepts will be applied to bars, rods, membranes, and plates. Approximate methods will be introduced to determine the natural modes of vibration for complex continuous systems. A few methods to be considered include the Rayleigh-Ritz, Galerkin, Collocation, Myklestad, and Lumped-parameter methods. All the approximate methods presented will allow expedient numerical solution by means of high-speed computers. The damped and undamped response to deterministic excitations will be considered for various systems. Graduate standing or special permission.

ME 642  Simulation of Mechanic Systems
3.000 Credits
Prerequisite(s): ECE 365

Analysis, synthesis, and optimization of linear, multilinear and nonlinear mechanical systems with the electronic analog computer. Graduate standing or special permission. (YR)

ME 699  Master's Thesis
6.000 Credits

Graduate students electing the course, while working under the general supervision of a member of the department faculty, are expected to plan and carry out the work themselves and submit a thesis for review and approval, and also present an oral defense of the thesis. Students must satisfactorily complete 6 credit hours in ME 699, but these hours may be spread over more than one term. Graduate standing or special permission.
SCHOOL OF EDUCATION

Administration

Paul Zionts, PhD, Dean
Gail Luera, PhD, Associate Dean
Mary Trepanier-Street, EdD, Associate Dean
Paul Fossum, PhD, Coordinator, MA in Teaching
Seth Hirshorn, PhD, Coordinator, MPA Program
Seong Bock Hong, PhD, Coordinator, Early Childhood Program
Raymond P. Kettel, EdD, Coordinator, MA in Education
Belinda Lazarus, PhD, Coordinator, Special Ed: LD/EI and Inclusion Specialist Programs
Richard Moyer, EdD, Coordinator, MS in Science Education
Yvonne DeCarlo, Budget Analyst
Mary Fulmer, Administrative Specialist
Shirley Solomon, Administrative Assistant
Joann Otlewski, Teacher Certification Officer and Director of Student Services Office
Robert Simpson, III, Computer Specialist
Monique Davis, Secretary Intermediate
Judy Garfield, Secretary Intermediate
Sandy Kulka, Academic Secretary
Elizabeth Morden, Secretary Intermediate
Pat Parker, Secretary Intermediate
Carolyn Williams, Academic Services Secretary

Faculty (Full-Time)

Martha Adler, PhD, University of Michigan, Assistant Professor of Education
Bonnie M. Beyer, EdD, Vanderbilt University, Professor of Education and Educational Administration
Stein Brunvand, PhD, University of Michigan, Assistant Professor of Educational Technology
Christopher J. Burke, PhD, University of Illinois at Urbana-Champaign, Assistant Professor of Science Education
Nancy Douglas, PhD, Southern Illinois University, Associate Professor of Education
Mesut Duran, PhD, Ohio University, Associate Professor of Education
Susan Everett, PhD, University of Iowa, Assistant Professor of Science Education
Paul Fossum, PhD, University of Minnesota, Associate Professor of Education
Seth I. Hirshorn, PhD, Syracuse University, Associate Professor of Public Administration
Seong Bock Hong, EdD, University of Massachusetts, Amherst, Associate Professor of Education
Raymond P. Kettel, EdD, Wayne State University, Associate Professor of Education
Kim Killu, PhD, Ohio State University, Associate Professor of Education
Belinda Lazarus, PhD, Ohio State University, Professor of Special Education
Gail R. Luera, PhD, University of Michigan, Associate Professor of Science Education
Richard Moyer, EdD, University of Northern Colorado, Professor of Science Education
John B. Poster, PhD, University of Chicago, Professor of Public Administration and Education
Laura Reynolds-Keefer, MA, University of South Carolina, Assistant Professor of Educational Psychology
Kathleen Silverman, PhD, Northwestern University, Assistant Professor of Early Childhood Education
Julie Taylor, PhD, University of Cambridge, Associate Professor of Education
Leslie J. Thornton, II, PhD, University of Michigan, Associate Professor of Education
Karen Thomas-Brown, PhD, University of the West Indies, Assistant Professor of Education
Dale Thomson, PhD, University of Maryland, Assistant Professor of Public Administration
Mary Trepanier-Street, EdD, University of Rochester, Professor of Education

Cooperating Faculty

Judith Flowers, PhD, Research Associate
Eileen Kaller, MA, Lecturer in Mathematics
Angela Krebs, PhD, Associate Professor of Mathematics
Judy Nesmith, MS, Senior Lecturer in Natural Sciences
Charlotte Otto, PhD, Professor of Chemistry
Margaret Rathous, PhD, Assistant Professor of Mathematics
Rheta N. Rubenstein, PhD, Professor of Mathematics

Professors Emeriti

Paul Carter, EdD, Professor of Education
Joseph Cepuran, PhD, Associate Professor of Public Administration
Claudia Collin, PhD, Assistant Professor of Education
Grace Kachaturoff, EdD, Professor of Education
Greta B. Lipson, EdD, Associate Professor of Education
Jane A. Romatowski, EdD, Professor of Education
Rosalyn Saltz, PhD, Professor of Education
Daniel G. Sayles, PhD, Associate Professor of Education
Darlene Van Tiem, PhD, Associate Professor of Education
Roger Verhey, PhD, Professor of Mathematics, Director of the Center for Mathematics Education

Child Development Center Staff

Mary Trepanier-Street, EdD, Director
Jennifer Bauer, MA, Educational Coordinator
Tammy Daigneau, BS, Early Childhood Professional
Kathy Filipiak, BA, Early Childhood Professional
Caryn Finklestein, MA, Early Childhood Professional
Seong Bock Hong, PhD, Cooperating Faculty
Linda Lapansee, Administrative Assistant
Jamie Paris, BGS, Early Childhood Professional
Katie Silverman, PhD, Cooperating Faculty
Lia Simpson, Secretary Intermediate

School of Education Mission Statement

The mission of the School of Education is to prepare and sustain exemplary teachers, trainers and administrators through
emphasis on scholarship, diverse clinical experiences, and practice in effective service delivery.

To achieve its mission, the School of Education draws upon a broad assortment of institutional resources. Use is made of staff and programs in other schools and colleges of the University. Additionally, the facilities of local school districts, other public agencies and private corporations are regularly utilized to provide students with a rich spectrum of laboratory experiences.

Students participate in the affairs of the School in a variety of ways. There are programmatic advisory committees as well as the student representative group, the Association of Educators. Students also evaluate courses and furnish exit interviews at the end of their graduate degree programs.

History of the School

Shortly after the UM-D opened in 1959, a small teacher certification program was added to UM-D’s liberal arts division. Its first faculty chair was Paul D. Carter. With the academic reorganization of the campus in the spring of 1973, the department became an independent unit with its own regentally appointed associate dean. During the spring of 1974, it was authorized to provide post-baccalaureate instruction leading to continuing certification. A year later, it was granted authority to offer a Master of Arts degree in Education. In 1984 the education unit was reorganized as the School of Education. Richard W. Morshead was appointed dean. In 1992 the Master in Public Administration program was transferred from the Interdisciplinary Studies unit to the School of Education. A Master’s degree in Special Education, with an endorsement in Learning Disabilities, was introduced in 1993, and in 1997 an endorsement in Emotional Impairments was added. More recently the Master of Arts in Teaching and the Master of Science in Science Education programs have been added.

U.S. Department of Education
Title II Reports

Michigan Test for Teacher Certification

Institution: 292 – University of Michigan-Dearborn
Number of Program Completers: 227
(Results for less than 10 students taking an exam are not reported.)

<table>
<thead>
<tr>
<th>Test Field/Category</th>
<th>Number Tested</th>
<th>Number Passed</th>
<th>Pass Rate</th>
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<td>Math</td>
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</tr>
<tr>
<td>07 Economics</td>
<td>5</td>
<td>--</td>
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</tr>
</tbody>
</table>

Accreditation

The School of Education is a fully accredited professional unit of the University of Michigan-Dearborn. Along with the rest of UM-D, it carries the approval of the Higher Learning Commission. As a teacher preparation institution, it is a member of the American Association of Colleges for Teacher Education and the Michigan Association of Colleges for Teacher Education. It is approved as a teacher certification institution by the Michigan Department of Education.
MCOATT

The School of Education at the UM-D is a charter member of the Consortium for Outstanding Achievement in Teaching with Technology. It is also a pioneer in offering the Michigan Certificate for Outstanding Achievement in Teaching with Technology. For more information regarding certification for pre-service teachers, click on the link at http://www.umd.umich.edu/mitten/mcoatt.htm.

Code of Conduct

The School of Education adheres to the University policies regarding the Student Academic and Non-Academic Code of Conduct. Refer to the General Information section of the Graduate Catalog, the UM-D Undergraduate Catalog, or the Student Handbook of the Horace H. Rackham School of Graduate Studies for further information.

Grading for Master Degree Programs

The method of grading graduate students is the letter grade system (A, B, C, D, E,). Courses in which grades of D, E, or U are earned cannot be used in fulfillment of degree requirements.

Grades of + and - may be given to graduate students whenever such fineness of discrimination is possible. These letter grades are translated into honor points for each hour of credit in a course as follows:

\[ A+ = 9 \quad B+ = 6 \quad C+ = 3 \quad D \text{ and } E = 0 \]
\[ A = 8 \quad B = 5 \quad C = 2 \quad (failure) \]
\[ A- = 7 \quad B- = 4 \quad C- = 1 \]

The honor points earned for a course are calculated by multiplying the number of credit hours for which the course was elected by the number of honor points earned on the above grading scale (e.g., if a grade of B+ is earned for a three-credit hour course, the total number of honor points for the course is 3 credit hours times 6, or 18 honor points).

To maintain satisfactory academic standing, a student must have a minimum cumulative graduate grade point average (GPA) of 5.0 or B for all graduate courses taken for credit and applied toward the degree program.

Incomplete (I) Grades

An incomplete grade may be assigned to a student only if the unfinished part of the student's work is small, the work is unfinished for reasons acceptable to the instructor and the student's standing in the course is a B grade or higher.

The student and the instructor should discuss a schedule for completing the remaining work prior to the conferral of I. An incomplete contract form signed by the student and by the instructor must be completed. Grades of incomplete can be changed to a letter grade only if the work is completed. Students should contact the instructor, School of Education Student Services Office or the Rackham School of Graduate Studies Student Handbook (if applicable) for the deadline date for completion. If the grade of I has not been completed within the allotted time limit, credit can be earned only by re-electing the course, attending classes, and completing all required coursework and examinations.

Post-Degree Programs

Certification Only Program

Persons already holding earned degrees may acquire an elementary or secondary provisional teacher's certificate through the post-degree Certification Only Program. Applicants to this program are required to meet the certification requirements in force at the time they are admitted.

Admission Requirements

To be admitted to the program, an applicant must have:

1) A baccalaureate degree from a regionally accredited institution.
2) A minimum grade point average of 2.75/4.0 in the undergraduate degree.
3) A minimum GPA of 2.75 in the selected teaching major and minor.
4) A passing score on the Michigan Test for Teacher Certification Basic Skills Test.

Professional Education Certificate Program

This program is ideal for the teacher who wants to maintain a valid teaching credential but is not interested in a Master's degree program. Upon the expiration of the provisional certificate, teachers are required by state law to secure a Professional Education Certificate. This certificate may be earned through either a planned 18-hour program or a program leading to an additional major, minor, or endorsement. Upon completion of the post-degree Professional Education Certificate Program, the University makes the recommendation for certification to the Michigan Department of Education.

The Michigan Professional Education Certificate is issued to teachers who have held a provisional certificate provided they have: 1) taught successfully for three years according to the validity of their provisional certificate, 2) earned 18 semester hours in a planned program applicable to their professional development, 3) met other state requirements, and 4) are recommended for certification by a recommending university.

Enhancement Program

Through the post-degree Enhancement Program, teachers who already have earned a Michigan Permanent, Continuing, or Professional Education Certificate may add another major, minor, or endorsement to their current teaching certificate.

Six endorsements are available to certified teachers. These are as follows: 1) early childhood (ZA), 2) English as a Second Language, 3) middle level (ZL), 4) special education/learning disabilities (SM), 5) special education/emotional impairments (SE), and 6) Reading Specialist K-12 (BR).
MASTER OF ARTS IN EDUCATION

In conjunction with the Horace H. Rackham School of Graduate Studies, the School of Education of the UM-D offers a Master of Arts degree in Education at UM-D. This is a degree, which is designed for educators who desire to fulfill all requirements for a University of Michigan master's degree, including residency, at UM-D. Courses are offered in the late afternoon, the early evening, and the summer in order to accommodate working students. Classes are taught by the faculty of the School of Education as well as by selected adjunct faculty who are specialists in their field.

The program is designed for teachers who wish to strengthen their competencies, expand their professional outlook and gain greater knowledge and understanding of their subject specialization. Through this program, teachers may apply for an endorsement in Early Childhood Education, Educational Technology, English as a Second Language, Middle Level Education, Middle Grades Mathematics, Reading Specialist K-12, and other endorsements for which the School of Education is approved, a renewal of the Provisional Certificate, or obtain a Professional Education Certificate. An Early Childhood Special Education Inclusion UM-D Certificate and a Middle Grades Mathematics Specialty Certificate are also available.

For additional information visit the website at www.soe.umd.umich.edu.

Rules and Procedures

Since some graduate programs in education at the University of Michigan are authorized through the Horace H. Rackham School of Graduate Studies, it is the responsibility of each graduate student to be thoroughly familiar with the rules and procedures contained in the Rackham School Announcement and the Rackham MA in Education Handbook.

Admission

Eligibility for regular admission into the program includes completion of a bachelor's degree, a 3.0 (B) undergraduate grade point average or better, and a teaching certificate.

One official transcript from the college/university granting the undergraduate degree, one official transcript from all other colleges and universities attended, three recommendation forms, a writing sample, and a copy of a teaching certificate must be submitted to the Graduate Coordinator in the School of Education at UM-D.

Individuals who wish to apply for the Master of Arts in Education may obtain an application from the School of Education, University of Michigan-Dearborn 262 Fairlane Center South, 19000 Hubbard Drive, Dearborn, MI 48126-2638, telephone 313-593-5091 or visit the website at www.soe.umd.umich.edu.

Minimum Grade Point

A cumulative grade point average of 5.0 (B) is required for continuation in the program. Courses in which grades of D, E, or U are earned cannot be used to fulfill degree requirements. Students whose cumulative grade point average falls below a 5.00 (B) will be placed on probation. Continued deficiencies will result in a required withdrawal from the Rackham program.

Readmission

Students not registered for classes within one calendar year must submit a readmission form. Approval for readmission must be obtained in order to register for classes.

Residency Requirements and Time Limits

Students seeking a master's degree must fulfill the residency requirement by completing at least one-half of the degree in courses offered by the UM-D. All coursework toward the master's degree must be completed within six (6) consecutive years from the date of first enrollment in the Graduate School.

Transfer of Credit

Students may apply for transfer of credit of a maximum of fifteen semester hours from any University of Michigan campus or six semester hours from another accredited collegiate institution. Only graduate credit hours earned during the last five years that relate to the program and for which a grade of B or better was received can be considered for transfer. Transfer credit can be requested only after admission to the program and completion of eight hours of Rackham graduate-level letter graded coursework. Correspondence and extension courses as well as Continuing Education Units (CEU) are not considered for transfer of credit. All courses to be transferred must be approved by the MA Graduate Coordinator. A "Request for Transfer of Credit" form and two official copies of the transcript must be submitted. Enrolled students must obtain prior approval of the MA Coordinator to elect classes off campus.

Program of Study

This 30 (minimum) semester hour master's degree is divided into three parts: 1) Core Themes, 2) Professional Studies, and 3) Cognate Studies. Considerable flexibility is available in the professional and cognate areas to satisfy individual interests and needs.

Core Themes ...................................................... 9 hrs

The core sequence provides continuity and integration for all programs. Ideas of policy, change, growth and diversity are developed in the following courses.

EDA 501 Advanced Social Foundations of Education
EDC 556 Learning and Classroom Assessment
EDK 500 Introduction to Research in Education

These courses are to be selected with the advisor’s approval in consideration of the student’s academic background and/or teaching assignments.

Students are strongly recommended to elect at least one core class during the first year of work. Completion of all core classes is recommended within the first 20 credit hours. All core classes must be elected on the UM-D campus.
Professional Studies .................. 9-15 hrs

The professional studies courses are offered through the School of Education and other units of the University. These courses are to be selected with the advisor’s approval in consideration of the student’s academic background and/or teaching assignments.

Cognate Studies .................................. 6-12 hrs

Cognate studies are approved graduate courses offered in the College of Arts, Sciences, and Letters, School of Management, or in the Public Administration Program. Courses should be selected with the advisor’s approval in consideration of the student’s academic background and/or teaching assignment.

Professional studies and cognate studies courses may be selected to enhance the student’s current areas of specialty in elementary or secondary education or to obtain an additional area of specialization. These courses may be used to add a major or minor to the certificate. If an additional major or minor is to be added to the certificate, students must meet all the State of Michigan and UM-D certification requirements for that major or minor. Only courses required for the major or minor, which are approved for graduate credit may be applied toward the MA program. Professional and cognate studies courses may also be used toward meeting the requirements for State teaching endorsements.

Details concerning the requirements and the appropriate coursework can be secured from the student’s assigned advisor, the Graduate Coordinator, or from the School of Education Student Services Office. A more definitive description of the program is available from the School of Education’s web page at www.soe.umd.umich.edu.

Advising

Students must plan their program with their assigned advisor or with the MA Coordinator. Contact the School of Education at 313-593-5091 for an advising appointment.

Petition

All graduate policies have been formulated by the Horace H. Rackham Graduate School and by the UM-D School of Education with the goal toward academic quality. This goal requires that policies be equitably and uniformly applied. However, there may be an infrequent extenuating circumstance that warrants individual consideration. In such a case, a petition to waive or modify a policy may be filed by the graduate student. Please see the Rackham Graduate Secretary for information and forms regarding the petition process.

MA Exit Essay

The purpose of the MA Exit Essay is to provide the School of Education with valuable information for program evaluation and program development. The completion of the MA Exit Essay may provide the students with an opportunity for reflection, synthesis and evaluation of their educational experiences at UM-D

The Exit Essay is required for program completion. It is to be completed during the term in which the student is graduating from the program. Essays will not be graded. Forms for the MA Exit Essay are available from the School of Education Student Services Office.

Graduation

Students who plan to graduate in a specific semester should meet with their advisor or Graduate Coordinator for a program audit the semester before graduation. A formal graduation audit must be completed early in the last semester with the Graduate Secretary or Graduate Coordinator. A diploma application must be submitted at the time of registration for the final semester.

MASTER OF ARTS IN TEACHING (MAT)
(Secondary School Certification)

The Master of Arts in Teaching program is designed for those who have completed the bachelor’s degree in non-educational fields and wish to earn the State of Michigan Secondary School certification. Students in the MAT program will bring valuable experience and expertise to assist in exploring the practice of teaching through thinking about goals, values, beliefs and assumptions about teaching, and will consider schools in broad, social, political and historical contexts.

The MAT degree will be offered weekdays in the late afternoon and evening hours and/or Saturdays to enable students to earn the degree through part-time study. Students who are employed will be able to complete the degree through after-work study except for the Directed Teaching requirement. This will occur during the last semester of each student’s residency. Students have six years to complete the degree.

MAT Program of Study Required Courses

This program of study is under review; contact a program advisor for updates.

The total number of credit hours required for the MAT degree is 36.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDA 500</td>
<td>Theoretical Foundations of Education</td>
<td>2 hrs</td>
</tr>
<tr>
<td>EDB 500</td>
<td>Educational Trends in a Multicultural Society</td>
<td>2 hrs</td>
</tr>
<tr>
<td>EDC 502</td>
<td>Adolescent Development</td>
<td>2 hrs</td>
</tr>
<tr>
<td>EDC 517</td>
<td>Management of Classroom Behavior</td>
<td>2 hrs</td>
</tr>
<tr>
<td>EDC 554</td>
<td>Evaluation of Classroom Learning</td>
<td>2 hrs</td>
</tr>
<tr>
<td>EDC 561</td>
<td>Educating the Exceptional Child</td>
<td>2 hrs</td>
</tr>
<tr>
<td>EDD 569</td>
<td>Reading in the Content Areas</td>
<td>3 hrs</td>
</tr>
<tr>
<td>EDT 511</td>
<td>Educational Technology</td>
<td>3 hrs</td>
</tr>
<tr>
<td>EDD 518</td>
<td>Directed Teaching MAT</td>
<td>12 hrs</td>
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<tr>
<td>Methods Course in the Major Area*</td>
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<td></td>
</tr>
<tr>
<td>Methods Course in the Minor Area*</td>
<td>3 hrs</td>
<td></td>
</tr>
</tbody>
</table>

*Secondary Methods Courses
EDD 501  Teaching English in the Secondary School...3 hrs
EDD 565  Teaching Mathematics in the Secondary School ...........................3 hrs
EDD 580  Teaching Science in the Secondary School ...................................3 hrs
EDD 590  Teaching Social Studies in the Secondary School ............................3 hrs
EDD 596  Second Language Teaching .........................................................3 hrs

**Admission Requirements:**

Those seeking admission must schedule an intake interview with the program coordinator. Applicants must also complete a signed and dated MAT Application with the fee attached. For current information on fees, students should contact the School of Education 313-593-5091. Recommendations must be mailed on the forms provided. A Statement of Purpose, which is a concise, well-organized discussion of the applicant’s academic and career goals, must accompany the application as well as unofficial transcripts with the bachelor’s degree posted. Admission requires evidence of a minimum GPA of 3.0, normally demonstrated as the cumulative GPA from the applicant’s baccalaureate degree or as the cumulative GPA from a completed graduate degree. Official transcripts will be required for admission to the program.

Admission to the MAT program also requires satisfactory scores on the Michigan Test for Teacher Certification (MTTC) Basic Skills Test as well as satisfactory scores on the MTTC Subject Area Tests in both the major(s) and minor areas of concentration. All MTTC Tests must be passed satisfactorily prior to admission to the MAT Program.

Before registering for the MTTC tests, applicants should contact the School of Education at 313-593-5091 for procedures regarding reporting of MTTC scores to the UM-D School of Education.

In addition, all coursework in the major(s) and minor areas must be completed in order to gain full admission to the MAT program. The teaching majors and minors currently available for the State of Michigan Secondary School certification are: Biology, Chemistry, Computer Science (minor only), Earth Science, Economics, English, Environmental Studies, French, General Science, German (minor only) History, Mathematics, Physics, Psychology (minor only) Political Science, Social Studies (major only), Sociology (minor only), Spanish and Speech.

**Application**

Prospective applicants may contact the MAT Program Coordinator or Graduate Secretary in Room 262 Fairlane Center South. For more information and an application, telephone the Student Services Office at 313-593-5091 or visit the web site at www.soe.umd.umich.edu/mat.

**Minimum Grade Point**

A cumulative grade point average of 5.0 (B, or 3.0 employing a four-point scale) is required for continuation in the program. Students whose cumulative grade point average falls below this level will be placed on probation. Continued deficiencies will result in a required withdrawal from the MAT Program.

**MAT Exit Interview**

The MAT Exit Interview contributes to program evaluation and development and is to be completed prior to the student’s graduation from the program. MAT students must arrange for this interview, which is normally conducted during the student’s directed teaching term, through the School of Education at 313-593-5091.

**MASTER OF PUBLIC ADMINISTRATION (MPA)**

The MPA is offered by the Public Administration Program in conjunction with the Horace H. Rackham School of Graduate Studies. The MPA is offered at times convenient for public, educational, and nonprofit employees, and is intended to serve a diverse student body drawn from a variety of service organizations.

The MPA curriculum emphasizes practical skills and information for a wide range of human service organizations. The classes are designed to develop technical administrative skills and competence in leadership, personnel, finance and analytical areas. Given the diversity of candidate backgrounds and agencies represented, MPA candidates are encouraged to develop their abilities to work in teams and in a variety of organization contexts. Candidates prepare a portfolio which best presents their administrative competencies.

**The Program:**

The 36 (minimum) credit hour master's degree is divided into three parts: 1) Core and Information Systems, 2) Specialty Courses, and 3) Assessment Seminar and Internship. A minimum cumulative GPA of B (5.0) must be maintained to continue in the program.

**Admission:**

Eligibility for entrance into the MPA program includes a clear interest in the service sector, a bachelor's degree from an accredited school, an undergraduate 3.0 GPA (on a 4-point scale), and an ability to write on an acceptable level.

**Information**

Individuals who wish to apply for the Master of Public Administration degree program on the Dearborn campus may obtain application material on the Program’s website or from the School of Education Student Services Office, University of Michigan-Dearborn, 262 Fairlane Center South, 19000 Hubbard Drive, Dearborn, MI 48126-2638. telephone 313-436-9135. Applications may also be obtained from the Horace H. Rackham School of Graduate Studies Admissions, University of Michigan, 110 Rackham, Ann Arbor, Michigan 48109-1070. Applications should be mailed for receipt by July 30 for the fall semester; by November 30 for the winter semester; and by April 1 for spring semester.
Regulations:

Master of Public Administration Program students are fully responsible for determining both the program and Rackham requirements. A Rackham School of Graduate Studies Regulations Handbook is available for viewing in the Public Administration Office or may be purchased by writing to the Rackham Mail Room, 122 Rackham, University of Michigan, Ann Arbor, Michigan 48109-1070.

The following are some important rules and regulations selected from the Rackham Handbook:

Registration Information:

Rackham graduate students enrolled in the MPA Program must use Rackham election and drop/add forms and obtain the program director's signature for elections each term. If MPA students wish to elect an appropriate graduate-level Extension course, elective (other than those suggested), a directed study, or the Master's Project, they must obtain permission from the program director prior to registering. No courses are to be elected on a pass-fail basis. Students whose grade point average falls below a 5.0 (B) will be placed on probation (D+) and lower grades do not count toward graduation but are calculated as 0 for GPA). Continued deficiencies will result in a required withdrawal from the University. Students who have been absent for one calendar year must apply for readmission before registering for classes.

Advising may be obtained by phone or appointment. With proper approval and signatures, Rackham students may be permitted to drop or withdraw from courses up to the last day of classes without academic penalty. Drops, as well as withdrawals, for graduate students are initiated in the School of Education.

Residency Requirements and Time Limits:

Students seeking a MPA degree must fulfill the residency requirement by completing at least one-half of their degree in courses offered by the UM-D. All coursework toward the MPA degree must be completed within six consecutive years from the date of first enrollment in the Graduate School.

Transfer of Credit:

Rackham students may apply for up to six hours of inter-university transfer credit into the program provided the courses meet several requirements. Among these requirements are the following: a) the student applying for transfer of credit must have attained an average grade of B or better in eight or more credit hours of graduate-level residence work in the Rackham Graduate School [Non-letter grades, e.g. pass-fail or satisfactory/unsatisfactory are not eligible for transfer credit]; b) the student must submit a written application for transfer of credit to the program office; c) submission of an official copy of the transcript from the institution giving the courses to the program office. Additionally, courses cannot be transferred for credit if: a) they were not graduate-level courses; b) they were already applied in whole or in part toward a degree; c) taken more than five years before beginning the present Rackham program; or d) a grade below B was earned. Courses taken while enrolled as an undergraduate may be transferred under the above conditions with the following additional restrictions: a) courses at the 300 level or below (or equivalent) are not acceptable for graduate credit; b) courses at the 400 level (or equivalent) and above are acceptable for graduate credit if: a) the course had been approved for graduate credit by the graduate school of the institution, and b) the registrar or senior auditor of the granting institution certified that the course was not used in whole or in part to meet requirements for the bachelor's degree.

For intra-university transfer of credit, all previous regulations must be met. Up to one-half of the minimum number of credit hours required for a master's professional degree may be transferred to a student's Rackham record from inter-university and intra-university sources combined. The transfer of intra-university credit appears on the Rackham academic record and the associated grades received for this credit also appear and are computed in the student's cumulative grade point average. The University of Michigan Extension courses are treated as inter-university transfer of credit.

Graduation:

Students who plan to graduate in a specific semester must submit a diploma application to the Student Services Office within the first two weeks of that semester. MPA students may participate in graduation exercises (if desired) with the Dearborn and/or Ann Arbor student body.

Curriculum:

This area of study is under review. Contact Program Coordinator for additional information at 313-436-9135 or consult the web page at www.soe.umd.umich.edu.

MPA – Public Sector Specialty ................. 36 hrs

The Public Sector program requires completion of the MPA Core, specialty electives appropriate to administration in the public sector and approved by the Public Sector program advisor. Students must also complete the MPA Assessment Seminar (PADM 650).

Public Administration Core ....................15 hrs

PADM 505 Introduction to Administration ...........3 hrs
PADM 520 Leadership and Administration ............3 hrs
PADM 540 Administration of Financial Resources ......3 hrs
PADM 560 Administration of Human Resources .........3 hrs
PADM 580 Information Systems and Statistics for Administrators ........................................3 hrs

Electives .................................. 18 hrs approved by advisor

PADM 507 Strategic Communication
PADM 523 Legal and Regulatory Issues in Admin
PADM 525 Consulting and Staff Development
PADM 527 PR for the Nonprofit/Public Sector
PADM 541 Fund Accounting
PADM 548 Fundraising
PADM 561 Organizational Development and Theory
MPA in Nonprofit Leadership Specialty .......................... 36 hrs

The MPA in Nonprofit Leadership requires completion of the Public Administration Core, Nonprofit Leadership Specialty, the Assessment Seminar and a three credit Directed Study in Nonprofit Leadership. The design of the program is consistent with the guidelines established by the American Society of Association Executives.

Public Administration Core ..................................... 15 hrs

Public Administration Core ..................................... 15 hrs

Nonprofit Leadership Specialty .......................... 15 hrs

Nonprofit Leadership Specialty .......................... 15 hrs

Assessment Seminar .................................................. 3 hrs

Directed Study ......................................................... 3 hrs

Directed Study ......................................................... 3 hrs

Public Administration Core ..................................... 15 hrs

Public Administration Core ..................................... 15 hrs

MPA in Assessment and Evaluation .......................... 44 hrs

The MPA with a graduate certificate in Assessment and Evaluation requires: 1) completion of the Public Administration Core; 2) completion of the Methods Core seminars; 3) completion of the Technical Core; 4) an optional Internship in Assessment and Evaluation (PADM 720); 5) PADM 690 Directed Study in Assessment and Evaluation 6) PADM 650 Assessment Seminar.

Public Administration Core ..................................... 15 hrs

Public Administration Core ..................................... 15 hrs

MPA in Assessment and Evaluation .......................... 44 hrs

The MPA with a graduate certificate in Assessment and Evaluation requires: 1) completion of the Public Administration Core; 2) completion of the Methods Core seminars; 3) completion of the Technical Core; 4) an optional Internship in Assessment and Evaluation (PADM 720); 5) PADM 690 Directed Study in Assessment and Evaluation 6) PADM 650 Assessment Seminar.
Administrators ............................................. 3 hrs

Methods Core ..................................................... 15 hrs

- PADM 507 Strategic Communications .................. 3 hrs
- PADM 525 Consulting and Staff Development .......... 3 hrs
- PADM 581 Strategic Planning .............................. 3 hrs
- PADM 582 Policy Analysis and Development .......... 3 hrs
- PADM 583 Program Evaluation .......................... 3 hrs
- EDT 585 Technology for Administrators ................. 3 hrs

Technical Core .................................................. 8 hrs

Candidates must select, with the approval of their Advisor, eight credit hours of graduate course work in the Ann Arbor Program in Survey Research’s Summer Institute.

Internship (optional)

- PADM 720 Internship ........................................ 1-3 hrs

Directed Study .................................................. 3 hrs

- PADM 690 Directed Studies in Pub Administration .... 3 hrs

Seminar .............................................................. 3 hrs

- PADM 650 Assessment Seminar .......................... 3 hrs

Graduate Certificate-Only Programs: G

In addition to the MPA degree, the program offers the opportunity to obtain a certificate in educational administration, central office administration, nonprofit leadership or assessment and evaluation. These certificate programs are described below.

Educational Administration Certificate .................. 27 hrs

The qualifications for the certificate program in educational administration are the same as for the MPA—a bachelor’s degree from an accredited institution, an undergraduate GPA of 3.0 or other evidence of an ability to do graduate work, and an ability to write at the graduate level.

The certificate program offers a UM-D certificate in one of the following areas: Principal, Elementary or Secondary (27 credit hours) or Central Office Administration (18 credit hours). Required courses for the certificate are as follows:

Core .................................................................... 9 hrs

- EDB 501 Principalship ....................................... 3 hrs
- EDB 540 School Budgeting and Finance .............. 3 hrs
- EDB 560 Administration of Human Resources .......... 3 hrs

Professional Emphasis Requirements ................... 18 hrs

- EDB 502 The School and Community Relations ...... 3 hrs
- EDB 523 Legal and Regulatory Issues in Education .... 3 hrs
- EDB 583 Program Evaluation .............................. 3 hrs
- EDB 586 Curriculum Deliberation and Development ... 3 hrs
- EDT 585 Technology for Administrators ................. 3 hrs
- EDB 720 Internship ........................................... 3 hrs

Central Office Administration Certificate ............... 18 hrs

Candidates for the central office administration certificate must hold a masters degree (with a GPA of 5.0 or better) with appropriate coursework in Educational Administration. Students are required to complete an additional eighteen credit hours beyond the Masters degree in an approved program of study, including a practical internship experience in a central office setting. Required courses for the 18 credit certificate are as follows:

Core .................................................................... 12 hrs

- EDB 562 Labor Relations in School Setting ............. 3 hrs
- EDB 581 Strategic Planning and Needs Assessment ... 3 hrs
- EDB 582 Policy Analysis and Development ............ 3 hrs
- EDB 721 Internship in Central Office Admin ............ 3 hrs

Electives (choose two)

- PADM 548 Fundraising ....................................... 3 hrs
- EDB 507 Strategic Communication ...................... 3 hrs
- EDB 561 Organizational Development and Theory .... 3 hrs
- EDB 583 Program Evaluation .............................. 3 hrs
- EDT 585 Technology for Administrators ................. 3 hrs
- PADM 564 Performance Appraisal ........................ 3 hrs

Nonprofit Leadership Certificate ......................... 21 hrs

In addition to the required coursework for the Educational Administration certificate, candidates must have a valid State of Michigan teaching certificate verifying completion of a State approved program with a specialty in one of the three certificate program areas.

Contact the Student Services Office, 262 Fairlane Center South, 19000 Hubbard Drive, Dearborn, MI 48126-2638, or telephone 313-436-9135, for further information on this program.

Nonprofit Leadership Certificate ......................... 21 hrs

The admission qualifications for the certificate in Nonprofit Leadership are the same as for the MPA: a bachelor’s degree from an accredited institution, an undergraduate GPA of 3.0 or other evidence of an ability to do B graduate work, and an ability to write at the graduate level.

The certificate in Nonprofit Leadership requires completion of 21 credit hours. Students must complete 18 credit hours of Nonprofit Professional Emphasis courses and a three credit Directed Study approved by the candidate’s faculty advisor.

The design of the certificate program is consistent with the certification process established by the American Society of Association Executives and has been endorsed by the Michigan Society of Association Executives.

Nonprofit Professional Emphasis Courses .................. 18 hrs
MASTER OF EDUCATION IN SPECIAL EDUCATION

The Master of Education in Special Education provides students with advanced training in special education. The MEd-SPED offers three possible concentrations:

1) Learning Disabilities. The Learning Disabilities concentration includes all of the coursework needed to earn the master’s degree and the State of Michigan, Learning Disabilities Endorsement. Candidates must pass the MTTC and hold a Michigan teaching certificate.

2) Emotional Impairments. The Emotional Impairments concentration includes all of the coursework needed to earn the master’s degree and State of Michigan, Emotional Impairments Endorsement. Candidates must pass the MTTC and hold a Michigan teaching certificate.

3) Inclusion Specialist. The Inclusion Specialist concentration includes all of the coursework needed to serve students with disabilities in inclusive environments. In addition to the master’s degree, graduates receive a UM-D Inclusion Specialist Certificate.

Objectives

The School of Education offers an endorsement program in K-12 learning disabilities and K-12 emotional impairments for certified teachers. These endorsements may be earned in the context of a 30-credit Master of Education in Special Education degree. The program is a local program that is designed for working educators and offers evening coursework and summer internship placements.

The School of Education also offers a Master of Education in Special Education degree with an UM-D Inclusion Specialist Certificate. This program is a 30-credit hour online degree program that provides K-12 general-education teachers, administrators, social workers and other professionals an opportunity to gain the skills needed to teach students with disabilities in general education classrooms and mainstream settings. The Master of Education degree with an Inclusion Specialist Certificate program does not require a teaching certificate; furthermore, this program does not lead to teaching certification nor will it lead to an endorsement.

The Special Education Program enhances educational and career options by:

a) extending job opportunities from general education to learning disabilities or emotional impairments resource, consulting, and tutoring positions;
b) addressing the competencies needed for graduates to teach and serve students with disabilities in a variety of inclusive settings;
c) providing the background for graduates to seek special education administrative endorsements;
d) preparing graduates to work collaboratively with various educators and parents; and
e) providing the requisite skills needed for graduates to pursue doctoral studies in special education.

Assessment and Evaluation Certificate …29 hrs

Students interested in a graduate certificate-only program in assessment and evaluation have the same application requirements as all MPA students. The certificate-only program of study requires: 1) 18 credit hours of course work in the Methods Core; 2) 8 credit hours in the Technical Core; 3) an optional Internship; and 4) Directed Study.

Methods Core .......................................................18 hrs

PADM 507 Strategic Communications ..........................3 hrs
PADM 525 Consulting and Staff Development ..................3 hrs
PADM 581 Strategic Planning .....................................3 hrs
PADM 583 Program Evaluation ..................................3 hrs
EDT 585 Technology for Administrators ......................3 hrs
PADM 580 Information Systems and Statistics ................3 hrs

Technical Core .........................................................8 hrs

Candidates must select, with the approval of their Advisor, eight credit hours of graduate course work in the Ann Arbor Program in Survey Research’s Summer Institute.

Internship (optional)

PADM 720 Internship ..................................................3 hrs
(additive credit only)

Directed Study ....................................................3 hrs

PADM 690 Directed Studies in Pub Administration ........3 hrs

Directed Study ....................................................3 hrs

PADM 690 Directed Studies in Pub Administration ........3 hrs

Contact the Student Services Office, 262 Fairlane Center South, 19000 Hubbard Drive, Dearborn, MI 48126-2638, 313-436-9135 or visit the web: http://www.soe.umd.umich.edu for further information on this program and updates on program requirements.
Admission

Eligibility for entrance into the program includes completion of a bachelor's degree with a 3.0 (B) grade point average, and a Michigan Teaching Certificate (except for the Inclusion Specialist Certificate program).

For educational purposes, a wide mix of administrative activities and skills are desirable. All potential students, regardless of background or specialization, are encouraged to apply. Arrangements for completing any deficiencies will be made at the initial advising session.

Formal application will be made on the "Application for Graduate Admission, Master of Education - Special Education Degree Program". Since enrollment to the program is limited, special attention should be paid to the "Statement of Purpose" in the application.

Application

Applications should be completed and include one official copy of the applicant's undergraduate transcript with the degree posted, official transcripts from all other colleges or universities attended, two letters of recommendation, a statement of purpose, a copy of the Michigan Teaching Certificate, except for those applying for the Inclusion Specialist Certificate program, and the $30.00 fee attached.

Those who are interested in the program and do not have an application form should write or telephone the University of Michigan-Dearborn, Special Education Office, 262 Fairlane Center South, 19000 Hubbard Drive, Dearborn, MI 48126-2638

For answers to specific questions, applicants may either telephone 313-436-9135 or contact the Program Coordinator, Dr. Belinda Lazarus, at 313-436-9136.

Graduate Non-Candidate for Degree
(GNCFD)

Graduate Non-Candidate for Degree (GNCFD) are for those students who have missed the application deadline date to apply for the program or for those who would like to take a course to see what the program is like. GNCFD status allows you to take some graduate-level courses for graduate credit, but does not admit you to the Master of Education in Special Education Program. Further, GNCFD status does not guarantee admission to the Master in Special Education Program. Once the student has been accepted to the Master of Education in Special Education Program, those courses taken as a GNCFD can be transferred into the program. Six hours as a GNCFD are the maximum allowed to transfer, and the student must achieve a B or better in each course that transfers.

For further information regarding the GNCFD status, please contact the Special Education Office, 262 Fairlane Center South, 19000 Hubbard Drive, Dearborn, MI 48126-2638, or telephone 313-436-9135.

Transfer of Credit

For transfer courses, whether they are University of Michigan or non-University of Michigan, certain criteria must be met before the transfer application is made and in order for courses to transfer. There is a limit of six hours that can transfer from a non-University of Michigan school and 15 hours of University of Michigan credit as long as the courses apply to this program. Students are fully responsible for accurately planning their degree program. For additional information, please consult the program coordinator, the current Schedule of Classes, the Special Education secretary, or the UM-D Graduate Catalog.

Program Requirements

Master of Education in Special Education
with a K-12 Learning Disabilities
Endorsement (Michigan)

Candidates for the K-12 Learning Disabilities Endorsement must have a bachelor’s degree from an accredited college or university and a Michigan teaching certificate. The Learning Disabilities endorsement requires a total of 30 credit hours of coursework. These courses are also applied toward the completion of the Master of Education in Special Education.

EDC 501 Introduction to Learning Disabilities........ 3 hrs
EDC 517 Classroom Management ....................... 3 hrs
EDD 513 Internship - Elementary ...................... 2 hrs
EDD 515 Internship – Secondary....................... 2 hrs
EDK 680 Individual Research in Education............. 3 hrs
EDN 501 Strategies for Learning Disabilities........ 3 hrs
EDN 502 Social and Vocational Transitions............ 3 hrs
EDN 503 Assessment of the Learner..................... 3 hrs
EDN 504 Assessment Practicum.......................... 1 hr
EDN 506 Collaboration in the Classroom............... 3 hrs
EDN 508 Internship Seminar............................ 1 hr
PDED 505 Special Education Legislation and
L mitigation.................................................. 3 hrs

Second-Area Special Education Learning
Disabilities Endorsement-Only
Requirements

Candidates desiring a second-area special education endorsement in Learning Disabilities must have a bachelor’s degree from an accredited college or university and a full Michigan teaching certificate in any other special education category (emotional impairments, mental impairments, visual or hearing impairments, etc.). The second-area endorsement requires 15 semester hours.

EDC 501 Introduction to Learning Disabilities........ 3 hrs
EDN 501 Strategies for Learning Disabilities........ 3 hrs
EDN 503 Assessment of the Learner..................... 3 hrs
EDN 504 Assessment Practicum.......................... 1 hr
EDN 508 Internship Seminar: LD....................... 1 hr
EDD 513 Internship-Elementary......................... 2 hrs
EDD 515 Internship-Secondary......................... 2 hrs

EDC 513 Internship - Elementary...................... 2 hrs
The Inclusion Specialist Certificate enables K-12, general-education teachers, administrators, social workers, and other professionals to gain the skills needed to teach and support students with disabilities in general education classrooms and the community. The 30-credit-hour master’s degree requires coursework in the following areas:

- EDC 501 Introduction to Learning Disabilities ....... 3 hrs
- EDC 517 Classroom Management .................. 3 hrs
- EDC 521 Practicum at Psychiatric Facility .......... 1 hr
- EDC 522 Emotional Impairments Internship ......... 3 hrs
- EDC 523 Strategies: Emotional Impairments .......... 3 hrs
- EDC 524 Counseling Families of Students with Emotional Impairments .................................. 2 hrs
- EDC 525 Eco-Behavioral Assessment ............. 3 hrs
- EDC 526 Eco-Behavioral Assessment Practicum ...... 1 hr
- PDED 505 Special Education Legislation and Litigation .................................................. 3 hrs

The Master of Science in Science Education (MSSE) is designed for teachers at all levels who wish to further their knowledge of science as well as science pedagogy. The MSSE is based on the research underlying the National Science Education Standards.

The program is designed for professionals who possess either an elementary or secondary teaching certificate. MSSE students can elect to integrate studies of either literacy or the environment into their curriculum. To accommodate the different science content background of teachers with elementary or secondary certificates, this degree program has two tracks: one for K-8 teachers (Track I) and one for 7-12 teachers with BS or BA degrees in a science discipline (Track II). Depending on a student’s background, a combination of the Tracks may be appropriate at the discretion of the MSSE.
Coordinator. It may be possible for some students to complete an additional endorsement in science through the MSSE.

The degree consists of 30 semester hours, available to both full and part-time students although courses will be primarily offered during the late afternoon and evening sessions or in the summer to accommodate the working professional.

**MSSE Requirements**

**Track I**

30 hrs

**Content**

9 hrs

NSCI 531 Advanced Learning by Inquiry: Physical Sciences .................................................. 3 hrs
NSCI 532 Advanced Learning by Inquiry: Earth Sciences .......................................................... 3 hrs
NSCI 533 Advanced Learning by Inquiry: Life Sciences .............................................................. 3 hrs

**Pedagogy**

9 hrs

EDD 575 Integrating Science and Literacy ................. 3 hrs
EDD 685 Advanced Teaching of Elementary Science .. 3 hrs
EDT 510 Teaching With Technology .......................... 3 hrs

**Assessment**

8-9 hrs

EDC 554 Evaluation of Classroom Learning .............. 2 hrs
EDC 556 Learning and Classroom Assessment ............ 3 hrs
EDK 500 Introduction to Research in Education ........... 3 hrs
EXPS 520 Science Education Action Research ............. 3 hrs

**Electives**

4-5 hrs

Consult with the program advisor for eligible electives.

**Track II**

30 hrs

**Content**

9 hrs

Science content as advised

**Pedagogy**

9 hrs

EDD 574 Environmental Education .......................... 3 hrs
EDD 586 Environmental Interpretation ...................... 3 hrs
EDD 680 Advanced Teaching of Secondary Science ..... 3 hrs
EDT 510 Teaching with Technology ........................ 3 hrs

**Assessment**

8-9 hrs

EDC 554 Evaluation of Classroom Learning .............. 2 hrs
EDC 556 Learning and Classroom Assessment ............ 3 hrs
EDK 500 Introduction to Research in Education ........... 3 hrs
EXPS 520 Science Education Action Research ............. 3 hrs

**Electives**

4-5 hrs

Consult with the program advisor for eligible electives.

**Residency Requirements and Time Limits**

Students may apply for transfer of credit of a maximum of 15 semester hours from applicable University of Michigan graduate courses. Students may apply to transfer six semester hours from another accredited graduate institution. Only graduate course credit hours earned during the last five years for which a grade of B or better was received will be considered for transfer. Transfer credit may be requested only after admission to the Master of Science in Science Education program and successful completion of eight credit hours of graduate-level letter-graded coursework. All courses to be transferred must be approved by the Coordinator of the Master of Science in Science Education program. A "Request for Transfer of Credit" form and official course descriptions and course syllabi must be submitted. Enrolled students must obtain prior approval of the Coordinator to elect classes off campus.

**Admission Requirements**

All applicants must submit evidence of each of the following to the MSSE Program Coordinator:

1) A baccalaureate degree and a teaching certificate
2) A 3.0 (B) or higher grade point average (GPA is based on a 4.0)
3) An official transcript from college or university granting the undergraduate degree and one from each college or university attended
4) Two recommendations from supervisors or university faculty
5) A one-page statement of philosophy of teaching science
6) A one-page statement of educational and career goals

**Track I**

Evidence of passing the science section of the Michigan Test for Teacher Certification (MTTC) at the elementary level

**Track II**

Evidence of passing the appropriate science sections of the MTTC (for major and/or minor)

(Students may be provisionally admitted to either Track I or II without the MTTC. Additional coursework may be required in that case.)

**CENTER FOR MATHEMATICS EDUCATION**

The Center for Mathematics Education offers a Middle Grades Mathematics Specialty as part of the Master of Arts in Education degree program of the School of Education. The program has two paths. The Endorsement path is for teachers
with elementary certification who seek an endorsement in mathematics on their elementary certificate. The Leadership path is for teachers at the elementary or secondary level who have an endorsement in mathematics on their certificate and desire to become leaders in mathematics education at the middle grades level.

This specialist program consists of the Core Studies (8 hours) required of all students in the MA in Education degree program with the additional hours for the degree selected from courses in mathematics education (Professional Studies) and courses in mathematics content (Cognate Studies). All courses build from and address national and state standards and frameworks and the most current research and thinking about effective mathematics learning and teaching. The mathematics education courses deepen and extend students’ pedagogical knowledge with respect to the teaching, learning, and assessment of middle grades mathematics. The mathematics content courses deepen and extend students’ mathematics knowledge with an emphasis on the mathematics important to teaching middle grades mathematics. Problem solving, uses of technology, and measurement topics are integrated throughout these courses.

Candidates for this specialist program must be practicing teachers with at least six semester hours in undergraduate mathematics for teachers and admitted to the School of Education’s Masters of Arts in Education degree program.

Master of Arts in Education Middle Grades Mathematics Specialty

Endorsement Program

I. Core Component Studies ...................... 9 hrs

The core sequence provides continuity and integration for all programs. Ideas of policy, change, growth and diversity are developed in the following courses.

EDA 501 Advanced Social Foundations of Ed 3 hrs
EDC 556 Learning and Classroom Assessment 3 hrs
EDK 500 Introduction to Research in Education 3 hrs

Students are strongly recommended to elect at least one core class during the first year of work. Completion of all core classes is recommended within the first 20 credit hours. All core classes must be elected on the UM-D campus.

II. Professional Studies 6-9 hrs

Required

EDMA 511 Learning and Teaching Middle Grades Mathematics .......................... 3 hrs
EDMA 512 Communication and Assessment in Mathematics Learning ................... 3 hrs

Electives

EDMA 521 Leadership in Mathematics Education ............... 3 hrs
EDMA 590 Topics in Mathematics Education .................. 3 hrs
EDT 510 Teaching with Technology ....................... 3 hrs

Cognates .................................................. 12-15 hrs

Required

MATH 542 Geometry for Teachers .................. 3 hrs
MATH 543 Algebra for Teachers ..................... 3 hrs
MATH 544 Probability and Statistics for Teachers .......... 3 hrs
MATH 545 Number and Proportional Reasoning for Teachers .................. 3 hrs

Electives

MATH 546 Discrete Mathematics and Mathematical Modeling for Teachers .......... 3 hrs
MATH 547 Microcomputers in Mathematics for Teachers .......................... 2 hrs
MATH 549 Concepts of Calculus for Teachers .................. 3 hrs
MATH 586 Secondary School Mathematics for Teachers ....................... 3 hrs
MATH 591 Topics in Mathematics for Teachers ........ 1-3 hrs

Leadership Program

I. Core Component Studies ......................... 8 hrs

The core sequence provides continuity and integration for all programs. Ideas of policy, change, growth and diversity are developed in the following courses.

EDA 501 Advanced Social Foundations of Ed 3 hrs
EDC 556 Learning and Classroom Assessment 3 hrs
EDK 500 Introduction to Research in Education 3 hrs

Students are strongly recommended to elect at least one core class during the first year of work. Completion of all core classes is recommended within the first 20 credit hours. All core classes must be elected on the UM-D campus.

II. Professional Studies ......................... 9-12 hrs

Required

EDMA 512 Communication and Assessment in Mathematics Learning .................. 3 hrs
EDMA 521 Leadership in Mathematics Education .................. 3 hrs
EDMA 525 Curriculum Development & Research in Mathematics Education ............ 3 hrs

Electives

EDMA 511 Learning and Teaching Middle Grade Mathematics ....................... 3 hrs
EDMA 590 Topics in Mathematics Education .................. 3 hrs
EDC 560 Reading: Diagnostics and Assess K-12 .................. 3 hrs
EDT 510 Teaching with Technology ....................... 3 hrs
III. Cognates ................................. 9-12 hrs

Required

MATH 545  Number and Proportional Reasoning for Teachers ........................................ 3 hrs
MATH 546  Discrete Mathematics and Mathematical Modeling for Teachers ......................... 3 hrs
MATH 549  Concepts of Calculus for Teachers ..................................................... 3 hrs
MATH 591  Topics in Mathematics for Teachers ....................................................... 3 hrs
MATH 586  Secondary School Mathematics for Teachers .............................................. 3 hrs

Electives

MATH 544  Probability and Statistics for Teachers ...................................................... 3 hrs
MATH 547  Microcomputer in Mathematics for Teachers ............................................. 3 hrs
MATH 586  Secondary School Mathematics for Teachers .............................................. 3 hrs

COURSE DESCRIPTIONS

The following lists include all courses normally offered at UM-D. However, not all courses are offered every year and periodically courses are added and deleted. For details, students should consult the Schedule of Classes for each term.

THEORETICAL FOUNDATIONS (EDA)

EDA 500  Theoretical Foundations of Ed  3.000 Credits

This is an advanced seminar course in educational theory. It involves a systematic examination of numerous theories that have played a major role in shaping American education. Among these are: 1) ideologies, 2) ethical theories, 3) learning theories, 4) instructional theories, and 5) theories of study. These have provided education with different moral outlooks, different social objectives, different curricula, and different teaching methods.

EDA 501  Adv Social Fndations of Ed  3.000 Credits

This advanced seminar will investigate various aspects of formal education taking into account historical, philosophical, political, social, cultural, religious and economic contexts. Within these contexts, the course will identify and examine school reform and change issues and trends as they relate to complex and rapidly changing local, national and global society.

EDA 530  Loc Govt for Teach/Admin  1.000 TO 3.000 Credits

At the seminar, teachers participate in interactive learning activities with local government staff members. Officials serve as resource people, not lecturers. Teachers experience each lesson through the eyes of their students. All participants provide complete lesson plans for each activity, making it easy to share favorites from the course/academy with colleagues. Teachers work on developing coordinated learning experiences in local government including field trips, case studies and class visitations drawn from both school district and local government resource-bases.

EDA 550  Hist/Theory of Bilingual Educ  2.000 TO 3.000 Credits

This course provides an extensive background on bilingual education (programs where two languages are used as media of instruction) in the United States, and events that led to the inception of such programs on the Federal as well as the State levels. The course provides a background on the concept itself, its rationale and implementation. (OC).

EDUCATIONAL ADMIN (EDB)

EDB 500  Ed Trends in a Multicult Soc  2.000 Credits

The theoretical concepts from the history of education, educational research, and the social sciences will form a base for studying educational trends, issues, and reforms in our society of diverse origins and outlooks. Topics for discussion may include: issues in reform movements; social, economic, pedagogical, and ethical problems related to education; and problems and prospects in international educational competition. The focus will be on institutional problems and processes related to quality education for pupils in our multicultural society.

EDB 501  Principalship  3.000 Credits

Administration and supervision of elementary, middle, and secondary school entails the analysis of organizational arrangements at both the classroom and school level. This course will deal with applications and practices that develop competencies and behaviors that educators need to supervise, evaluate, and lead organizational and instructional improvement efforts for school, staff, and students.

EDB 502  School and Community Relations  2.000 OR 3.000 Credits

Examines interactions of schools and their communities: citizens’ role/involvement in governance of education, internal and external communication concepts and practices, politics of education, community power and pressure groups, and organizational culture and climate.

EDB 505  Intro to Educ Administration  3.000 Credits

The course will provide an overview of educational administration and cover basic issues facing school administrators. It provides an introduction to the role of the school leader in contemporary educational programs and services. Students will examine opportunities in school administration and begin to develop a knowledge base for leadership in a variety of educational settings.
EDB 507  Strategic Comm for Admin  
3.000 Credits

This Internet course addresses three levels of administrative communications - individual, group and organization - and examines the concepts and skills needed to be an effective communicator. Students will develop applications emphasizing goal-oriented communications and making strategic choices in content, structure, style and delivery. An emphasis is given to the design and best use of computer technologies such as Word and PowerPoint applications. The course also covers basic ethical and legal issues of work-place communications.

EDB 521  Current Issues in Early Ed  
2.000 Credits

Examines the expanding field of early childhood in order to understand major issues which are shaping the development and support of early education and child care programs. Designed for present and future teachers, administrators, and other workers in the field of early childhood, and for the general public who must participate in major pending decisions relating to such questions as proposed changes in state licensing, teacher certification, and funding sources.

EDB 523  Legal and Reg Issues in Ed  
2.000 OR 3.000 Credits

This class will focus on important legal and regulatory issues related to public, education, and nonprofit organizations. It will consider the various court and administrative decisions which affect these. Numerous case situations will be used to facilitate the student's learning.

EDB 524  Site-Based Management  
2.000 Credits

Site-based management in organizations is an evolving type of organizational improvement effort. Shared planning and participative decision-making are other related vehicles for enabling local organizational units to plan and execute their own processes, goals, and outcomes. An examination of the policies, practices, evolving research, impediments, and promoters of site-based management will be reviewed, along with case studies of success stories.

EDB 540  School Budgeting and Finance  
3.000 Credits

Basic principles and actual practices of financial administration and accounting for state/local governments, public school systems, and non-profit organizations, particularly budgeting and financial reporting within the context of other organizational processes and political demands and/or requirements. As one of the required seminars for the Educational Administration Certification, the case method will be employed to illustrate issues and problems of school financial administration.

EDB 560  Admin of Human Resources  
3.000 Credits

This seminar will examine human resource administration activities in public, educational and nonprofit settings. Issues such as recruiting, selection, planning, performance appraisal, contracting and collective bargaining will be related to the overall administrative activities. Emphasis will be placed on the connections between human resource issues in public, education, and nonprofit organizations.

EDB 561  Organizational Dev and Theory  
2.000 OR 3.000 Credits

Students will learn how organizations are structured and shaped, know what features of organizations vary and the parameters on which they vary, and be able to analyze, synthesize, and apply concepts to reduce organizational uncertainty, and to improve and regulate organization behaviors and outcomes. Attention will also focus on top down and participatory administration in organizations, and change in public, educational, and nonprofit organizations and agencies.

EDB 562  Labor Relat in School Settings  
2.000 OR 3.000 Credits

The seminar will consider the impact of collective bargaining on traditional human resource administration in public, education, and nonprofit settings. It also will focus on developing an initial competency in the various activities associated with collective bargaining situations.

EDB 580  Info Sys and Stats for Admin  
3.000 Credits

This course will introduce Educational Administration students to descriptive and basic inferential statistics. Participants will use micro-computers and software to perform elementary statistical analyses, and to prepare presentation quality reports and graphics making use of statistical information.

EDB 581  Strategic Plng/Needs Assess  
2.000 OR 3.000 Credits

This course develops the strategic planning and needs assessment competencies of participants. Emphasized in the course is the "cascade" process of information gathering involving interviewing, focus groups, and surveys as applied in strategic planning.

EDB 582  Policy Analysis & Development  
2.000 OR 3.000 Credits

Policy formulation involves two different activities: 1) identifying and assessing alternative courses of action, i.e., deciding what, if anything, needs to be done about a problem; and 2) developing the policy, regulation or law that will carry an agreement in principle into effect. Both aspects of policy development will be covered in the course. (AY).

EDB 583  Program Evaluation  
2.000 OR 3.000 Credits

This class will examine procedures for evaluating programs in public, education, and nonprofit settings. The concern will be to examine the various techniques available to determine whether a program is doing what it was intended to do.
Students will utilize various techniques in examining a variety of case situations.

**EDB 586  Curriculum Delib and Develop**
2.000 OR 3.000 Credits

Study of teaching, learning, evaluation, and outcomes of education in relation to curriculum study and development. Focus on policy issues, utilization of research and current effective practices related to the successful articulation and implementation of curricula.

**EDB 650  Assessment Seminar**
1.000 OR 2.000 Credits

This class will focus on assessing the performance of individuals in administrative settings. There will be a variety of exercises which will provide an assessment of the students with regard to different administrative circumstances. Students will also evaluate their career plans and situation.

**EDB 720  Internship**
2.000 TO 3.000 Credits

Students who lack the necessary experience in responsible administration will be afforded the opportunity to gain the experience in an internship. The class and the number of hours will be arranged to fit the needs of the students as determined by the program coordinator.

**EDB 721  Central Office Internship**
2.000 TO 3.000 Credits

Students who lack the necessary experience in central office administration will be afforded the opportunity to gain the experience in an internship. The class and the number of hours will be arranged to fit the needs of the students as determined by the program coordinator.

### PSYCHOLOGICAL FOUNDATIONS (EDC)

**EDC 500  The Human Learner**
2.000 Credits

The growth and development of the human learner is studied, with stress upon teaching and learning from preschool through adulthood. Consideration will be given to theories of learning, development, and motivation, with the goal of identifying the implications of theory for educational practice.

**EDC 501  Intro to Learning Disabilities**
3.000 Credits

Overview of characteristics, identification, service delivery models, and issues pertaining to persons from preschool to adulthood with learning disabilities. Required course for Special Education-Learning Disabilities Certification.

**EDC 502  Adol Devl & Classroom Mgmt**
3.000 Credits

An examination of the current theories and research findings concerning the physical, social, emotional and cognitive development during the early and late adolescent years. Theory will be related to educational and parenting practices. Course includes significant material addressing classroom management of the middle school and high school classroom using simulations, case studies and videos of actual classrooms.

**EDC 503  LD Practicum K-12**
1.000 Credits

Co-requisite(s): EDC 501

The K-12 LD Practica will provide beginning students with initial exposure to the practical aspects of teaching LD students in a variety of general and special education settings. Students will be required to observe and actively participate in instructional planning, teaching, managing, and monitoring LD students in K-12 settings. Students will also observe a variety of service delivery models including the resource room, inclusive settings, and tutorial situations. Graduate standing or permission of the instructor; concurrent enrollment in C501.

**EDC 505  Adult Learning Process**
3.000 Credits

This course will consider adult learning theory. Students will learn to write educational objectives in the cognitive, affective, and psycho motor domains. Sample lessons will demonstrate the use of objectives in instruction and assessment.

**EDC 511  Dev Peer/Social Relationships**
2.000 Credits

Prerequisite(s): EDC 340 *

Students will examine the processes of peer relations and socio-emotional development from birth to adolescence. Topics to be covered in this course include attachment, peer popularity and intimacy. As well, students will discuss the importance of the family on social development. Classroom environment and peers as educators will also be covered. (OC)

**EDC 512  Soc Devl & Pos Guidnce Techn**
3.000 Credits

This course will examine the process of social and emotional development in childhood through adolescence. Positive strategies to promote and guide this development in the classroom will be explored using behaviorist and constructivist frameworks. Topics will include character education, discipline models, conflict resolution and family collaboration. Guiding the development of emotional regulation, perspective taking and peer relationships in children including children with special needs will be investigated.

**EDC 514  Early Child Ed Special Needs**
3.000 Credits

Prerequisite(s): EDC 540 or (EDC 340 and EDC 341) or (PSYC 302 and PSYC 312) and (PSYC 170 or PSYC 171)

Focuses on the psychological and educational needs of the young child with special needs. Discusses identification techniques and educational strategies for teaching in a regular early childhood classroom with young children having special
needs. Special emphasis will be placed on behavioral, linguistic, and intellectual needs. Suitable for classroom teachers, child care directors, and teachers in training.

EDC 517  Manag of Classroom Behavior
3.000 Credits
Prerequisite(s): EDC 300

Provides intervention and management techniques for teachers and teacher candidates using principles of behavior modification. Includes examination of theoretical foundations, research and field reports, participation in self-management projects, and consideration of various applications in regular and special classrooms. Field experience is optional. Will focus on classroom management in early childhood and elementary environments, allowing a more focused examination of topics and case studies geared to those grade levels.

EDC 520  Hum Sexuality:Psyc-Ed Concepts
2.000 Credits

The course is intended to acquaint elementary and secondary teachers with the elements that comprise sexuality as it relates to their lives and those of their students. Although a basic core of information is to be covered, the content of each class will provide for the needs and interests of the teachers. Teachers will be directly involved in identifying problems and the development and collection of strategies for problem resolution. Teachers who complete this program will meet the state requirements for certification in sex education/reproductive health.

EDC 531  Constructivist Education
3.000 Credits
Prerequisite(s): EDC 340 and EDC 341

An examination of constructivist theory and its application to educational practices. The nature and stages from birth through adolescence of cognitive and social development from the constructivist viewpoints of Piaget, Vygotsky, and others will be discussed. A major focus will be the application of constructivist theory to educational goals, teaching strategies and curriculum.

EDC 540  Psych of Child Development
3.000 Credits

A systematic presentation of facts and theories concerning the growth of children from birth to maturity. Emphasizes the child as a whole being with attention given to physical, mental, social, and emotional development.

EDC 541  The Child: Birth to Three
2.000 TO 3.000 Credits

An examination of current theories and findings concerning the physical, social, emotional and intellectual development of the young child from prenatal to three years of age. Topics include fetus maturation, capabilities of the newborn, language, cognition, and environmental influences on development. Theory will be related to infant care practices in the home and in early childhood centers.

EDC 542  EC:Fam/Sch/Com Collab Mult Soc

Focuses on factors which influence the building of partnerships among early childhood professionals, families and communities. Includes understanding and working with culturally and linguistically diverse families. Various communication and problem-solving strategies which promote family involvement and community outreach are practiced through discussion and role play.

EDC 543  Family/School/Community Collab
2.000 Credits

Characteristics, roles, and functions of contemporary families are described. Various communication and training strategies designed to promote collaboration and teamwork within and between the school staff, the families, and community are described and practiced through discussion, problem-solving activities, and role playing. Family effectiveness assessment instruments and strategies are also described and practiced.

EDC 545  Develop Assess of Young Child
3.000 Credits
Prerequisite(s): ( PSYC 170 or PSYC 171 ) and EDC 340

Survey and demonstrations of formal and informal measures to assess young children's physical, social, intellectual, and emotional development. Instruction in some techniques appropriate for use by classroom teachers, childcare directors, health care professionals, and others who are interested in assessing the development of children aged birth to nine years. Students cannot receive credit for both EDC 545 and EDC 445.

EDC 546  Cog/Memory Dev in Children
3.000 Credits
Prerequisite(s): EDC 340 or EDC 540

Examines the theories and recent research on the development of cognition and memory. Selected topics include: perception, language, representation, social cognition and problem solving. Educational implications and strategies for developing children’s thinking and memory are explored.

EDC 554  Evaluation of Learning
2.000 TO 3.000 Credits

In this course students will develop their knowledge and skills in traditional and non-traditional methods for evaluating classroom learning, performance technology and training. Students will learn how to construct evaluations, tests, analyze evaluation results, conduct program evaluation and educational assessment in relation to performance technology, training and teaching and learning.

EDC 555  Assessment L2 Learning (K-12)
2.000 Credits
Prerequisite(s): EDD 596 and EDD 597 and EDD 547 and EDD 548

In this course, students will learn to identify, assess, and place second language learners for appropriate instruction and instructional programs. Students will review, evaluate, and implement a variety of assessment instruments and strategies intended for use with limited
English proficient students, K-12. Students will also examine the impact and issues regarding high-stakes assessments on English language learners. Official admission to and good standing in the teacher certification program are required. (W).

EDC 556 Learning & Classroom Assessment
3.000 Credits

In this course students will examine the relationship between curriculum, instruction and assessment. Students will review different forms of assessment and evaluate the strengths and weaknesses of each format. Students gain experience in 1) selection of assessment formats based on curricular focus and student developmental levels; 2) development of assessments; and 3) decision-making based on the results of the assessments.

EDC 560 Rdg:Diag/Assessment Tech K-12
3.000 Credits
Prerequisite(s): EDB 503

Overview of K-12 reading diagnostic and assessment techniques. Review of state-mandated tests. Use of criterion referenced tests, norm-referenced tests, and informal inventories to develop individual reading profile. Results of diagnostic instruments will be interpreted to suggest appropriate instructional strategies. (YR).

EDC 561 Educating the Exceptional Child
2.000 TO 3.000 Credits

Characteristics, identification, assessment and instruction of students with exceptionalities are addressed. Includes students with learning disabilities, behavior disorders, emotional impairment, mild mental retardation, communicative disorders, visual and hearing impairments, orthopedic impairments, giftedness, and chronic medical conditions. Service delivery models, general assessment procedures, and curricular and instructional adaptations that help integrate students with exceptionalities into the general education classroom will also be addressed.

EDC 645 ECSE Assessment
2.000 Credits
Prerequisite(s): EDC 545

Culturally sensitive and family-centered approaches to assessing infants, toddlers, and young children with a variety of disabilities as well as determining family resources, needs and priorities will be the focus. Selecting and using assessment instruments and procedures in order to guide decision-making about determining eligibility for services, planning intervention goals and objectives, monitoring progress, and evaluating program effectiveness will be included. (YR).

CURRICULUM & INSTRUCTION (EDD)

EDD 501 Teach English in Second Grds
3.000 Credits

Investigates the general and specific goals and objectives of English education. Trends, materials, and strategies are presented. A study of outstanding problems in the teaching of English composition, literature, grammar, and language are discussed. Official admission to and good standing in teacher certification program are required.

EDD 502 Practicum: English Second Grd
1.000 Credits
Co-requisite(s): EDD 501

A supervised field experience related to the study of English in the secondary grades involving a minimum of 45 clock hours of observation and work spread over a semester in a school setting. Official admission to and good standing in teacher certification are required. Credit cannot be given for both EDD 502 and EDD 441.

EDD 503 Wksp: Art in the Elementary Sch
2.000 Credits

A course which presents the rationale, trends, and principles of art education for elementary teachers. Teachers will have ample opportunities to experiment with various art media such as printmaking, puppetry, paints, and clay. Different strategies that focus on the creative growth of children will be developed. (OC)

EDD 504 Inquiry Based Curr Prim Grades
3.000 Credits

This course examines how teachers can apply inquiry method to all curriculum areas in the primary grades. Major focus will be designing curriculum to meet state and professional guidelines within a developmentally appropriate context.

EDD 508 Practicum in Early Child Ed
1.000 Credits

A supervised field experience related to the study of early childhood education involving a minimum of 45 clock hours of observation and work spread over a semester in an early childhood school setting. TB clearance, physician's statement of good health, and criminal background check are required. Students cannot receive credit for both EDD 410 and EDD 508.

EDD 509 Workshop in Secnd Sci Educ
1.000 TO 6.000 Credits

Provides an opportunity for experienced professionals in junior and senior high schools to work on problems and topics related to the teaching of natural science.

EDD 513 Internship Elementary LD
2.000 OR 3.000 Credits
Prerequisite(s): EDC 501 and EDN 501 and EDC 503 and EDN 504
Co-requisite(s): EDC 508

Field experience with elementary students with learning disabilities in regular and resource classrooms. Experiences include delivery of direct instruction through observation, tutoring, small and large group instruction, small and large group assessment, curriculum development, participation in the IEP process, collaboration with regular classroom teachers, and other activities under the on-site supervision of a certified teacher of LD and LD-certified university field supervisor.

EDD 515 Internship Secondary LD
2.000 Credits
Prerequisite(s): EDC 501 and EDN 501 and EDN 503 and EDN 504
Co-requisite(s): EDN 508

Field experience with secondary students with learning disabilities in secondary-general and special education classrooms. Experiences include delivery of direct instruction through observation, tutoring, small and large group instruction, curriculum development and adaptations for secondary settings, participation in the IEP and ITP process, collaboration and co-teaching with regular classroom teachers in various academic content areas, and other activities under the on-site supervision of a certified teacher of LD and LD certified university field supervisor.

EDD 516 Wksp: Creative Tchng Erly Child
2.000 Credits
Prerequisite(s): EDC 340

Workshop designed for early childhood teachers in which there will be a chance to explore and manipulate materials. The framework will be that of the open classroom and participants will have the opportunity to take an active part in open learning situations. (OC)

EDD 517 Sem: Teaching Secondary MAT
1.000 Credits
Co-requisite(s): EDD 518

Draws upon the resources found in the directed teaching environment. Considers problems and issues in four broad areas: students in the school, teacher’s professional responsibilities, curriculum understandings, and administrative/organizational problems. Open only to students enrolled in EDD 518.

EDD 518 Directed Tchg (MAT) Second Sch
10.000 TO 12.000 Credits
Prerequisite(s): EDA 500 and EDB 500 and EDC 502 and EDC 561 and EDC 554 and EDC 517 and EDT 511 and EDD 569

Directed teaching consists of a teaching internship in a selected class room for a full term under the direction of an experienced teacher. Includes a period of observation followed by several weeks of responsible teaching. (F, W).

EDD 519 Early Literacy/Language Develp
3.000 Credits
Prerequisite(s): EDC 340

This course examines early language development, the factors that contribute to its growth and the role that it plays in the development of literacy. Diagnostic techniques for assessing language and literacy and teaching strategies and materials to facilitate language and literacy growth in children birth through third grade will be discussed. (YR)

EDD 530 Concepts & Strat/Tchg:Midl Lev
3.000 Credits

Introduces current curricular trends and various teaching strategies for use at the middle school level to stimulate inquiry in the classroom. Opportunity will be provided to experiment with these strategies in videotaped, microteaching situations.

EDD 534 ML Curriculum & Instruction
3.000 Credits
Co-requisite(s): EDD 535

This course addresses curriculum development and instruction adapted to meet the unique needs and characteristics of the middle level student. Attention is given to instructional planning, presentation, and assessment of learning.

EDD 535 Field Exploration: ML
1.000 Credits
Co-requisite(s): EDD 534

Field exploration involving a minimum of 45 clock hours research activities related to the study of middle level curriculum development, instruction and students.

EDD 536 Grad Sem in Early Childhood Ed
3.000 Credits
Prerequisite(s): EDC 540

This course examines the theories, research, and educational practices developmentally appropriate for children: infancy through primary grades. The seminar provides the theoretical foundation for the field placement (EDD 594). Strategies for planning effective curricular activities, arranging a learning environment, communicating and working with families and staff, and administering early childhood programs will be discussed. The issues of multiculturalism, family centered approaches, addressing the inclusion of children with special needs and professional development will be addressed. Open only to graduate students seeking an early childhood endorsement and approved by the program coordinator. TB test, physician's statement of good health, and criminal background check are required. (W).

EDD 542 Differentiating Inst K-12 Clrm
2.000 TO 3.000 Credits

Individualized instruction combined with the latest information on the brain and our understanding of multiple intelligences leads us to a new method of meeting the needs of students called differentiating instruction. This course will look at the concept of differentiating instruction in-depth.

EDD 543 Tchg Writing at the Scnd Lvl
2.000 TO 3.000 Credits

This course is designed to help the classroom teacher promote functional and creative writing among students at the secondary school level. Attention will be given to both theory and research with emphasis on the development of instructional strategies, teaching materials and practical resources.

EDD 546 Intervention Strat EC Spec Ed
3.000 Credits

Strategies and methods which early educators can use when planning and implementing interventions for infants, toddlers and young children with disabilities and their families. Emphasis will be on addressing family identified priorities and the goals and objectives stated on the Individual Family Service Plan (IFSP) or
Individual Educational Plan (IEP) using activity-based intervention, adapting materials, modifying environments and using assistive technology. (W, YR)

EDD 547 Second Language Teaching Elem
3.000 Credits
Co-requisite(s): EDD 548

This course examines current methodologies and theories for English as a second language learning and instruction. Emphasis will be placed on a standards-based curriculum for English language learners. The use of communicative activities and strategies for developing English language skills in the elementary grades will be emphasized. Official admission to and good standing in teacher certification program are required. (F).

EDD 548 Practicum: Sec Lang Teach Elem
1.000 Credits
Co-requisite(s): EDD 547

This course examines current methodologies and theories for English as a second language learning and instruction. Emphasis will be placed on a standards-based curriculum for English language learners. The use of communicative activities and strategies for developing English language skills in the elementary grades will be emphasized. Official admission to and good standing in teacher certification program are required. TB clearance, physician's statement of good health, criminal background clearance, and bloodborne pathogens/infectious diseases training are required. (F).

EDD 552 Methods of Teaching Math K-8
3.000 Credits
Prerequisite(s): MATH 387

The course relates to the teaching of the mathematics curriculum in the elementary and middle school. The emphasis is on the development of teaching techniques that promote problem solving, reasoning, connections, communication, and concept and algorithmic development. Cooperative groups, manipulatives, technology, and meeting the special needs of every child in grades K-8. Required for all preservice elementary teachers. Official admission to and good standing in teacher education program required.

EDD 554 Wrkshp:Nwspaper in Educ
2.000 Credits

A course designed to familiarize elementary and secondary teachers with the use of newspapers as a classroom resource. Workshop participants will use the daily newspaper and other resource materials to develop activities appropriate for meeting their own professional needs. Emphasis will be on the enhancement of academic skills, practical life skills and creative expression.

EDD 560 Reading:Clinical Pract Int/Sem
3.000 Credits

A supervised field experience in which students will work in a reading program. In this internship students will acquire experience in selecting students for the program, assessing students, working with students to develop reading and writing skills, and in reporting functions. In addition, a weekly seminar to explore issues related to reading programs will be held. (S)

EDD 563 Teach Giftd Stdnt Reglr Clssr
2.000 Credits

This course introduces classroom teachers to the education of gifted and talented students in the regular classroom. It is designed to help teachers understand the social, emotional, and intellectual needs of gifted students and to show them ways of effectively addressing these needs along with those of the other students present. It will offer specific proposals for structuring the learning environment as well as for selecting appropriate levels and types of subject matter.

EDD 565 Teach Math in Second Grades
2.000 TO 3.000 Credits
Prerequisite(s): MATH 412 and MATH 331

This course discusses: 1) the important parts of recent pedagogical literature, 2) new instructional materials, methods, and curricular trends, and 3) procedures useful in the construction of new units and in the improvement of curricular units. Official admission to and good standing in teacher certification program are required.

EDD 566 Practicum: Math Second School
1.000 Credits
Co-requisite(s): EDD 565

A required supervised field experience related to the teaching of mathematics in grades 7-12. Involves 45 clock hours of work and observation in a classroom setting. The practicum includes the construction of classroom activities and lesson plans designed to strengthen students' skills in communication, problem solving, making connections, and in the use of technology. Official admission to and good standing in teacher certification program are required. Students cannot receive credit for both EDD 451 and EDD 566.

EDD 567 Practicum in Reading Instruct
1.000 Credits
Co-requisite(s): EDD 566

A required supervised field experience related to the teaching of reading in the elementary and/or middle grades. Involves a minimum of 45 clock hours of work and observation in a supervised classroom setting. Techniques learned in EDD 567 will be applied directly to increase the reading competence of elementary school children. Must be elected concurrently with EDD 568. TB test and criminal background check required.

EDD 568 Teach Read/Lang Arts- Elem Grd
3.000 Credits
Co-requisite(s): EDD 567

Acquaints the student with theory, methods, materials, and research related to the teaching of reading and other communications skills in the elementary school. Includes classroom activities designed to strengthen skills in reading comprehension, content area reading, word attack, and the related language arts. Must be elected concurrently with EDD 567. Official admission to and good standing in the School of Education certification program are required.
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<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EDD 569</td>
<td>Reading in the Content Areas</td>
<td>3.000</td>
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<td></td>
<td>Emphasis on developmental and remedial reading activities at the middle grades and the secondary level; diagnosis, testing, and materials; reading in the content subjects; study habits; independent reading activity; exemplary programs. Some attention will be given to related problems in the teaching of written composition. Official admission to and good standing in the School of Education certification program are required. Students cannot receive credit for both EDD 469 and EDD 569.</td>
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<tr>
<td>EDD 571</td>
<td>Reading Instr: Models and Meth</td>
<td>2.000 TO 3.000</td>
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<td>The impact of psycholinguistic research on reading instruction will be examined especially as it relates to: reading comprehension, the teaching of phonetic skills, the teaching of reading/study skills in content areas, and in testing. Various approaches to reading instruction will be reviewed. Students electing this course for three credit hours will be required to complete a reading tutorial suitable in meeting the needs of an elementary student. Not open to students who have taken EDD 472, EDD 532, or EDD 570. Official admission to and good standing in the School of Education certification program are required.</td>
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<tr>
<td>EDD 574</td>
<td>Environmental Education</td>
<td>2.000 TO 3.000</td>
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<td></td>
<td>An analysis of environmental education at both the elementary and secondary school level particularly stressing the environment as a teaching resource. Community resources as they relate to environmental education also are investigated.</td>
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<tr>
<td>EDD 575</td>
<td>Integrating Science &amp; Literacy</td>
<td>3.000</td>
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<td>Students will enhance their understanding of and ability to integrate multiple literacy skills into the science classroom. Students will create integrated classroom activities and lessons based on State of Michigan benchmarks in language arts and science. (F,W).</td>
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<tr>
<td>EDD 580</td>
<td>Teach of Sci in the Second Grd</td>
<td>2.000 TO 3.000</td>
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<td>A brief survey of the place of science in the secondary school curriculum, an analysis and evaluation of objectives, and a consideration of modern practices in teaching science. Official admission to and good standing in teacher certification program are required.</td>
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<tr>
<td>EDD 581</td>
<td>Practicum in Science:Secnd Grd</td>
<td>1.000</td>
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<td>Co-requisite(s): EDD 580</td>
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<td></td>
<td>A supervised field experience related to the study of science in the secondary grades involving a minimum of 45 clock hours of observation and work spread over a semester in a school setting. Official admission to and good standing in teacher certification program are required.</td>
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<tr>
<td>EDD 583</td>
<td>Wkshp:Sci Teach Elem/Midd Schl</td>
<td>1.000 TO 3.000</td>
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<td>Deals with existing and innovative science materials. Offered at various times emphasizing one or more areas from elementary and junior high school science. Centers on a laboratory approach. May be elected twice for a total of six hours.</td>
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<tr>
<td>EDD 585</td>
<td>Teach Science in the Elem Grd</td>
<td>2.000 TO 3.000</td>
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<td>Explores the objectives, methods, and instructional emphasis of elementary school science. Stresses concept development in several areas of elementary science. Provides opportunity for preparation of materials for classroom use. Official admission to and good standing in teacher certification program are required. Students cannot receive credit for both EDD 485 and EDD 585.</td>
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<tr>
<td>EDD 586</td>
<td>Environmental Interpretation</td>
<td>3.000</td>
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<td>Course deals with the interpretation of the environment, its characteristics, and its presentation to school groups as well as to the general public. Intended to acquaint students with a variety of skills and techniques necessary for interpreting the environment to others. Extensive use is made of the UM-D Environmental Study Area.</td>
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<tr>
<td>EDD 589</td>
<td>Practicum in Soc Stud:Sec Sch</td>
<td>1.000</td>
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<td>Co-requisite(s): EDD 590</td>
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<td>A supervised field experience related to the study of social studies in the secondary grades involving a minimum of 45 clock hours of observation and work spread over a semester in a school setting. Official admission to and good standing in teacher certification program are required.</td>
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<tr>
<td>EDD 590</td>
<td>Tch of the Soc Stud in Sec Sch</td>
<td>2.000 TO 3.000</td>
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<td>An introduction to the problems of teaching secondary social studies. Considers objectives and techniques from both the theoretical and practical points of view. Required of all candidates for the secondary teaching certificate who are majoring in history or social studies. Official admission to and good standing in teacher certification program are required.</td>
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<tr>
<td>EDD 593</td>
<td>Simulation and Gaming</td>
<td>1.000 TO 3.000</td>
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<td>This course focuses on simulation and gaming as approaches to learning which are fundamentally different from methods traditionally used in education, industry, business, and psychology. Students will have the opportunity to examine many different types of simulations and games and to participate in selected ones. They will also be able to design one for use in their own area of interest.</td>
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EDD 594  Early Childhood Ed Internship
2.000 TO 3.000 Credits
Prerequisite(s): EDD 536

Supervised observation and teaching in early childhood programs under the joint direction of university and school personnel. Open only to students in the MA in Education Program (Early Childhood Endorsement) who have been approved for the course by the program director. TB clearance, physician's statement of good health, and criminal background check required. Replaces EDD 494 as the graduate level Early Childhood Internship.

EDD 595  Wkshp:Social Studies Educ
2.000 TO 3.000 Credits

The workshop is planned to acquaint elementary and secondary teachers with specific trends and/or problems in social studies education. The theme of each workshop will vary according to the needs and interests of the teachers to reflect current interests in social studies education. Teachers will be directly involved in problem definition, literature review, research, and the collection and creation of strategies for classroom use. Students may repeat the course as topics vary up to a maximum of three hours of credit.

EDD 596  Second Lang Tchg: Sec Level
3.000 Credits
Prerequisite(s): FREN 301 or GER 301 or SPAN 301

An examination of current methodologies and techniques for instruction in foreign languages and English as a second language in grades 7-12. Emphasis will be placed on a standards-based curriculum with special attention given to the creation of learning scenarios. The use of communicative activities and the assessment of language skill areas will also be emphasized. Official admission to and good standing in teacher certification program are required.

EDD 597  Practicum in Second Lang Tchg
1.000 Credits
Prerequisite(s): FREN 301 or GER 301 or SPAN 301
Co-requisite(s): EDD 596

A required supervised field experience related to the teaching of a foreign language or English as a second language in grades 7-12. Involves a minimum of 45 clock hours of work and observation spread over one semester in a supervised classroom setting. Methods and techniques learned in EDD 496 will be used to increase the second language proficiency of learners in grades 7-12. Official admission to and good standing in teacher certification program are required. TB clearance, physician's statement of good health, criminal background clearance, and bloodborne pathogens/infectious diseases training are required.

EDD 598  Tchg Creative Writ in Elem Sch
1.000 TO 2.000 Credits

This course is designed for those wishing to establish or improve creative writing programs in their elementary school classrooms. Theoretical models will be discussed. Strategies and materials which facilitate the writing of prose and poetry will be emphasized. (OC)

EDD 599  Social Studies in the Elem Grd
2.000 TO 3.000 Credits

Examination and analysis of various programs and materials currently available for teaching social studies at the elementary level. Critical investigation of new developments and trends. Opportunity is provided to experiment with various techniques and to evaluate their effectiveness. Official admission to and good standing in teacher certification program are required.

EDD 631  Junior High/Middle Sch Currclm
2.000 Credits

Relates the junior high and middle school curriculum to the unique needs and characteristics of early adolescence. Gives attention to the scope, organization, and interrelationships of instructional programs as well as trends, experimentation, innovations and reports of research in this field. Designed for pre-service and in-service teachers.

EDD 650  Internship ECSE
2.000 Credits
Prerequisite(s): EDC 645 and EDD 546
Co-requisite(s): EDD 651

Supervised observation and teaching in Early Childhood Special Education setting under the joint direction of university and program personnel. Open only to graduate students in the Early Childhood Special Education Inclusion program who have been approved for the course by the program director. (YR).

EDD 651  Seminar in ECSE
1.000 Credits
Prerequisite(s): EDC 645 and EDD 546
Co-requisite(s): EDD 650

The seminar provides a theoretical foundation and support for the Internship in Early Childhood Special Education. Focus is on understanding the supports and barriers to implementing recommended practices in early childhood special education and early intervention as well as the changing roles of professionals working in early care and education settings. Skills in family-centered service delivery, collaborative consultation, problem-solving, teaming, advocacy and supervising paraprofessionals will be included. (YR).

EDD 680  Adv Science Meth: Secondary
3.000 Credits
Prerequisite(s): EDD 485 or EDD 585

This course is designed for students interested in utilizing the research in science education at the secondary level. Students will study historical and philosophical perspectives that have shaped thinking and research related to science education. They will also be involved in the latest methods and techniques for science teaching and learning. Topics will include the use of inquiry methodologies, science education research, integration of science and other core subject areas, and current science education reform efforts. (F)
EDD 685  Adv Science Meth: Elem & MS
3.000 Credits
Prerequisite(s): EDD 485 or EDD 585

This course is designed for students interested in utilizing the research in science education at the elementary and middle school levels. Students will study historical and philosophical perspectives that have shaped thinking and research related to science education. They will also be involved in the latest methods and techniques for science teaching and learning. Topics will include the use of inquiry methodologies, science education research, integration of science and other core subject areas, and current science education reform efforts. (F)

PHYSICAL EDUCATION (EDF)
EDF 550  Hlth, Nutr, & PE/Clsrm Tchrs
2.000 Credits

Instruction and participation in health, nutrition and physical education concepts and principles as they relate to elementary school curriculum. The six-dimensional model of wellness will be applied to meet legislative goals and objectives for the various grade levels. Required for elementary education majors.

EDF 555  Principles of Coaching
2.000 Credits

Introduction in the basic principles and psychology of coaching all age groups, skill levels, and genders. Emphasis will be placed on many factors which relate to success in athletics/sports, the qualities and qualifications of coaches, and the administration of programs and organized practices. Students cannot receive credit for both EDF 455 and EDF 555. (YR)

INDEPENDENT STUDY (EDK)
EDK 500  Intro to Research in Education
3.000 Credits

An introduction for classroom teachers to the process of reviewing, evaluating, conducting, and disseminating educational research. Designed to help teachers evaluate research findings and their applications to classroom practice.

EDK 680  Individual Res in Education
1.000 TO 3.000 Credits

Requires the student to initiate and carry to completion a research project under the supervision of a staff member. May be elected more than once for a total of not more than three credits as approved by an advisor.

EDK 690  Internship/Directed Field Exp
1.000 TO 3.000 Credits

Allows the student to practice skills in the field in which the student has been trained. Develops greater competence in skill use. The staff member under whose direction the work is to be done, or a program coordinator, will make arrangements with the field supervisor who will furnish a report of the student’s work. May be elected more than once for a total of not more than three credits as approved by an advisor.

COMMUNITY & BILINGUAL (EDM)
EDM 505  ESL Strategies for the Classrm
2.000 Credits

This course examines a variety of instructional approaches to teaching English as a Second Language (ESL) which are being used throughout the United States. These approaches will be discussed in light of underlying language learning theories. Instructional materials representing various approaches to teaching ESL will be examined. Students will also have the opportunity to construct instructional material for use in teaching ESL.

EDUCATION MATHEMATICS (EDMA)
EDMA 511 Lrng & Tchg Middle Gr Math
3.000 Credits

This course addresses issues central to teaching and learning mathematics in middle grades; building learning communities, how students learn mathematics, use of worthwhile mathematical tasks, instructional modes, technology options, assessment to inform instruction, and professional perspectives. (Y).

EDMA 512  Comm and Assmt in Math Lrng
4.000 Credits
Prerequisite(s): (MATH 442) or MATH 542 and (MATH 443 or MATH 543)

Problems and strategies for making effective the reading, symbolizing, graphing, diagramming, explaining, and writing of mathematical concepts and solutions: multiple uses and forms of assessment.(W)

EDMA 521  Leadership in Mathematics Educ
3.000 Credits

This course focuses on leadership concerns in mathematics education at the middle grades level. Topics may include school reform; staff development; program review; communicating with the community; new teacher induction; proposal writing. Open only to graduate students or by permission of the instructor. (Y).

EDMA 525  Currm Devt & Rsch in Math Ed
3.000 Credits
Prerequisite(s): EDMA 512 and EDMA 521

Curriculum Development and Research in Mathematics Education is a capstone course for leadership in mathematics education. It addresses recent research in mathematics education and the design, implementation, and evaluation of research-based curriculum development; action research methods; and applications.
This course focuses on mathematics education topics of current or emerging interest, such as current research; current curriculum development; issues related to school organization; new technologies; new national, state, or local initiatives; focused fieldwork; and equity concerns. Open only to graduate students or by permission of instructor. Course may be repeated for up to six hours when specific topics differ. (OC).

SPECIAL EDUCATION (EDN)

EDN 501 Strategies for LD 3.000 Credits Prerequisite(s): EDC 501

Content includes strategies for teaching students with learning disabilities in special and regular education classes. Course addresses diagnostic-prescriptive teaching, direct instruction, and specific strategies and materials addressing each academic area. The individualized education program (IEP), development of goals and objectives, linking assessment and instruction, inclusion, and generality of behavior change will also be included.

EDN 502 Social/Vocational Transitions 3.000 Credits Prerequisite(s): EDC 501

Course includes strategies that teach age-appropriate social skills to elementary students with learning disabilities. Topics include interactive skills, self-management skills, self-concept, attitude, communication skills particularly pragmatics, assessing social skills, and differential responding in a variety of social settings found in the school, home, and community.

EDN 503 Assessment of the Learner 3.000 Credits Prerequisite(s): EDC 501

Formal and informal assessment strategies used in the identification and service of students with handicaps are described. Technical and operations aspects of standardized testing, curriculum-based assessment, and informal strategies are described.

EDN 504 Assessment Practicum 1.000 Credits Prerequisite(s): EDC 501

Clinical experiences with formal and informal assessment strategies currently used by special educators to identify and program for students with handicaps. Activities include administration, scoring, and interpretation of norm- and criterion-referenced tests, curriculum-based assessments, and informal assessment strategies. Deriving goals, objectives, activities, and strategies from assessment data are also included.

EDN 505 Teaching Students with ADD 2.000 TO 3.000 Credits

Identification of the behavioral characteristics and instructional needs of students with attention deficit disorders and/or hyperactivity will be discussed. Conducting and interpreting assessment, promoting academic skill gains, sustained attention, task involvement, self-management and functional social skills, and managing hyperactive and hypoactive behaviors will be addressed. Strategies to support and promote family involvement and self-esteem will be described.

EDN 506 Collaboration in the Classroom 3.000 Credits

Techniques for enhancing collaboration between special and regular classroom teachers of mainstreamed exceptional and low-achieving learners at all levels. Included are essential skills for managing and monitoring the learning process and maintaining collaborative partnerships.

EDN 507 Ed of the Emotionally Impaired 2.000 Credits Prerequisite(s): EDC 561

Explores educational strategies for the emotionally disturbed and behaviorally disordered. Emphasis is given to etiological factors and prescriptive approaches to teaching. The role of the teacher as a consultant, a modifier of behavior, and a learning strategist is explored.

EDN 508 Internship Seminar LD 1.000 Credits Prerequisite(s): EDC 501 and EDN 501 and EDN 503 and EDN 504

Seminar will focus on the discussion, development, and evaluation of Individualized Educational Programs, Individualized Transition Plans, and Behavior Intervention Plans for students with learning disabilities at a variety of internship sites. Topics will include academic and behavior assessment and strategies, curriculum, child study teaming, service delivery options and inclusion strategies.

EDN 520 Intro to Emotional Impairments 3.000 Credits

Identification of the behavioral characteristics and instructional needs of children with emotional impairments/behavior disorders will be discussed. Causes of emotional impairments and environmental influences on behavior will also be discussed. Strategies for identification, assessment, and interpreting such instruments will be addressed. Finally, instructional strategies for students with emotional impairments will be described and practiced through classroom activities. (YR).

EDN 521 Practicum at Psych Facility 1.000 Credits

Experience in a clinical setting with emotionally impaired individuals, for no less than 45 clock hours. Activities include working with cooperating teacher on tasks such as individual tutoring, data collection, informal assessment, and program implementation and evaluation. Also included will be the development of goals and objectives relevant for emotionally impaired students. (YR).
EDN 522  Emotional Impairments Intrnship
3.000 Credits
Prerequisite(s): EDN 520 and EDN 525 and EDN 526 and EDN 523

Field experience with elementary/secondary students with emotional impairments in classroom setting. Experiences include delivery of direct instruction, observations, tutoring, small and large group instruction, curriculum development, program development, and implementation and participation in the IEP process. Collaboration with regular classroom teachers, and other activities under the on-site supervision of an EI certified teacher and an EI-certified university field supervisor. Internship also includes weekly seminar. This course has EDN 520, EDN 525, EDN 526, EDN523 with a "B" or better as prerequisites. (YR).

EDN 523  Strat: Emotional Impairments
3.000 Credits
Prerequisite(s): EDN 520 or EDC 501

Course content includes strategies for teaching students with emotional impairments, including instruction on reading and mathematics. Course also includes strategies to deal with hyperactive behavior, aggressive behavior, socially withdrawn behavior, and delinquency. Strategies for effective teaching, and the development of instructional materials and learning environments for students with emotional impairments is included. The Individualized Educational Program, development of goals and objectives, linking assessment with instruction, and integrating students with emotional impairments into the regular classroom will also be covered. EDN 520 or EDC 501 is a prerequisite. (YR).

EDN 524  Couns Fam of Studts Emo Impair
2.000 Credits
Prerequisite(s): EDN 520

Course content focuses on preparing teachers to work with parents and families, to meet the academic, emotional, social and behavioral needs of students with emotional impairments. Issues concerning counseling families and students in educational settings will be discussed. Strategies for individual and group counseling will also be addressed and practiced through classroom activities. (YR).

EDN 525  Eco-Behavioral Assessment
2.000 OR 3.000 Credits
Prerequisite(s): EDN 520 or EDC 501

Formal and informal assessment strategies used in identifying and serving students with emotional impairments are described. Assessment strategies include eco-behavioral assessment, functional analyses, naturalistic observation techniques, norm-referenced and criterion referenced tests, interviewing, achievement tests, and curriculum based assessment. Technical aspects of assessment, interpretation of data, and diagnostic strategies are also addressed, as well as using assessment instruments to facilitate more effective teaching for students with emotional impairments. To be taken concurrently with EDN 526. (YR).

EDN 526  Eco-Behav Assessment Practicum
1.000 Credits
Prerequisite(s): EDN 520
Co-requisite(s): EDN 525

Clinical experiences with formal and informal assessment strategies currently used by special educators to identify and program for students with emotional impairments. Activities include practicing observation techniques, completing and analyzing eco-behavioral assessments and functional analyses. Also included are administration, scoring, and interpretation of norm-referenced and criterion referenced tests, curriculum based assessments, achievement tests, rating scales and checklists, and informal assessment strategies. To be taken concurrently with EDN 525. (YR).

EDN 527  Inclusion:Multisen/Direct Inst
2.000 TO 3.000 Credits

Course addresses developing, implementing, and evaluating teaching strategies and materials that incorporate principles of direct instruction and multi-sensory activities that promote inclusion of students with special needs in general education settings, increase all students' academic achievement, and improve social interaction among students from a wide variety of social, economic, and cultural backgrounds. (F,W,S).

EDN 580  Mentally Impaired Child
2.000 TO 3.000 Credits

A course specially designed for regular classroom teachers to better equip them for effectively teaching children with mental impairments.

EDUCATION TECHNOLOGY (EDT)

EDT 500  Instrl Media Meth and Mattrls
1.000 TO 2.000 Credits

Explores the technology, the production, and the effective use of audio visual media instructional purposes in a variety of settings.

EDT 501  Rsrch, Trends & Iss in Ed Tchnlgy
3.000 Credits

This course is designed to acquaint the students with research and issues facing education in the digital era. This course will look at the wide range of developments in technology and investigate the trends that are impacting the field of educational technology. Students explore and analyze key issues related to technology in the classroom of the twenty-first century. (F)

EDT 502  Surv Prog, Auth, Basic Tools
3.000 Credits

This course provides students with a general overview of various software packages that can be used to create multimedia and hypermedia for use in educational modules. The students will create several projects using various basic tools, programming and authoring environments to develop interactive multimedia, computer-based instructional products. (W)
EDT 510 Teaching with Technology
3.000 Credits
Introduces students to the management and integration of technology in education. Students experience and become familiar with technologically based teaching and learning materials; learn methodologies for using technology in specific teaching situations including audiovisual and media methods; develop skills in effectively evaluating educational software; explore how technology can be used as a problem-solving tool within the classroom environment; and become familiar with application programs, telecommunications and multimedia. (F, W, S).

EDT 511 Technology in Second Educ: MAT
3.000 Credits
This course focuses on teaching technology 6-12. The course will focus on understanding technology literacy at the secondary school level. Additionally, the course will provide opportunities to develop teaching activities that provide 6-12 learners with the ability to utilize productivity, Internet, and multimedia tools and understand ethical and safety issues related to the use of technology in education.

EDT 512 Human Performance Improvement
3.000 Credits
This course addresses organizational and human behaviors that affect performance. Causes of performance deficits will be examined and possible solutions linking business goals to interventions will be considered.

EDT 513 Analyzing Human Performance
3.000 Credits
Prerequisite(s): EDT 512
Students will practice research design, sampling, surveys, and statistical analysis in the analysis of performance problems in local companies. Different modes of performance analysis will be demonstrated. (F, W).

EDT 514 Application of Instrl Design
3.000 Credits
Prerequisite(s): EDT 512 and EDC 505
Students will learn project techniques such as contingency planning, status reporting, project tracking software, and evaluation. Students will create a portfolio including relevant software.

EDT 516 Application of Distance Learn
3.000 Credits
Prerequisite(s): EDT 505 and EDT 512 and EDT 514
Students will use cameras, microphones, VCRs, computers, and other equipment to manage video conferences and other forms of distance education. Students will research distance learners' satisfaction and retention of distance learning applications.

EDT 517 Evaluating PI Interventions
3.000 Credits
Prerequisite(s): EDT 512
Students will learn several models for evaluating performance interventions. Concepts of validity, reliability, item analysis and culture bias will be included.

EDT 519 Select & Design Interventions
3.000 Credits
Prerequisite(s): EDT 512 and DT 513 and EDT 517
Students will learn appropriate interventions for remedying typical performance problems. Students will also learn to manage and monitor the implementation process. (F, W).

EDT 520 Instructional Multimedia Prod
3.000 Credits
Prerequisite(s): EDT 514 and EDT 505
Introduction to basic principles of instructional multimedia authoring and production. Learners will study design techniques, authoring systems, and produce a working, computer mediated instructional module with audio, video, text, and interactive elements. (YR).

EDT 521 Transitioning to HPI
3.000 Credits
Prerequisite(s): EDT 512 and EDT 513 and EDT 517 and EDT 519
Students will learn tools for analyzing organizational readiness for change. Students will plan an intervention cycle including preparing for change, designing the intervention, and comparing anticipated and actual results.

EDT 522 Dev of Tech-Based Learning
3.000 Credits
Prerequisite(s): EDT 520
Students will acquire competence in their ability to develop web-based learning demonstrating mastery of the latest web authoring software. From the design document and prototype development in EDT 520 (or equivalent material), students will create a rich, interactive web-based learning module based on sound instructional and multimedia design principles.

EDT 530 Assistive Technology
3.000 Credits
This course will discuss how individuals learn about and use technology to assist people with disabilities. Discussions and project work will focus on ergonomics, transparency, controls, computer screens, age factors, and associated costs. (F).

EDT 531 Lead. & Prof. Devel in Ed Tech
3.000 Credits
Prerequisite(s): EDT 510
This field-based course provides students with necessary skills to design and practice methods and strategies for providing effective professional development programs for teachers and
to demonstrate leadership in technology learning practices and techniques in K-12 environment. This course is designed as a capstone course and should be taken in the final semester of the program.

**EDT 562 EDT Internship/Seminar**

3.000 Credits

A supervised field experience in which students will work in a K-12 technology program for 120 clock hours. In this internship students will serve as instructional staff, developing knowledge of and experience in managing resources, assessing students, working with students to develop technology literacy, and assisting another teacher in integrating technology into the classroom. In addition, a weekly seminar to explore issues related to K-12 technology programs will be held. (F, W).

**EDT 580 Appl of Tech for Organ Admin**

2.000 OR 3.000 Credits

This course will focus on the role of organizational administrators in the applications of technology within and organization, including policy development, personnel management, financial planning and budgeting, program planning and evaluation, training, and strategic planning.

**EDT 585 Technology for Administrators**

3.000 Credits

This course will focus on the role of organizational administrators in the applications of technology within an organization, including policy development, personnel management, financial planning and budgeting, program planning and evaluation, training, and strategic planning.

**EXPLORATORY STUDIES (EXPS)**

**EXPS 520 Science Ed Action Research**

3.000 Credits

This is the culminating course that integrates prior experiences in the MSSE program. Each student will identify a research question related to his/her own classroom practice, review relevant literature, collect and analyze data, and complete a scholarly report.

**EXPS 543 Family/School/Community Collab**

2.000 Credits

Characteristics, roles, and functions of contemporary families are described. Various communication and training strategies designed to promote collaboration and teamwork within and between the school staff, the families, and community are described and practiced through discussion, problem-solving activities, and role-playing. Family effectiveness assessment instruments and strategies are also described and practiced.

**EXPS 593 Simulation and Gaming**

1.000 TO 3.000 Credits

This course focuses on simulation and gaming as approaches to learning which are fundamentally different from methods traditionally used in education, industry, business, and psychology. Students will have the opportunity to examine many different types of simulations and games and to participate in selected ones. They will also be able to design one for use in their own area of interest.

**EXPS 599 Individ Res in Lit in Educatio**

1.000 TO 3.000 Credits

Requires the student to initiate, and carry to completion, a literature in education based research project under the supervision of a faculty member. May be elected more than once for a total of not more than three credits as approved by advisor.

**LIBRARY SCIENCE (LIBR)**

**LIBR 575 Issues Lit Child/Yng People**

2.000 TO 3.000 Credits

This course is designed to heighten the awareness and sensitivity of teachers to the treatment of issues in modern and traditional literature for elementary and middle school children. Among these issues will be justice, ethics, abuse, conformity, aging, death, sibling problems, alienation, friendship, prejudice, gender, and other areas of concern. Techniques and activities for fostering discourse and open inquiry in the classroom, relative to the literature, will be explored and presented. (F, YR).

**PROFESSIONAL EDUCATION (PDED)**

**PDED 505 Sp Ed Legisltn and Litigation**

2.000 OR 3.000 Credits

Prerequisite(s): EDC 501 or EDN 520

Content traces the historical development of special education through landmark litigation and legislation, parent advocacy, and national economic and social needs. The provisions of federal and state special education mandates, judicial interpretations, and Michigan state guidelines regulating the delivery of educational and vocational services to persons with handicaps will also be addressed.

**PDED 515 Museum Resources for Teaching**

2.000 Credits

Explores the use of museums as educational resources by elementary and secondary teachers. Various museums in the greater Detroit metropolitan area will be visited and studied. Students will review how to plan educational trips and how to use museum resources in meeting their own particular individual needs.

**PDED 518 Tchg Mid Sch Math/Spec Needs**

1.000 TO 2.000 Credits

Prerequisite(s): EDD 512

This course will emphasize the number strand of the middle grades mathematics as defined in the recently adopted Grade Level Content Expectations. These expectations will be the
basis for the grade level tests that begin October 2005. The course will also be applicable to teachers being Highly Qualified according to state level definitions as mandated by NCLB legislation.

PDED 525  The Educator and the Law
1.000 TO 2.000 Credits

Designed to familiarize classroom teachers with school law and its implications for educators, pupils, and parents. Consideration will be given to the legal aspects of such matters as physical threats, teacher liability, codes of conduct, discipline and student rights.

PUBLIC ADMINISTRATION (PADM)

PADM 500  Topics in Public Admin
1.000 TO 3.000 Credits

A major topic or set of related topics in public administration will be examined in the course. For example, the topic one semester might be the “Classics of Public Administration.” The topics may change and, therefore, it is possible to take the course more than once.

PADM 505  Introduction to Administration
3.000 Credits

This course provides both concepts and content for understanding the responsibilities of contemporary public administrators. Included is an overview of the main core areas of finance, human resources, and leadership. Emphasized in the seminar are team building, case analysis, and developing a professional portfolio.

PADM 507  Strategic Comm for Admin
3.000 Credits

This Internet course addresses three levels of administrative communications - individual, group and organization - and examines the concepts and skills needed to be an effective communicator. Students will develop applications emphasizing goal-oriented communications and making strategic choices in content, structure, style and delivery. An emphasis is given to the design and best use of computer technologies such as Word and PowerPoint applications. The course also covers basic ethical and legal issues of work-place communications.

PADM 520  Leadership and Administration
3.000 Credits

An overview and examination of the background and current practices and applications associated with substantive leadership and futures-oriented management of a variety of public service and nonprofit organizations.

PADM 521  Lead,Advoc,Admin Earl Ch Prgm
3.000 Credits

This course promotes role of the early childhood educator as a leader and advocator for young children and families. Designed for present and future teachers, administrators and other professionals who participate in decisions relating to public policy and legislations, state licensing, teacher certification, funding resources, parental involvement and other issues affecting young children and families.

PADM 522  Qlty and Prod in Serv Org
2.000 Credits

Contemporary service organizations are concerned with improving their quality and productivity. What are the different approaches to accomplishing these ends? Subjects such as Total Quality Management and other approaches will be examined and utilized to suggest techniques to improve educational, public, and nonprofit organizations.

PADM 523  Legal and Regulatory Admin
2.000 OR 3.000 Credits

This class will focus on important legal and regulatory issues as they relate to public, education, and nonprofit organizations. It will consider the various court and administrative decisions which affect these. Numerous case situations will be used to facilitate the students' learning.

PADM 525  Consulting and Staff Dev
2.000 Credits

This two-pronged program aligns the planning, design, and implementation of pre-service and in-service staff development programs for individuals and groups with an analysis and study of internal and external consultant roles and practices that help ensure proper development of personnel, processes and programs to enhance the organizational mission and desired outcomes.

PADM 527  PR for Nonprofit/Public Sector
2.000 OR 3.000 Credits

The seminar examines the interaction of bureaucracies and their communities. It is particularly concerned with citizen roles and influence in governance and communications in education, public and nonprofit organizations. Concepts used include community power, pressure groups and organization culture and climate.

PADM 530  Loc Govt for Teach/Admin
1.000 TO 3.000 Credits

At the seminar, teachers participate in interactive learning activities with local government staff members. Officials serve as resource people, not lecturers. Teachers experience each lesson through the eyes of their students. All participants provide complete lesson plans for each activity, making it easy to share favorites from the course/academy with colleagues. Teachers work on developing coordinated learning experiences in local government including field trips, case studies and class visitations drawn from both school district and local government resource-bases.

PADM 540  Admin of Financial Resources
3.000 Credits

Basic principles and actual practices of financial administration and accounting for state/local governments, public school
systems and nonprofit organizations, particularly budgeting and financial reporting within the context of other organizational processes and political demands and/or requirements. As one of the MPA core seminars, the case method will be employed to illustrate issues and problems of financial administration.

**PADM 541  Fund Accounting**  
2.000 Credits

This seminar focuses on the goals, methods and issues associated with accounting for funds used in public agencies, school districts and nonprofit organizations. Included in the course is consideration of the preparation and use of financial statements, and Comprehensive Annual Financial Reports. A variety of other related topics will be covered such as managing debt, investments, and cash management practices.

**PADM 548  Fundraising**  
2.000 OR 3.000 Credits

The course will analyze the role of fundraising and philanthropy for nonprofits. The class will examine issues such as the cultural, political and economic supports and constraints within which nonprofit organizations operate. Students will be able to enhance their fundraising skills and their knowledge of the fundraising practices of nonprofits.

**PADM 560  Admin of Human Resources**  
3.000 Credits

This seminar will examine human resource administration activities in public, educational and nonprofit settings. Issues such as recruiting, selection, planning, performance appraisal, contracting and collective bargaining will be related to the overall administrative activities. Emphasis will be placed on the connections between human resource issues in public, education, and nonprofit organizations.

**PADM 561  Organization Dev and Theory**  
2.000 OR 3.000 Credits

Students will learn how organizations are structured and shaped, know what features of organizations vary and the parameters on which they vary, and be able to analyze, synthesize, and apply concepts to reduce organizational uncertainty, and to improve and regulate organization behaviors and outcomes. Attention will also focus on top down and participatory administration in organizations, and change in public, educational, and nonprofit organizations and agencies.

**PADM 562  Labr Relations in Serv Setting**  
2.000 OR 3.000 Credits

The seminar will consider the impact of collective bargaining on traditional human resource administration in public, education and nonprofit settings. It also will focus on developing an initial competency in the various activities associated with collective bargained situations.

**PADM 564  Performance Appraisal**  
2.000 Credits

Evaluating the performance of individuals in an organization is crucial to the motivation of the individual and the success of the organization. This class will consider the available methods for assessing performance of personnel in different public, educational and nonprofit settings. The different methodologies and concepts in the field will be utilized in the class.

**PADM 580  Info Sys and Stats for Admin**  
3.000 Credits

This course will introduce MPA students to descriptive and basic inferential statistics. Participants will use microcomputers and software to perform elementary statistical analyses and to prepare presentation quality reports and graphics, making use of statistical information.

**PADM 581  Strat Planning/Needs Assessmnt**  
2.000 OR 3.000 Credits

This course develops the strategic planning and needs assessment competencies of the participants. Emphasized in the course is the "cascade" process of information gathering involving interviewing, focus groups, and surveys as applied in strategic planning.

**PADM 582  Policy Analysis & Development**  
2.000 OR 3.000 Credits

Policy formulation involves two different activities: 1) identifying and assessing alternative courses of action, i.e., deciding what, if anything, needs to be done about a problem; and 2) developing the policy, regulation or law that will carry an agreement in principle into effect. Both aspects of policy development will be covered in the course.

**PADM 583  Program Evaluation**  
2.000 OR 3.000 Credits

This class will examine procedures for evaluating programs in public, education and nonprofit settings. The concern will be to examine the various techniques available to determine whether a program is doing what it was intended to do. Students will utilize various techniques in examining a variety of case situations.

**PADM 585  Technology for Administrators**  
3.000 Credits

This course will focus on the role of organizational administrators in the applications of technology within an organization, including policy development, personnel management, financial planning and budgeting, program planning and evaluation, training, and strategic planning.

**PADM 650  Assessment Seminar**  
1.000 OR 2.000 Credits

This "capstone" seminar involves the assessment of public administration degree candidates' knowledge, skills and abilities in core program areas. These core areas include...
administration of programs, finance and human resource administration, and leadership. Students will prepare and present portfolios of their work.

**PADM 690  Directed Studies in Pub Admin**  
1.000 TO 3.000 Credits

This course will permit students to take subjects not currently offered in regular courses but within the capacity of existing or adjunct faculty. To be elected only with the permission of the program director and an instructor.

**PADM 720  Internship**  
1.000 TO 3.000 Credits

Students who lack the necessary experience in responsible administration will be afforded the opportunity to gain the experience in the internship. The class and the number of hours will be arranged to fit the needs of the students the program coordinator believes are necessary.
SCHOOL OF MANAGEMENT

Administration

Kim Schatzel, PhD, Dean, Senior Associate Dean for Business Development
Karen Strandholm, JD, PhD, Associate Dean of Academic Affairs
Michael D. Harkness, PhD, CPA, Chair, Department of Accounting and Finance
Andrew Urbaczewski, PhD, Chair, Department of Management Studies
Mary B. Howard, Graduate Programs Director
Christine A. Brzezinski, Graduate Admissions Coordinator
Joanne Hurt, Recorder
Amy Kazanowski, Recorder
Brenda Williams, Support Staff
Mike Callahan, Internship Program Director
Fabia Snage, Internship Program Coordinator

Faculty (Full-Time)

Accounting and Finance

Mohamed E. Bayou, PhD, University of Cincinnati, Professor
Robert E. Blatz Jr, JD, University of Detroit Mercy, Associate Professor
Kelly Cai, PhD, University of Houston, Assistant Professor
Michael Foran, PhD, University of Washington, Associate Professor
Brian P. Green, PhD, CPA, Kent State University, Professor
Michael D. Harkness, PhD, CPA, University of South Florida, Assistant Professor
Claudia Kocher, PhD, Michigan State University, Associate Professor
Hei Wai Lee, PhD, University of Illinois at Urbana-Champaign, Associate Professor
Gail K. McCracken, JD, CPA, Wayne State University, Lecturer
Lee Redding, PhD, Princeton University, Associate Professor
Vivek Sharma, PhD (candidate), Virginia Tech, Lecturer
Alice Xie, PhD, Syracuse University, Assistant Professor

Management Studies

Aaron Ahuvia, PhD, Northwestern University, Associate Professor
Joy Beatty, PhD, Boston College, Assistant Professor
Thomas J. Callahan, PhD, Michigan State University, Associate Professor
Michael Clay, MBA, Long Island University, Lecturer
Lee A. Freeman, PhD, Indiana University, Assistant Professor
Yi Guo, PhD (candidate), Texas A&M University, Lecturer
Micki Hyde, PhD, Southern Illinois University-Carbondale, Assistant Professor
Barbara D. Klein, PhD, University of Minnesota, Associate Professor
Kamalesh Kumar, PhD, University of North Texas, Professor
Timothy E. Landon, PhD, University of Minnesota, Assistant Professor
Benjamin Lev, PhD, Case Western Reserve University, Professor
K. H. Padmanabhan, PhD, Michigan State University, Associate Professor
Young Ro, PhD, University of Michigan, Assistant Professor
Donald F. Rossin, PhD, University of California at Los Angeles, Associate Professor
Linda Salisbury, PhD (candidate), University of Michigan, Assistant Professor
Robert H. Schappe, PhD, University of Wisconsin, Lecturer
Kim E. Schatzel, PhD, Michigan State University, Assistant Professor
Karen S. Strandholm, JD, PhD, Indiana University, Associate Professor
Robert P. Steel, PhD, University of Tennessee-Knoxville, Professor
Andrew Urbaczewski, PhD, Indiana University, Assistant Professor
Magali Valero-Tonone, PhD (candidate), Arizona State University, Lecturer

Professors Emeriti

Yu-Min Chou, PhD, University of Illinois at Urbana-Champaign
D. Ross Cowan, MF, University of Michigan
William H. Culp, PhD, CPA, University of Michigan
Richard E. Czarnecki, PhD, CPA, Michigan State University
Cedric V. Fricke, PhD, University of Michigan
A. Richard Krachenberg, PhD, University of Michigan
Thomas F. Lyons, PhD, University of Michigan
William R. D. Martin, MBA, University of Chicago
Victor J. Streeter, PhD, University of Michigan
Gary R. Waissi, PhD, University of Michigan

School of Management Accreditation

The School of Management’s graduate and undergraduate degree programs are accredited by AACSB-International, The Association to Advance Collegiate Schools of Business. AACSB-International is the premier accreditation agency for business schools.

Mission Statement

Our mission is to be the school of choice for quality business education, preparing future business leaders for Southeastern Michigan and beyond.

The School of Management provides high quality, practice-oriented business programs to well-qualified students on a regional campus of the University of Michigan. While the School primarily maintains a regional student focus, it provides a quality educational experience preparing them for national placement. Our primary mission is to meet the business-related educational needs of our undergraduate and graduate students, supported by new technologies and a variety of teaching methodologies. By providing regional organizations with professionally competent interns and graduates, we strive to meet both the community's human resource needs and our students' employment and educational needs. This mission is enhanced by the School's
location in a major metropolitan and industrial area. The environment is strongly influenced by the automobile manufacturing industry and its increasingly global outreach.

Our undergraduate and graduate programs are designed to supply students with professional and technical skills essential to being successful in an evolving business environment. Each program is characterized by limited class size. We also offer students outstanding professional internship opportunities.

Our primary mission is complemented by our faculty's commitment to making intellectual contributions. The main focus of this intellectual process is refereed publications in nationally recognized journals that lead to contributions beneficial to academic and business professionals.

Graduate Degree Programs

The University of Michigan-Dearborn (UM-D) is one of the three campuses of the University of Michigan and has been in existence since 1959. It is committed to the same rigorous academic standards and tradition of excellence for which the University of Michigan is so well known. The regional campuses, Flint and Dearborn, each have a Chancellor as chief executive officer. The President of the University, located in Ann Arbor, has responsibility for all three campuses. One Board of Regents governs the three campuses.

The School of Management offers the following master degree programs, all accredited by AACSB-International:

- Master of Business Administration (MBA) degree program, offered through evening on-campus, and online courses
- Master of Science (MS) in Accounting
- Master of Science (MS) in Finance, offered through evening on-campus and online courses, and in Hong Kong in collaboration with Hong Kong University, School of Professional and Continuing Education
- Dual Degree program leading to both the MBA and the MS in Finance
- Dual Degree program leading to both the MBA and the Master of Science in Engineering-Industrial & Systems Engineering (MSE-I&SE) from the College of Engineering and Computer Science
- Dual Degree program leading to both the MBA and the Master of Health Services Administration (MHS) from the School of Public Health at the University of Michigan - Ann Arbor.

The Master of Science in Engineering is offered jointly by the School of Management and the College of Engineering and Computer Science.

MASTER OF BUSINESS ADMINISTRATION PROGRAM

Program Description

The MBA is tailored for busy professionals working full-time. Courses are offered on weekday evenings as well as online. The MBA program is right for you if you want to:

- Pursue an MBA while balancing your job, travel, or life commitments.
- Expand your network of professional relationships.
- Interact with a talented and experienced faculty as well as talented and experienced fellow students.
- Customize your degree with specialized electives that allow you to earn a concentration in Finance, International Business, Marketing, Supply Chain Management, Human Resource Management, or Accounting.

Students may earn their degree entirely through on-campus evening courses, or entirely through online MBA courses, or through a mixture of both.

Online MBA courses are the same courses as taught on the Dearborn campus, taught by the same full-time faculty. There is no distinction between online MBA courses and on-campus MBA courses or the degree earned. There is no on-campus residency requirement, so students can earn their MBA from anywhere. Pursuing the MBA through online courses may be right for those who work long or unusual hours, travel extensively, live far from a good college or university, or for other personal or work reasons need the flexibility of online MBA courses. Online courses allow you to tailor the time and place of your learning to fit your work schedule and lifestyle.

The average GMAT score is 570 to 580 and the average undergraduate grade point average is 3.2 for those entering the MBA program. Undergraduate degrees in engineering, business, computer science, natural science, social or behavioral science, humanities, health care or education are all appropriate as preparation for the MBA program.

Curriculum

The MBA curriculum is comprised of courses from four categories. To earn the MBA without a concentration requires 60 credits distributed as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBA Core Courses</td>
<td>33 hrs</td>
</tr>
<tr>
<td>MBA Managerial Applications Courses</td>
<td>18 hrs</td>
</tr>
<tr>
<td>MBA Capstone Course</td>
<td>3 hrs</td>
</tr>
<tr>
<td>Electives</td>
<td>6 hrs</td>
</tr>
<tr>
<td>Total Credits Required</td>
<td>60 hrs</td>
</tr>
</tbody>
</table>

To earn the MBA with a concentration requires 63 credits distributed as follows:

<table>
<thead>
<tr>
<th>Category</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBA Core Courses</td>
<td>3 hrs</td>
</tr>
<tr>
<td>MBA Managerial Applications Courses</td>
<td>18 hrs</td>
</tr>
<tr>
<td>MBA Capstone Course</td>
<td>3 hrs</td>
</tr>
<tr>
<td>Electives</td>
<td>9 hrs</td>
</tr>
<tr>
<td>Total Credits Required</td>
<td>63 hrs</td>
</tr>
</tbody>
</table>

The total number of credits required to earn the degree will be reduced for those receiving core course waivers, as discussed below. A minimum of 36 graduate credits is required for the MBA.

The MBA curriculum requirements are the same whether the degree is pursued through online courses or evening, on-campus courses. However, there may be fewer elective courses and concentrations available for students doing their MBA entirely through online courses. However, all concentrations can be earned by those able to take elective courses on campus.
MBA Core Courses

Core courses are designed to provide students with exposure to the functional areas of business. They provide the foundation for MBA Managerial Application courses, electives, and the MBA Capstone course.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC505</td>
<td>Developing and Interpreting Financial Information</td>
<td>3</td>
</tr>
<tr>
<td>OB 510</td>
<td>Organization Behavior</td>
<td>3</td>
</tr>
<tr>
<td>MKT 515</td>
<td>Marketing Management</td>
<td>3</td>
</tr>
<tr>
<td>DS 520</td>
<td>Applied Statistical Modeling</td>
<td>3</td>
</tr>
<tr>
<td>OM 521</td>
<td>Operations Management</td>
<td>3</td>
</tr>
<tr>
<td>MIS 525</td>
<td>Computer and Information Systems</td>
<td>3</td>
</tr>
<tr>
<td>LE 523</td>
<td>Legal Environment for Managers</td>
<td>3</td>
</tr>
<tr>
<td>BE 530</td>
<td>Economic Analysis: Firm and Consumer</td>
<td>3</td>
</tr>
<tr>
<td>BE 580</td>
<td>Economic Analysis: National and International</td>
<td>3</td>
</tr>
<tr>
<td>FIN 531</td>
<td>Financial Management I</td>
<td>3</td>
</tr>
<tr>
<td>BPS 535</td>
<td>Strategic Planning and Decision Making</td>
<td>3</td>
</tr>
</tbody>
</table>

Core course waivers reduce the number of credits required to complete the MBA degree; however, a minimum of 36 graduate credit hours is required to graduate. The Graduate Office determines all course waivers. Students may, at their option, enroll in core courses that have been waived, although completion of these courses will not satisfy MBA program requirements. Once admitted to the MBA program, students must take graduate level courses, or courses approved for graduate credit.

Core course waivers will be considered based on previous equivalent undergraduate or graduate coursework as reflected on official transcripts. Only undergraduate courses completed with a grade of B or better and taken as part of a baccalaureate degree program completed within seven years of admission to the MBA program, will be considered for core course waivers.

Prior graduate coursework, completed with a grade of B or better, can be considered for MBA core course waivers if a) the graduate coursework had been completed within seven years of admission to the MBA program, or b) the graduate coursework was part of a graduate degree that had been completed within seven years of admission to the MBA Program.

There are three options available for determining core course waivers based on the above guidelines:

1) Admitted applicants that have completed an equivalent undergraduate or graduate course from an AACSB-International accredited school will be waived from the appropriate core course. In some cases, students may be advised to petition for a waiver and provide additional course information before the waiver decision is made.

2) Admitted applicants may request a core course waiver based on previous undergraduate or graduate coursework from non-AACSB accredited schools on a case-by-case basis by completing a petition form. The following supporting documentation must accompany the petition: copy of the course description from the college catalogue, a copy of the course syllabus, and a copy of the title page and table of contents of the textbook used in the course.

3) Core MBA courses may also be waived by proficiency demonstrated by examination. MBA candidates who wish to waive core courses in this manner must petition the Graduate Office to take a proficiency exam and must provide reasonable justification for the request. Proficiency exams are generally administered two to three times per year and must be taken within one year of initial enrollment. Admitted students must complete the required proficiency examination registration forms and pay the applicable non-refundable fee prior to taking the exam. Students receiving a grade of B or better on the exam will be waived from the applicable core course. Additional information regarding proficiency examinations is available to admitted students in the SOM Graduate Office, 168 Fairlane Center South.

MBA Managerial Applications Courses

Managerial Applications courses build upon the foundation knowledge and skills of the MBA Core courses, and apply functional business knowledge in a managerial setting. Managerial Applications courses provide in-depth exposure to the analysis and solution of business problems, and the implementation of business decisions. MBA students are required to complete three courses each from Group A and Group B.

**Group A** 9 hrs

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 555</td>
<td>Cost Management</td>
<td>3</td>
</tr>
<tr>
<td>DS 570</td>
<td>Management Science</td>
<td>3</td>
</tr>
<tr>
<td>OM 571</td>
<td>Global Operations Management</td>
<td>3</td>
</tr>
<tr>
<td>FIN 581</td>
<td>Financial Management II</td>
<td>3</td>
</tr>
</tbody>
</table>

**Group B** 9 hrs

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>OB 560</td>
<td>Management Skills Development</td>
<td>3</td>
</tr>
<tr>
<td>HRM 561</td>
<td>Human Resource Management</td>
<td>3</td>
</tr>
<tr>
<td>MKT 565</td>
<td>Advanced Marketing Management</td>
<td>3</td>
</tr>
<tr>
<td>MIS 575</td>
<td>Information Management</td>
<td>3</td>
</tr>
</tbody>
</table>

**MBA Capstone Course** 3 hrs

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BPS 585</td>
<td>Managing Strategic Innovation and Change</td>
<td>3</td>
</tr>
</tbody>
</table>

**MBA Electives** 6-9 hrs

Students complete the MBA program by choosing at least two graduate elective courses tailored to their individual interests. No more than three graduate credits can be taken from units other than the School of Management.

Required and elective courses cannot be taken off-campus except by prior permission of the Graduate Office. The Director will consider a request to take a course off-campus only if there are unusual circumstances.

To earn a concentration within the MBA requires at least one additional elective course, according to the requirements specified below.

**MBA Concentrations**

MBA concentrations are available to students wishing to specialize in one of the following areas. Students are not required to select a concentration. More than one concentration...
may be earned. Concentrations are awarded at the time of graduation.

**Accounting**

**Required**
- ACC 555 Cost Management ........................................3 hrs

**Electives**........................................................................9 hrs
- ACC 600 Seminar in Financial Accounting Theory........3 hrs
- ACC 601 Advanced Accounting Information Systems ..........3 hrs
- ACC 602 Seminar in Contemporary Accounting Issues ..........3 hrs
- ACC 603 Controllership ..................................................3 hrs
- ACC 604 Issues in Auditing and Assurance Services .......3 hrs
- ACC 605 International Accounting and Taxation ...........3 hrs
- ACC 608 Financial Statement Analysis ............................3 hrs

**Finance**

**Required**
- FIN 581 Financial Management II .................................3 hrs
- FIN 651 Investment Analysis and Management ................3 hrs

**Electives**........................................................................6 hrs
- FIN 650 Corporate Financial Applications ...................3 hrs
- FIN 652 Derivatives and Risk Management ....................3 hrs
- FIN 653 Current Issues in Investments and Capital Market .......3 hrs
- FIN 654 Financial Intermediation ....................................3 hrs
- FIN 655 International Financial Management ...................3 hrs
- FIN 656 Fixed Income Securities ....................................3 hrs
- ACC 608 Financial Statement Analysis ............................3 hrs

**Human Resource Management**

**Required**
- HRM 561 Human Resource Management ........................3 hrs

**Electives**........................................................................9 hrs
- OB 560 Management Skills Development ..........................3 hrs
- OB 610 International Dimensions of Organizational Behavior and Human Resource Management .........................3 hrs
- OB 612 Organizational Change and Development .............3 hrs
- HRM 611 Staffing, Training and Development ................3 hrs
- HRM 613 Management Union Relations .........................3 hrs

Note: OB 560 cannot satisfy both a Group B Managerial Applications requirement and an elective in the Human Resource Management Concentration.

**International Business**

**Required**
- OM 571 Global Operations Management ........................3 hrs
- OB 610 International Dimensions of Organizational Behavior and Human Resources Management .................................3 hrs

**Supply Chain Management**

**Required**
- OM 571 Global Operations Management ........................3 hrs
- OM 660 Analysis and Design of Supply Chains ...............3 hrs
- OM 661 Supply Chain Logistics Management ................3 hrs

**Electives**........................................................................3 hrs
- OB 610 International Dimensions of Organizational Behavior and Human Resource Management .................................3 hrs
- MKT 622 International Marketing .................................3 hrs
- MIS 640 Information Systems Development ................3 hrs

**Management Information Systems**

**Required**
- MIS 575 Information Management ................................3 hrs
- MIS 627 Programming and Data Structures .....................3 hrs
- MIS 640 Information Systems Development ................3 hrs
- MIS 641 Computer Networking ....................................3 hrs

**Marketing**

**Required**
- MKT 565 Advanced Marketing Management ................3 hrs

**Electives**........................................................................9 hrs
- MKT 620 Consumer Behavior .........................................3 hrs
- MKT 621 Advertising and Promotion ...............................3 hrs
- MKT 622 International Marketing .................................3 hrs
- MKT 623 Business to Business Marketing ......................3 hrs
- MKT 624 Service Marketing ..........................................3 hrs
- MKT 625 Global Sourcing and Logistics .........................3 hrs

**Master of Science in Accounting**

The Master of Science in Accounting serves professionals in public accounting, controllership, corporate accounting, and taxation. It provides those with bachelor degrees in accounting with the appropriate number of business and accounting credits required to sit for the Uniform Certified Public Accountant Exam in Michigan. UM-D students who are close to finishing a Bachelor of Business Administration degree in Accounting, and have been admitted to the MS-Accounting program, may take up to six graduate credits during their final term of undergraduate coursework.
Curriculum

The Master of Science in Accounting program consists of 30 credits of accounting and elective courses. Students must choose one of two tracks within the MS-Accounting degree – the Financial Accounting track or the Taxation track.

Courses Required for Both Tracks .......................... 15 hrs

ACC 600 Seminar in Financial Accounting Theory .... 3 hrs
ACC 601 Advanced Accounting Information
   Systems .................................................. 3 hrs
ACC 608 Financial Statement Analysis .................... 3 hrs
ACC 605 International Accounting and Taxation .... 3 hrs
ACC 630 Communication for the Tax Professional .... 3 hrs

Required for the Financial Accounting Track .......................... 15 hrs

ACC 603 Controllership ........................................ 3 hrs
ACC 604 Issues in Auditing and Assurance Services .... 3 hrs

Plus nine graduate credits from the School of Management.

Required for the Taxation Track .......................... 15 hrs

ACC 633 Fundamentals of Corporate Income
   Taxation .................................................. 3 hrs
ACC 634 Advanced Corporate Income Taxation .... 3 hrs
ACC 636 Flow Through Entities ............................ 3 hrs
ACC 637 Small Business and Estate/Trust
   Taxation .................................................. 3 hrs
ACC 638 State/Local Taxation and Emerging
   Issues .................................................... 3 hrs

MASTER OF SCIENCE IN FINANCE

The Master of Science in Finance serves professionals in corporate finance, financial institutions, and the investment fields. The MS-Finance program builds upon a long tradition of excellence in finance education. The program was built with input from numerous sources in the finance community and parallels much of the Chartered Financial Analysts (CFA) body of knowledge.

The program is tailored for busy professionals working full-time. Courses are offered on weekday evenings as well as online. Students may earn their degree entirely through evening on-campus courses, or entirely through online courses, or through a mixture of both. You can enter the MS-Finance with any undergraduate degree.

Online courses are the same courses as taught on the Dearborn campus, taught by the same full-time faculty. There is no distinction between online MS-Finance courses and on-campus MS-Finance courses or the degree earned. There is no on-campus residency requirement, so students can earn their degree from anywhere. Pursuing the MS-Finance through

A maximum of three credits of Business Internship (BI 500 or BI 560) may count as elective credits, by petition.

Curriculum

The MS-Finance program consists of 30 graduate credits, including up to 6 graduate transfer and/or graduate waiver credits. At least 15 of these 30 graduate credits must be from Finance courses.

Required .................................................................... 18 hrs

BE 530 Economic Analysis: Firm and Consumer .... 3 hrs
DS 520 Applied Statistical Modeling .................. 3 hrs
FIN 531 Financial Management I .................... 3 hrs
FIN 581 Financial Management II ................... 3 hrs
FIN 651 Investment Analysis and Management .... 3 hrs
ACC 608 Financial Statement Analysis ............... 3 hrs
BE 580 Economic Analysis: National and
   International ............................................. 3 hrs

Electives .................................................................... 12 hrs

FIN 650 Corporate Financial Applications ........... 3 hrs
FIN 652 Derivatives and Risk Management ........... 3 hrs
FIN 653 Current Issues in Investments and Capital
   Markets ................................................... 3 hrs
FIN 654 Financial Intermediation ........................ 3 hrs
FIN 655 International Financial Management .... 3 hrs
FIN 656 Fixed Income Securities ..................... 3 hrs
ACC 608 Financial Statement Analysis ............... 3 hrs
ACC 555 Cost Management ............................... 3 hrs
ACC 603 Controllership .................................... 3 hrs
BE 580 Economic Analysis: National and
   International ............................................. 3 hrs
DUAL DEGREE PROGRAM: MBA AND MS-FINANCE

This dual degree program takes advantage of course overlap between the MBA and MS-Finance curricula, and allows students to receive both degrees upon completion of a minimum of 75 graduate credits. Students can reduce the total credits required if they have had acceptable prior courses equivalent to MBA core courses. Both the MBA and the MS-Finance are offered through evening courses targeted to full-time working professionals, and through online courses available to students worldwide.

Admissions and Administration

Students who wish to pursue the dual MBA and MS in Finance degrees must meet the entrance requirements of both programs. See the information about application and admission for the MBA and the MS-Finance elsewhere in this Catalog.

Curriculum

The curriculum requirements for the dual MBA and MS in Finance degree program are:

**MBA Core Courses** ........................................... 33 hrs

- ACC 505 Developing and Interpreting Financial Information ................. 3 hrs
- OB 510 Organization Behavior .................................. 3 hrs
- MKT 515 Marketing Management ................................... 3 hrs
- DS 520b Applied Statistical Modeling ............................. 3 hrs
- OM 521 Operations Management ................................... 3 hrs
- MIS 525 Computer and Information Systems ...................... 3 hrs
- LE 523 Legal Environment of Business ............................ 3 hrs
- BE 530b Economic Analysis: Firm and Consumer ................ 3 hrs
- BE 580b Economic Analysis: National and International .......... 3 hrs
- FIN 531b Financial Management I .................................. 3 hrs
- BPS 535 Strategic Planning and Decision Making ........................ 3 hrs

**MBA Managerial Applications Courses** .............. 18 hrs

**Group A** .......................................................... 9 hrs

- FIN 581b Financial Management II (required for Dual MBA/MS-Finance) .......... 3 hrs
- ACC 555b Cost Management ........................................ 3 hrs
- OM 571 Global Operations Management ................................ 3 hrs

**Group B** .......................................................... 9 hrs

Select three from the following

- OB 560 Management Skills Development .................................. 3 hrs
- HRM 561 Human Resource Management ................................... 3 hrs
- MKT 565 Advanced Marketing Management ................................ 3 hrs
- MIS 575 Information Management ........................................ 3 hrs

**MBA Capstone Course** ............................................. 3 hrs

**Electives or Additional Application Courses**

Six credit hours required from MBA Electives or Additional Application Courses.

**MS in Finance Required Course** .................. 3 hrs

FIN 651 Investment Analysis and Management ........ 3 hrs

**MS in Finance Elective Courses** ................... 12 hrs

Choose 12 credits from the following, at least two must be Finance:

- FIN 650 Corporate Financial Applications .......................... 3 hrs
- FIN 652 Derivatives and Risk Management .......................... 3 hrs
- FIN 653 Issues in Investments & Capital Markets .................. 3 hrs
- FIN 654 Financial Intermediation ..................................... 3 hrs
- FIN 655 International Financial Management ........................ 3 hrs
- FIN 656 Fixed Income Securities ....................................... 3 hrs
- ACC 555 Cost Management ........................................... 3 hrs
- ACC 603 Controllership .................................................. 3 hrs
- ACC 608 Financial Statement Analysis ............................... 3 hrs
- BI 500 Business Internship ............................................. 3 hrs
- BI 560 International Business Internship ............................. 3 hrs

Minimum Credits required for the Dual MBA/MS-Finance is 75 credits.

Notes:

- a The MS-Finance program requires a course in Financial Accounting – equivalent to ACC 298 – as an admissions prerequisite. Students lacking this course take ACC 505 to fulfill this prerequisite.
- b These courses contribute to both the MBA and the MS-Finance degrees.
- c ACC 555 Cost Management may not be used as both an MBA Applications A course and an MS-Finance elective.
- d No course may be used as both an MBA elective and an MS-Finance Elective. Students may earn a concentration within the MBA, as long as the concentration is not in Finance. MBA concentrations require at least 9 elective credits, raising the total credits required for the MBA from 60 to 63 credits.
- e A maximum of three credits of Business Internship (BI 500 or BI 560), by petition, may count as MS in Finance elective credit.
- f Core MBA courses may be waived, reducing the credits required for the MBA, but students must complete a minimum of 36 credits for the MBA plus the 15 credits shown above for the MS-Finance degree, for a minimum total of 51 credits. A minimum of 39 credits-in-residence are required for the MBA and MS-Finance dual program.
- g A minimum of 15 credits in Finance courses is required. Upon completion of the entire 75 credit program the MBA and the MS in Finance will be awarded simultaneously.
DUAL DEGREE PROGRAM:
MBA AND MSE IN
INDUSTRIAL AND SYSTEMS ENGINEERING

The School of Management and the College of Engineering and Computer Science, through the Rackham School of Graduate Studies, offers an innovative dual degree program awarding both an MBA and a Master of Science in Engineering in Industrial and Systems Engineering degree (MBA & MSE-IS&E). The dual program requires 66 credit hours of specified coursework to earn both degrees.

This unique dual degree program has been carefully developed in direct response to an increasing need among employers in southeast Michigan, for professionals who are prepared for careers that require expertise in both technology and management.

Admissions and Administration

Students who wish to pursue the dual MBA and MSE-I&SE degree must meet the entrance requirements of, and gain admission, independently to both the School of Management, and Department of Industrial and Manufacturing Systems Engineering (IMSE) in the College of Engineering and Computer Science. In addition to meeting the admission requirements for the MBA, applicants will also need to meet the requirements for MSE-IS&E admission. See "Admission" under "Requirements for the MSE Degree in Industrial and Systems Engineering" located in the College of Engineering and Computer Science section of this Catalog. This includes:

1) Introductory courses in:
   a) Statistics (IMSE 510 or equivalent).
   b) Operations Research (IMSE 500 or equivalent).
   c) Human Performance (IMSE 442 or equivalent).
2) Three letters of recommendation.
3) A BS in engineering, a physical science, computer science, or
   applied mathematics.

Advising, academic records, and student services for SOM courses in this Dual Degree program are handled by the SOM Graduate Programs Office. IMSE student records are handled independently by the IMSE department.

Curriculum

The curriculum requirements for the dual MBA and MSE-I&SE degree are:

MBA Core Courses ...........................................27 hrs
MBA Managerial Applications Courses ......................6 hrs
MBA Capstone Course .......................................3 hrs
Total MBA Credits Required ................................36 hrs
IMSE Core Courses ...........................................12 hrs
IMSE Concentration Courses ................................12 hrs
Total IMSE Credits Required ................................24 hrs
Electives (at least 3 credits from the SOM) ...............6 hrs
Total Credits Required .....................................66 hrs

MBA Core Courses

ACC 505 Developing and Interpreting Financial
   Information ..................................................3 hrs
OB 510 Organization Behavior ............................3 hrs
MKT 515 Marketing Management ..........................3 hrs
MIS 525 Computer & Information Systems ...............3 hrs
LE 523 Legal Environment of Business ...................3 hrs
BE 530 Economic Analysis: Firm & Consumer ..........3 hrs
BE 580 Economic Analysis: National and
   International ................................................3 hrs
FIN 531 Financial Management I ........................3 hrs
BPS 535 Strategic Planning and Decision Making .......3 hrs

Dual degree students may receive exemptions for required MBA core courses if they have had prior equivalent coursework, but must make up the credits by taking additional MBA Managerial Applications courses.

MBA Managerial Applications Courses

.................................................................6 hrs

Dual degree students are required to complete one course each from Group A and Group B.

Group A

3 hrs
ACC 555 Cost Management ................................3 hrs
OM 571 Global Operations Management .................3 hrs
FIN 581 Financial Management II ........................3 hrs

Group B

3 hrs
OB 560 Management Skills Development .................3 hrs
HRM 561 Human Resource Management ..................3 hrs
MKT 565 Advanced Marketing Management .............3 hrs
MIS 575 Information Management ........................3 hrs

MBA Capstone Course .......................................3 hrs
BPS 585 Managing Strategic Innovation and
   Change .......................................................3 hrs

Industrial and Systems Engineering Core
Courses .........................................................12 hrs

Note: Consult the College of Engineering and Computer
   Science section of this Catalog for course descriptions.

IMSE 505 Optimization ....................................3 hrs
IMSE 511 Design and Analysis of Experiments .........3 hrs
IMSE 514 Multivariate Statistics .........................3 hrs
IMSE 580 Production Management ........................3 hrs

Industrial and Systems Engineering
Concentration Courses ....................................12 hrs

Four courses may be taken from one concentration area, or any combination of the following three areas.
Area 1: Industrial and Systems Engineering Concentration

Human Performance and Ergonomics

IMSE 543 Industrial Ergonomics ................................3 hrs
IMSE 545 Vehicle Ergonomics I ..................................3 hrs
IMSE 546 Safety Engineering ......................................3 hrs
IMSE 548 Human Factors ..............................................3 hrs
IMSE 593 Vehicle Packaging Engineering ..................3 hrs
AENG 546 Vehicle Ergonomics II ...........................3 hrs

Operations Research & Management Science

IMSE 506 Stochastic Models .........................................3 hrs
IMSE 520 Managerial Decision Analysis .....................3 hrs
IMSE 521 Manufacturing Cost Estimation and Control ...3 hrs
IMSE 555 Decision Support and Expert Systems ........3 hrs
IMSE 559 System Simulation .......................................3 hrs
IMSE 659 Advanced Systems Simulation ..................3 hrs

Area 2: Integrated Design and Manufacturing & Engineering Concentration

Manufacturing & Quality Systems Design

IMSE 513 Robust Design ..............................................3 hrs
IMSE 561 Total Quality Management ...........................3 hrs
IMSE 567 Reliability Analysis .....................................3 hrs
IMSE 581 Product Planning and Scheduling ...............3 hrs

Product Development and Concurrent Engineering

AENG 583 Project Management and Concurrent Engineering ....3 hrs
EMGT 580 Management of Product and Process Design ....3 hrs

Advanced Manufacturing & Automation

IMSE 502 Computer-Integrated Manufacturing ..........3 hrs
IMSE 532 Information for Manufacturing ..................3 hrs
IMSE 538 Intelligent Manufacturing ..........................3 hrs
IMSE 5655 Supply Chain Management ......................3 hrs

Area 3: Information Systems Concentration

Information Systems Management

IMSE 553 Software Engineering ..................................3 hrs
IMSE 556 Database Systems .....................................3 hrs
IMSE 557 Computing Networks and Communication ..3 hrs

Enterprise Information Systems

IMSE 532 Information for Manufacturing ....................3 hrs
IMSE 555 Decision Support and Expert Systems ..........3 hrs
IMSE 5585 Electronic Commerce ..............................3 hrs
IMSE 564 ABAP/4 Programming ..............................3 hrs
IMSE 570 Enterprise Information Systems ..................3 hrs
IMSE 5715 Modeling of Integrated Information Systems ..3 hrs
IMSE 5725 Object Oriented System Design ..................3 hrs
IMSE 574 IS Based Production Planning and Control ....3 hrs
IMSE 579 Software Integrated Manufacturing and Logistics Management ....3 hrs

Electives ............................................................6 hrs

The courses taught for the MHSA are tailored to the health care industry, while MBA courses generalize to a broader range of business and industry. For three areas of study – organizational behavior, information systems, and microeconomics – dual MHSA and MBA students may choose...

DUAL DEGREE PROGRAM: MBA AND MASTER OF HEALTH SERVICES ADMINISTRATION

The School of Management and the School of Public Health on the University of Michigan-Ann Arbor campus offer a jointly administered Dual Degree program leading to the Master of Health Services Administration (MHSA) and the Master of Business Administration (MBA). This program takes advantage of many areas of overlap between the two curricula, and allows admitted students to receive both degrees upon completion of a minimum of 81 graduate credits.

The UM-Ann Arbor MHSA has been the top-ranked program of its kind by US News and World Report every year since 1994.

Admissions and Administration

Students must apply and be accepted by each school to pursue the dual MHSA and MBA. Students already enrolled in either degree may apply for the second degree before completing one-half of their degree requirements. Applicants submit either GMAT or GRE test scores in support of their applications.

The Dual MHSA and MBA program is co-directed by the Director of the MHSA residential program and the Director of Graduate Programs for the SOM. Students will have an advisor in each school.

Curriculum

The courses taught for the MHSA are tailored to the health care industry, while MBA courses generalize to a broader range of business and industry. For three areas of study – organizational behavior, information systems, and microeconomics – dual MHSA and MBA students may choose...
either the relevant MHSA course or the MBA course. Students take MHSA courses in the areas of law, operations, managerial accounting, and advanced finance; and take MBA courses in the areas of advanced statistics, financial accounting, marketing, and finance. The rest of the curriculum includes courses offered solely by the SOM (e.g. strategy, strategic innovation), or solely by the SPH (e.g. health services systems, epidemiology).

Depending upon where students choose to take their three "either-or" courses, the curriculum allows from one to four MBA elective courses, and from zero to three MHSA elective courses. To earn both degrees, students must complete at least 36 credits from the SOM and 45 credits from the SPH (note that 4 of the 45 SPH credits are for basic statistics, which is an admission prerequisite for the MBA).

Courses for the following areas may be taken either from the School of Management or from the School of Public Health*.

Choose one course:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>OB 510</td>
<td>Organizational Behavior</td>
<td>3 hrs</td>
</tr>
<tr>
<td>HMP 643</td>
<td>Individual and Group Behavior in Health Service Organizations</td>
<td>3 hrs</td>
</tr>
<tr>
<td>HMP 616</td>
<td>Understanding Organizations</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

Choose one course:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIS 525</td>
<td>Computers and Information Systems</td>
<td>3 hrs</td>
</tr>
<tr>
<td>HMP 665</td>
<td>Computer Information and Decision Support Systems in Health Care</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

Choose one course:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BE 530</td>
<td>Economic Analysis: Firm and Consumer</td>
<td>3 hrs</td>
</tr>
<tr>
<td>HMP 660</td>
<td>Microeconomic Theory I</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

SOM courses

The following courses must be taken from the School of Management:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC 505</td>
<td>Developing and Interpreting Financial Information</td>
<td>3 hrs</td>
</tr>
<tr>
<td>MKT 515</td>
<td>Marketing Management</td>
<td>3 hrs</td>
</tr>
<tr>
<td>DS 520</td>
<td>Applied Statistical Modeling</td>
<td>3 hrs</td>
</tr>
<tr>
<td>FIN 531</td>
<td>Financial Management I</td>
<td>3 hrs</td>
</tr>
<tr>
<td>BPS 535</td>
<td>Strategic Planning and Decision Making</td>
<td>3 hrs</td>
</tr>
<tr>
<td>BPS 585</td>
<td>Managing Strategic Innovation and Change</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

Choose two courses from the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>OB 560</td>
<td>Management Skills Development</td>
<td>3 hrs</td>
</tr>
<tr>
<td>HRM 561</td>
<td>Human Resource Management</td>
<td>3 hrs</td>
</tr>
<tr>
<td>MKT 565</td>
<td>Advanced Marketing Management</td>
<td>3 hrs</td>
</tr>
<tr>
<td>MIS 575</td>
<td>Information Management</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

MBA electives or additional managerial applications courses

Minimum MBA credits required^b................................................... 36 hrs

SPH Courses

The following courses must be taken from the School of Public Health:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOSTATS 503</td>
<td>Introduction to Biostatistics</td>
<td>4 hrs</td>
</tr>
<tr>
<td>HMP 600</td>
<td>The Health Services System I</td>
<td>4 hrs</td>
</tr>
<tr>
<td>HMP 601</td>
<td>The Health Services System II</td>
<td>4 hrs</td>
</tr>
<tr>
<td>HMP 606</td>
<td>Managerial Accounting for Health Care Administrators</td>
<td>3 hrs</td>
</tr>
<tr>
<td>HMP 652</td>
<td>Health Law</td>
<td>3 hrs</td>
</tr>
<tr>
<td>HMP 653</td>
<td>Law and Public Health</td>
<td>3 hrs</td>
</tr>
<tr>
<td>HMP 654</td>
<td>Operations Research and Control Systems</td>
<td>3 hrs</td>
</tr>
<tr>
<td>HMP 663</td>
<td>Economics of Health Management and Policy</td>
<td>3 hrs</td>
</tr>
<tr>
<td>HMP 667</td>
<td>Advanced Seminar in Health Care Financial Management</td>
<td>3 hrs</td>
</tr>
<tr>
<td>HMP 682</td>
<td>Case Studies in Health Services Administration</td>
<td>3 hrs</td>
</tr>
<tr>
<td>HMP 684</td>
<td>The Politics of Healthcare</td>
<td>3 hrs</td>
</tr>
<tr>
<td>EPID 503</td>
<td>Strategy and Uses of Epidemiology</td>
<td>3 hrs</td>
</tr>
</tbody>
</table>

Minimum MHSA credits required^a............................................. 0-9 hrs

Total Credits ............................................................... 81 hrs

Notes:

^a Students may choose either the MBA or MHSA course (but not both) from these areas. Students may choose electives from either MBA or MHSA courses, but must complete at least 45 credits of MHSA courses and at least 36 credits of MBA courses. For example, if students take OBS10, MIS 525, and BE 530, they will need 3 credits of MBA electives to reach the minimum 36 total MBA credits, and 9 credits of MHSA electives to reach the minimum 45 MHSA credits. If students take HMP 643 or HMP 665, and HMP 660, they will need 12 credits of MBA electives to reach the minimum 36 total MBA credits, and will need no MHSA electives to reach the minimum 45 MHSA credits.

^b Students who have completed courses equivalent to the required core courses may select substitute courses with the approval of their advisers, but must still complete at least 45 credits of MHSA courses and at least 36 credits of MBA courses.

^c A basic statistics course is an admissions requirement for the MBA, but not for the MHSA. If otherwise admissible, students may be admitted to the MBA under the condition that they complete a basic statistics course during their first term. The MHSA course Biostatistics 503 will fulfill that requirement, and counts toward the minimum credit requirements for the MHSA.

^d Students taking HMP 606 may not enroll in the MBA Applications course ACC 555.

^e Students taking HMP 667 may not enroll in the MBA Applications course FIN 581.
MASTER OF SCIENCE IN ENGINEERING MANAGEMENT

The Master of Science in Engineering Management degree is jointly offered by the School of Management, and the College of Engineering and Computer Science, through the Horace H. Rackham School of Graduate Studies.

Admissions and Administration

The MS in Engineering Management is co-directed by the Department Chair of Industrial and Manufacturing Systems Engineering and the Director of Graduate Programs for the SOM. Advising, academic records, and student services for the MS-Engineering Management are handled by the Industrial and Manufacturing Systems Engineering Department. See the “Requirements for the MS Degree in Engineering Management” section of this Catalog for information on admissions requirements.

Curriculum

The MS in Engineering Management requires a minimum of 36 credits. There are 13 required courses for a total of 31 credits, plus 5 credits required for the degree that may be completed with the election of a thesis option that integrates and applies the knowledge of technical management to an engineering project in the student’s particular engineering discipline. Students not electing the thesis option are required to take the Capstone Project for 2 credits, plus 3 credits of electives from a set of approved courses.

School of Management Courses ............. 13 hrs
EMGT 510 Managerial Finance and Economics ........ 2 hrs
EMGT 515 Strategic Technology Management .......... 2 hrs
EMGT 535 Marketing Management and Policy .......... 2 hrs
EMGT 541 Accounting Fundamentals for Decision Making ............................................ 3 hrs
EMGT 545 Organization Behavior and Human Resource Management ......................... 2 hrs
EMGT 550 Business Ethics/Law .......................... 2 hrs

College of Engineering and Computer Science Courses .............................................. 18 hrs
EMGT 500 Managing the Engineering Function .......... 2 hrs
EMGT 505 Systems Engineering .......................... 3 hrs
EMGT 520 Production Management ...................... 3 hrs
EMGT 525 Total Quality Management ..................... 3 hrs
EMGT 530 Information Systems for Engineering Management ............................................ 3 hrs
EMGT 560 Engineering Management at Upper Levels ........................................... 1 hr
EMGT 580 Management of Product and Process Design ........................................... 3 hrs

Thesis or Project and Elective Credits ...... 5 hrs

Students are required to do either a) a master’s thesis for five credits or b) EMGT 591, Capstone Project, plus three credits of approved electives.

EMGT courses do not carry credit toward program for students enrolled in the MBA, MBA/MSE-I&SE, MBA/MHSA, MS-Accounting or MS-Finance programs. Course descriptions and prerequisites may be found in the College of Engineering and Computer Science section of this Catalog.

GRADUATE INTERNSHIP PROGRAM

The Internship program is an optional academic program that integrates classroom work and paid practical experience with cooperating businesses. Internships are full-time and last the full semester. Up to three non-resident academic credits are granted for the internship. Second and third internships will be offered for additive credit only.

Students interested in Graduate Internships should schedule an appointment with the Internship Director to go over program policies and sign the Student Internship Contract. The Internship Office coordinates resume dissemination, interview scheduling and job offers.

Students must register for the internship before starting work. As part of the internship, students are required to write a report at the end of the semester and participate in the evaluation process. Students may elect two courses along with the internship with the permission of the Internship Director.

DEGREE REQUIREMENTS

Minimum average grade of B (5.0).

A cumulative average grade of B or higher will be required in all graduate courses taken for credit and applied to the credit hour requirements.

Diploma Application

To be recommended for the degree, the student must file a formal application in the School of Management Office, 168 FCS.

Completion of required courses

See the requirements for each degree curriculum.

Minimum Credits-in-Residence

The following are not considered as credits taken in residence. A maximum total of twelve graduate credits may be applied to any SOM graduate degree from any combination of:
Approved graduate level offerings (500-level and above) offered by another UM-D academic unit - maximum three credits.
Graduate transfer credit from an AACSB accredited program - maximum six credits.
Graduate Business Internships (BI 500 or BI 560) - maximum three credits.
SOM graduate credits earned through exchanges with international partner universities – maximum twelve credits.

The minimum number of credits-in-residence required for the following graduate degrees are:

- 24 credits for the MBA
- 39 credits for the Dual MBA and MS-Finance
- 27 credits for the Dual MBA and MSE in Industrial and Systems Engineering
- 24 credits for the Dual MHSA and MBA
- 18 credits for the MS in Accounting
- 18 credits the MS in Finance

TRANSFER CREDIT

A maximum of 6 graduate semester credits may be transferred to a student’s record. Transfer credits appear on the academic record, but the associated grades received for these credits do not appear and are not computed in the student’s cumulative GPA. Credits may be transferred only for approved graduate-level courses and if all of the following conditions are met:

1) The graduate business course must have been completed in an AACSB-accredited business program;
2) The student must submit a written petition requesting transfer credit with proper documentation attached. The documentation must include a description of the course from the college catalogue, the syllabus for the course, and a copy of the title page and table of contents for each textbook used. Petition forms for admitted students are available on the SOM website or from the Records & Advising Office, 168 FCS. Completed petitions are submitted by the student to the Records & Advising Office. The petition is then reviewed by the appropriate faculty member, department chairperson, and Graduate Program Director. A written response to the student’s petition is sent to the student;
3) An official transcript must be received by the SOM Graduate Programs Office from the institution offering the courses.

Courses cannot be transferred for credit if:
1) already applied part toward a bachelor or master degree or certificate;
2) taken more than five years before enrollment in the SOM graduate program;
3) in which a grade lower than a B was earned.

APPLICATION AND ADMISSION

The School of Management accepts applications from those holding a bachelor degree or its equivalent from an accredited college or university. Applications may be obtained from:

Graduate Office
School of Management
University of Michigan-Dearborn
168 Fairlane Center South
19000 Hubbard Drive
Dearborn, MI 48126-2638
Telephone: 313-593-5460
Fax: 313-271-9838
Email: gradbusiness@umd.umich.edu
http://www.som.umd.umich.edu

APPLICATION AND ADMISSION CRITERIA

All credentials and documents submitted become the property of the UM-D School of Management. Applicants are carefully appraised on the following criteria.

ACADEMIC RECORDS

Applicants’ undergraduate and graduate records will be heavily considered in the admission decision. Transcripts will be examined not only for overall grade point average but also for trends of grades and particular scholastic capabilities.

SCORES FROM THE GRADUATE MANAGEMENT ADMISSION TEST (GMAT)

All applicants must take the GMAT before admission is granted. GMAT scores older than five years will not be considered.

GMAT Verbal and Quantitative scores will be heavily considered in the admission decision.

The GMAT Analytical Writing score will be used to assess an applicant’s writing proficiency. Applicants with an Analytical Writing score below 4.0 will be directed to participate in an online writing enhancement program offered through the School of Management. Students must complete the writing enhancement program within their first two terms of enrollment.
EXCEPTIONS POLICY FOR GMAT SCORES

Applicants to the MS-Finance and MS-Accounting degree programs who meet certain provisions will be considered for admission without submitting a GMAT score. If, upon review by the Graduate Programs Office, the applicant is considered admissible without a GMAT score, that requirement will be waived. The following provisions qualify an applicant to be considered for the GMAT waiver:

1) An advanced degree (e.g. master’s, doctorate, JD, etc.) in business, economics, law, or related field, or in a discipline involving a significant quantitative component (e.g. engineering, science, statistics).
2) CPA, CFA or CFM certification.
3) A bachelor degree in business with a cumulative GPA of 3.20 or higher, earned within the past five years from a business school accredited by AACSB-International.

The School of Management reserves the right to request a GMAT score from an applicant even if these conditions are met.

WORK EXPERIENCE

A careful review is made of an applicant's accomplishments and experience in employment, military service and extracurricular activities.

A minimum of two years of full-time relevant professional work experience is required for admission to the MBA degree. This requirement is typically met through work experience obtained after completing your bachelor degree. Applicants who wish to have full-time or part-time work experience, cooperative education, or internships that were obtained prior to completing their bachelor degree considered toward fulfilling this experience requirement, must provide a thorough description of job duties, starting and ending dates, and hours worked per week, plus the name and phone number for at least one person who can verify their experience. The burden is upon MBA applicants to provide information sufficient to demonstrate that they possess the equivalent of at least two years of full-time professional work experience.

In exceptional cases, the two-year work experience minimum may be waived with strong academic records and GMAT scores.

REFERENCES

At least one letter of reference is required, from someone able to evaluate the applicant’s academic potential and/or professional work performance.

ADMISSION PREREQUISITES

The following academic prerequisites for admission must be completed with grades of C or better prior to the first term of enrollment.

MBA Admission Prerequisites

1) SOM Mathematics requirement
2) SOM Statistics requirement

MS in Accounting Admission Prerequisites

A minimum of 18 credits of accounting, including courses equivalent to the following SOM undergraduate courses:

ACC 298 Financial Accounting
ACC 299 Managerial Accounting
ACC 355 Cost Accounting and Analysis
ACC 356 Asset Accounting
ACC 357 Equity Accounting
ACC 360 Federal Income Taxation
SOM Mathematics requirement

MS in Finance Admission Prerequisites

1) Three credits of financial accounting equivalent to the SOM undergraduate course ACC 298, Financial Accounting
2) SOM Mathematics requirement
3) SOM Statistics requirement

SOM Mathematics Requirement for Admission

Quantitative skills and reasoning are important and frequently used in graduate business courses. An applicant’s mathematics background will be considered in admissions decisions. The minimum requirement for admission is demonstrated proficiency in mathematics as evidenced by successful completion of courses through pre-calculus or finite mathematics. If an applicant’s university transcripts do not show satisfactory completion of pre-calculus, finite mathematics, or higher-level math courses (e.g. calculus), the burden will be on the applicant to explain and document that they have math knowledge equivalent to pre-calculus or finite mathematics. The following UM-Dearborn courses will satisfy the mathematics admission requirement.

Math 104 Pre-calculus: Management, Life, and Social Science, 4 credits, or MATH 105 Pre-calculus, 4 credits. The prerequisite for both courses is at least two years of high school Algebra, or Math 090 Intermediate Algebra and one year of high school Geometry.

SOM Statistics Requirement for Admission

An undergraduate course in statistics and probability and statistics is required for admission to the MBA and the MS-Finance programs. This course may be taken at UM-D or another four-year university or college.

The following course is offered by the School of Management and will satisfy the appropriate statistics and probability prerequisite.

DS 300 Quantitative Modeling and Analysis I (3 hrs). Prerequisite: MATH 113 or 115, and MIS 120.
Other UM-D courses that satisfy the statistics prerequisite include:

- ECON 305 Economic Statistics
- MATH 325 Mathematical Statistics I
- STAT 325 Applied Statistics I
- IMSE 317 Engineering Probability and Statistics

SOM COMPUTER APPLICATIONS REQUIREMENT FOR ADMISSIONS

The faculty expect every graduate student to be proficient in word processing and spreadsheets, including spreadsheet math and statistical functions. Prior to enrollment in SOM graduate courses, students must have completed a college-level computer applications course equivalent to the SOM undergraduate course MIS 120, Fundamentals of Information Systems, or they must have acquired equivalent expertise through training or work experience.

TAKING UM-DEARBORN UNDERGRADUATE PREREQUISITE COURSES

Please check the Schedule of Classes online at www.umd.umich.edu/registration for course availability each term. To register for any of the above courses as a non-degree student (personal enrichment) prior to entry in a graduate program, contact the Undergraduate Admissions Office for admission information.

Applicants deficient in either the mathematics or statistics admission prerequisites may be considered for admission contingent upon their completing the appropriate course during their first term of enrollment in the graduate degree program.

APPLICATION DATES

The graduate programs of the UM-D admit part-time students in the fall (September), winter (January), and summer terms (May). Applicants for full-time study in the MS-Accounting or MS-Finance students should plan to enter in the fall term, or should confirm with the Graduate Admissions Office that sufficient courses will be available if they enter in other terms. Applications are reviewed on a rolling basis. Written notification is sent shortly after the decision date.

Fall Term Admission

Applications are accepted through August 1. Applications received after August 1st for the fall term are accepted on a space-available basis only.

Winter Term Admission

Applications are accepted through December 1. Applications received after December 1st for the winter term are accepted on a space-available basis only.

Summer Term Admission

Applications are accepted through April 1st. Applications received after April 1st for the summer term are accepted on a space-available basis only.

APPLICATION FEE

Application for admission is made through the School of Management at the UM-D, Dearborn, Michigan 48128-2638. A non-refundable fee must accompany every application for admission. Fees are subject to approval by the Regents of the University and may be changed at any time.

TRANSCRIPTS

An official academic transcript from each college and university attended, including the UM-D, must be submitted to the School of Management. All credentials and documents submitted become the property of the UM-D School of Management. To be considered official, transcripts must come directly from one university to another. Transcripts cannot be accepted if sent by the student. When requesting transcripts from one of the three University of Michigan campuses (Ann Arbor, Dearborn, or Flint), inter-office copies are sufficient for admission consideration.

RECOMMENDATION FORM

At least one letter of recommendation is required for admission. A form is included in the application for this purpose. The reference letter should come from an individual who is familiar with the applicant’s academic accomplishments and/or job performance. The form should be sent directly to the School of Management by the evaluator.

GRADUATE MANAGEMENT ADMISSION TEST (GMAT)

Applications will not be considered without GMAT scores. Exceptions to the GMAT requirement may be considered for MS-Accounting and MS-Finance applicants, as noted above. There are no exceptions to the GMAT requirement for MBA applicants.

The GMAT is administered by the Educational Testing Service. Applicants are encouraged to make every
effort to take the test at the earliest possible date and request that score be reported to the University of Michigan-Dearborn. The Graduate Management Admission Test (GMAT) is administered as a computer-adaptive test. The GMAT website at http://www.mba.com/mba describes the GMAT, where it is given, how to schedule an appointment, what to expect at the test center, GMAT scores, and how to prepare for the test.

SUBMISSION OF APPLICATION MATERIALS

The completed application form and all supporting documents should be mailed to the Graduate Office, School of Management Graduate Programs, University of Michigan-Dearborn, 168 Fairlane Center South, 19000 Hubbard Drive, Dearborn, Michigan 48126-2638. Inquiries on the status of applications should be directed to 313-593-5460 or gradbusiness@umd.umich.edu.

In addition, applicants should arrange to have scores on the Graduate Management Admission Test (and TOEFL, when necessary) sent directly to the School of Management.

DEFERRED ADMISSION

Admission to a graduate program is good for one year after the term for which admission was granted. If an admitted applicant decides to defer admission, written notification must be sent to the School of Management Graduate Office or email gradbusiness@umd.umich.edu prior to the start of the term for which initial admission was granted.

INTERNATIONAL STUDENTS

The UM-D welcomes applications from qualified international students. The language requirements for international students can be found in Admissions in the General Information portion of the Graduate Catalog. There are no housing facilities at the Dearborn campus. Students wanting more information about housing should refer to the Housing and Medical Referral Service in the General Information portion of this Catalog.

COSTS AND FINANCIAL AID

Because financial aid is unavailable to international students at the UM-D, an international student or his/her sponsor(s) must submit a notarized Affidavit of Support. This form must indicate that the student has access to funds, including living expenses, equaling at least $30,000 (U.S.), for one academic year of study at the UM-D. Estimated annual expenditures, for two semesters per year, are detailed on the tuition and fees page of the current Schedule of Classes.

TRANSCRIPTS

In addition to the instructions for domestic applicants, international applicants must also provide:
1) Official documentation of all courses taken and grades received (transcripts/records) from each undergraduate and postgraduate institution attended. Transcripts/records should be issued in the original language and be accompanied by English translations prepared by the institution’s authorized official, such as a registrar.
2) Official certification of degrees and dates awarded, issued in the original language and accompanied by English translations prepared by the institution’s authorized official, such as a registrar. Academic transcripts/records must have a seal and signature in ink from the institution’s authorized official, such as a registrar or recorder.

All credentials and documents submitted become the property of the UM-D School of Management.

APPLICATIONS

In addition to the instructions for domestic applicants, international applicants must:

• Submit with the application, the Affidavit of Financial Support for International Students (available on the SOM website) with supporting documentation. Recommendation for admission cannot be certified without this information.
• Submit official transcripts from all universities attended according to the directions listed in this section under the heading “Transcripts.”
• Meet the minimum standards of the English proficiency requirement by taking either the TOEFL or the MELAB and submitting scores to the School of Management. See “English Language Requirements for Admission” in the General Information section of the Graduate Catalog.

International students requiring an I-20 upon admission to the School must have a complete application file in the School of Management Office and the application fee must be paid by the following application deadlines:

Fall Term: June 1st
Winter Term: October 1st
Summer Term: March 1st

GUEST STUDENTS AND POST-GRADUATE STUDENTS

Students currently enrolled in a graduate program at another university (guest students) and persons who have already earned a graduate degree (post-graduate students) may request permission to enroll in SOM graduate courses at UM-D as a guest/post-graduate student. Interested students should review the course descriptions, paying particular attention to prerequisites, and determine the course, or courses, they may wish to elect on the UM-D campus. Before permission to register
is granted, it will be necessary to provide the School of Management Graduate Office with the following information:

1) completed guest or post-graduate application form and application fee; the application and application fee is good for one term. When a guest or post-graduate student requests enrollment for two consecutive terms at the time of initial application, the application fee will be waived for the second term of enrollment. The second term of enrollment is contingent on the guest or post-graduate student earning a grade of B or better in each course elected at UM-D. The guest/post-graduate application form is on the SOM website or may be requested at gradbusiness@umd.umich.edu or by telephone to the School of Management Graduate Office at 313-593-5460;

2) official transcripts, sent directly to the School of Management Graduate Office from the student’s undergraduate degree-granting institution, and official transcripts for all graduate coursework completed or in progress; and

3) guest students only must provide written permission from their home institution verifying enrollment in a graduate program and granting permission to elect the course (or courses) at UM-D.

Upon receipt of the above information, the Graduate Program Director will review the documentation and if approved, the student will be notified of guest/post-graduate registration procedures. Guest and post-graduate students are permitted to elect a maximum of nine semester hours of credit. Approved guest and post-graduate registration is on a space-availability basis. Credits earned as a guest or post-graduate student do not count as credit toward degree in the UM-D SOM Graduate Programs.

FINANCIAL AID

Refer to this topic under Financial Aid in the General Information section of this Catalog.

ACADEMIC REGULATIONS

All students enrolled in the graduate program are subject to the University regulations concerning student affairs, conduct and discipline. Additional regulations, or variations, which apply specifically to graduate degree candidates, are given here.

Grading System

The following (9.0) grading system is used by the School of Management's Graduate Programs:

- \( A+ = 9 \) pts.
- \( B+ = 8 \) pts.
- \( C+ = 7 \) pts.
- \( D, E = 6 \) pts.
- \( A = 5 \) pts.
- \( B = 4 \) pts.
- \( C = 3 \) pts.
- \( D, E = 2 \) pts.
- \( C = 1 \) pt.

Grade point averages (scholastic averages) are computed by dividing the honor points a student has earned by the hours elected. Grades associated with transfer credit from colleges, schools, or units other than UM-D are neither recorded nor used in computing grade point averages of students enrolled in the School of Management.

No credit toward satisfaction of degree requirements is granted for courses in which grades below C- are received. Courses elected under the pass-fail option are not considered in computing grade average.

Incomplete Coursework and Absence from Final Examinations

Refer to this topic under Campus Policies and Procedures in the General Information section of this Catalog.

Academic Standing of Students

To be in good standing, a student must have an overall grade point average of 5.0 or better. At the end of each term, the School reviews the standing of each student with a scholastic average below 5.0. Those whose grade point average (GPA) for the term falls below 5.0 will receive a warning regardless of the cumulative average.

If a student’s cumulative GPA is below a 5.0 upon reaching a total of 6 credit hours, or at any point thereafter, the student will be placed on academic probation. The student may be allowed to continue on probation for the next 9 credit hours, as long as the GPA for each term on probation is at least 6.0 (B+). If a cumulative average of 5.0 has not been attained after this probationary period, the student will be required to withdraw from the program. Students required to withdraw may petition to be readmitted.

Students pursuing their degrees part-time (i.e., fewer than 8 credits per semester) may not register for more than 3 credits while on probation. Students pursuing their degrees full-time (i.e., 8 or more credits per semester) may not register for more than 9 credits while on probation. Students on probation may petition to waive the enrollment limit.

Repeating Courses

Courses in which a grade of C+, C or C- has been received may be repeated by students in the graduate programs. Grades and honor points for the original course and the repeated course will both appear on the student's transcript and be used in computing the student’s grade point average; however, additional credit toward program will not be awarded for the repeated course. Courses in which grades of B- or above have been received may not be repeated by students enrolled in the graduate programs.

Pass-Fail Option

Graduate students enrolled in the School of Management may elect courses with the pass-fail grading option subject to the following conditions:

1) This option may not be elected by students on academic probation.

2) Courses to be taken under this option must be specified at the time of registration or within the regular period for adding courses.

3) Only general elective courses that are not used toward an MBA concentration may be taken Pass-fail. Courses used to
satisfy MS (Accounting or Finance) degree requirements cannot be elected pass-fail.

4) In a course offered exclusively on a pass-fail basis, a passing grade will be recorded as $S$ (and not used in computing a student's grade point average), and a failing grade will be recorded as $F$ (and used in computing grade point average). In a course offered with a pass-fail option, a reported grade of $B-$ or above will be recorded as $P$, and a reported grade of below $B-$ will be recorded as $F$. (Whether a $P$ or $F$ is recorded, the grade is not used in computing a student's grade point average.)

5) A student may elect at most two courses on a pass-fail basis, whether at the student's option or not (excluding internship courses).

6) Courses that are elected on a pass-fail basis in a manner that does not conform to items 1) through 5) will not accrue toward the degree requirements of the student.

**Change in Course Election**

Refer to this topic under Campus Policies and Procedures in the General Information section of this Catalog.

**Petitions for Academic Action**

Each request to the faculty of the School of Management for special academic action relative to credits, requirements, standing, etc., should be entered on the appropriate petition form (available in the Graduate Office) or online at http://www.som.umd.umich.edu/grad/ and forwarded, with appropriate documentation, to the Graduate Office for review by the Academic Standards Committee. A written response, indicating Committee action, will be mailed to the student.

**Student Academic Conduct**

A student in the School of Management or any student enrolled in a School of Management course will not engage in academic misconduct, including, but not limited to, plagiarism, cheating, fabrication, aiding and abetting dishonesty or falsification of records and official documents as defined in the Statement of Student Rights and Code of Student Conduct. Definitions of prohibited conduct, sanctions, procedures for applying sanctions, and appellate procedures are specifically set out in the Statement. Copies of the Statement are available in the School of Management Office.

**Student Personal Conduct**

Any conduct that can be the grounds for civil or criminal lawsuit shall be subject to sanctions by the School of Management.

**Right of Appeal**

Refer to this topic in the General Information section of this Catalog.

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**Time Limits for Completing MBA Degree Requirements**

Requirements for the MBA degree must be completed within seven (7) years of first enrollment. Students who desire more time must submit, in a written petition to the Academic Standards Committee, reasons for the request and specific plans for the completion of the degree program.

**Maintenance of Active Degree-Seeking Status and Readmission**

Admission to the school is granted for a specific term. Students who are admitted, but do not enroll in the appointed term and who have not notified the School of their desire to exercise the deferred admission option, must reapply for admission. Full-time or part-time students lose active degree candidacy if at least one course is not completed within a 12-month period. Readmitted students must comply with current degree requirements. Admission to the School is competitive, and applications for readmission will be decided on the standard for the term in which the former student wishes to enroll.

**Application for the Degree**

Each candidate for a degree must file an Application for Diploma in the Graduate Office, typically within ten days of the beginning date of classes for the term in which the student expects to complete the requirements for degree. However, the Schedule of Classes should be consulted for specific dates. Applications will not be accepted after the published deadlines. If an application for a diploma was filed for a previous graduation period in which the student did not graduate, a new application is necessary. Degrees are granted at the end of the fall, winter, and summer terms, even though commencement exercises are held only in April (or May) and December.

**Advising**

Responsibility for planning the specific content of the academic program rests with the student. A thorough familiarity and understanding of the regulations contained in the Graduate Programs description material and/or the Catalog are essential for sound planning. All students are encouraged to take advantage of academic advising when they desire it in choosing courses. The School of Management maintains office hours Monday through Friday, and support personnel are available to answer student inquiries regarding course requirements, academic status, course prerequisites, and the like. An advance appointment is suggested for advising discussions. In addition, faculty advice is available and should be sought in planning programs. Members of the faculty are available during their office hours throughout the term. Students are invited to talk with them during faculty office hours or at a time arranged in advance.

**Academic Honors**

Achievement of various kinds is recognized both prior to graduation and in the granting of degrees.
**Dean's Honor List**

Each term the dean posts an Honor Roll recognizing those students who have taken nine hours or more, and have obtained a B+ (6.0) or better average.

**Beta Gamma Sigma**

Beta Gamma Sigma is the national honor society for business schools accredited by AACSB-The International Association for Management Education. Membership in Beta Gamma Sigma is one of the highest scholastic honors that a graduate business student in can achieve based on outstanding scholastic achievement as measured by overall grade point average. Invitation for membership to Beta Gamma Sigma is extended to MBA students that are in the top twenty percent of their graduation class.

**Graduation "With Distinction"**

Students who have maintained a 7.0 or above cumulative and business administration grade point average will graduate "With Distinction," and it will be recorded on their transcript.

**Graduation "With High Distinction"**

Students who have maintained an 8.0 or above cumulative and business administration grade point average will graduate "With High Distinction," and it will be recorded on their transcript.

**COURSE DESCRIPTIONS**

The courses described here are those regularly offered by the School. All courses give three hours of credit, except as otherwise specified by the numeral(s) in parentheses.

Prerequisite courses indicated with an (*) may be taken concurrently.

Students enrolled in graduate degree programs from other UM-D schools or colleges cannot elect more than 12 graduate credits offered by the School of Management, unless the SOM credits are required as part of the student’s graduate degree program.

**Course Prerequisites**

The faculty has determined the appropriate prerequisites for each course. These prerequisites exist to make sure the student has the specific background necessary not only to minimally complete the course, but also to assure a broad enough background so the student fully benefits from the course. Students must observe all prerequisites in course planning. The registration system will not allow students to register for courses without the course prerequisites successfully completed. Students with previous coursework or experience may petition the School of Management for a prerequisite override. Forms and instructions for this process are available on the SOM website or from Records & Advising, 168 FCS. Applicants must allow 10 working days for the request to be reviewed. Students registered for a course without the prerequisites or an approved prerequisite override will be administratively withdrawn from the course.

**ACCOUNTING (ACC)**

<table>
<thead>
<tr>
<th>ACC 505</th>
<th>Devel &amp; Interp Financial Info</th>
<th>3.000 Credits</th>
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<tbody>
<tr>
<td></td>
<td>To assist students in learning how financial statement information for merchandise, manufacturing, and services-based businesses is developed, interpreted and utilized. This is accomplished by demonstrating the importance of financial accounting tools and statement interpretation in manager's decisions relating to investing, financing, and operating activities. Topics include financial statement development and analysis, the accounting process, cash flow analysis, and communication of financial information. Financial accounting methodology with respect to the sales and receivables cycle, inventory, property, plant and equipment, liabilities, corporate equity and initial public offerings, and investments in other corporate entities are studied. Cases requiring critical analysis and interpretation may be integrated throughout the course.</td>
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<tr>
<td>ACC 555</td>
<td>Cost Management</td>
<td>3.000 Credits</td>
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<td></td>
<td>Prerequisite(s): ACC 505</td>
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<td></td>
<td>To introduce how cost and managerial accounting concepts and techniques can be applied to fully utilize information created by contemporary accounting information systems. The theoretical and empirical nature of cost management reports, their structures and contents, are emphasized with the goal of highlighting the relevance and limitations of this information in decision making. The course gives consideration to global and individual responsibility center performance by covering such topics as product costing, control standards, cost allocation, pricing, quality, short-term and long-term budgeting, and performance evaluation. In addition, the reciprocal roles of accounting and technology in enhancing efficiency and effectiveness benchmarks are investigated. Interwoven into course coverage are ethical, diversity, critical thinking, and global dimensions of business. This course also integrates emerging issues and techniques to assist managers and consultants in the accounting, finance, marketing, and human resources arenas.</td>
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<tr>
<td>ACC 600</td>
<td>Financial Accounting Theory</td>
<td>3.000 Credits</td>
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<td></td>
<td>Prerequisite(s): ACC 356</td>
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<td>This course provides an overview of 1) various approaches to accounting theory formulation (including traditional, regulatory, events, behavioral, information processing, predictive, and positive approaches), and 2) alternative asset valuation and income determination models (including historical cost, replacement cost, net realizable value, and present value models, along with the impacts of price level adjustments). Particular attention is directed at how these various approaches impact the state of the art of Accounting and how they influence the future evolution of Accounting. Additionally, the course provides for exploration and critical examination of the evolution and present state of the Financial Accounting Standards Board conceptual framework. The nature of the topics covered will enhance understanding of current and developing generally accepted accounting principles.</td>
<td></td>
</tr>
<tr>
<td>ACC 601</td>
<td>Adv Accounting Info Systems</td>
<td></td>
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This course examines the analysis, design, implementation, operation and control of contemporary accounting information systems. The course will compare and contrast the traditional accounting information system architecture with an alternative theoretical framework for designing accounting systems. Emphasis will be on critical business events within the organization necessary to accomplish organizational and operational goals, management and cost control, and financial reporting requirements. Analysis of these events will focus on identifying and modeling resources, events, agents, locations, and internal controls relevant to developing comprehensive accounting systems, particularly with regard to the following business processes: sales/collection, acquisition/payment, human resources/conversion.

**ACC 602  Contemporary Accounting Issues**  
**3.000 Credits**  
Prerequisite(s): ACC 600 and ACC 601

This course provides in-depth exposure to emerging contemporary issues in accounting. Topics in the seminar change to reflect the most relevant professional issues. The issues chosen are designed to be not only timely but to also provide insight into emerging future areas of the profession. In addition to lecture material and readings, the lecturer may incorporate case material, research papers, and other teaching methods as appropriate.

**ACC 603  Controllership**  
**3.000 Credits**  
Prerequisite(s): ACC 355 or ACC 555

The nature of the control function in business corporations is the focus of this course. Thus, classes cover the characteristics of management planning and control in functional and divisional organizations, responsibility accounting and the role of efficiency and effectiveness in performance measurement. Coverage also extends to controllers' roles in strategic planning, programming, and budgeting, transfer pricing, and their behavioral, global, ethical, and technological dimensions. Class presentations employ case analysis and emphasize the qualitative nature of controllership.

**ACC 604  Auditing & Assurance Services**  
**3.000 Credits**  
Prerequisite(s): ACC 600 and ACC 601

To study changes in generally accepted auditing standards, expanding assurance services, advanced internal control testing, fraud and its detection, principal audit objectives, the structure of audit programs, audit procedures, professional legal liability, ethical standards, statistical sampling techniques, the audit of EDP systems, auditor's report, and management letters. Special attention will be given to the changing role and services offered by the public accountant, auditor responsibility to the public, and the gap between public expectations and the ability of the public accountant to offer assurance.

**ACC 605  International Acctg & Taxation**  
**3.000 Credits**  
Prerequisite(s): ACC 600 and ACC 416

To study selected topics in international accounting and taxation. The course will examine accounting principles and practices of the major world economies and consider issues typically encountered by U.S. corporations in accounting for and reporting the financial activities of foreign operations. Students will explore taxation of international operations and tax planning for the U.S. based multinational corporation.

**ACC 608  Financial Statement Analysis**  
**3.000 Credits**  
Prerequisite(s): ACC 505

The objective of financial statement analysis is to examine the relationship between financial statement information and the measurement of firm value. The analysis merges actual firm value created by economic process and estimating firm value through accounting reporting methods. Students will develop tools to interpret financial statement information for use by investors, creditors, and other third party stakeholders. Topics include, but are not limited to, an overview of financial statements, basic financial analysis, profitability analysis and the quality of earnings, cash flow analysis, asset analysis, liability analysis, and valuation and equity analysis.

**ACC 630  Comm for Tax Professional**  
**3.000 Credits**

The ability to communicate effectively is an important skill for the tax professional. This course develops this important skill in tax compliance and tax planning settings through a series of case studies. Emphasis will be placed on effectively communicating technical aspects of the tax law to management, clients, and other professional tax situations.

**ACC 633  Fundamentals of Corp Taxation**  
**3.000 Credits**  
Prerequisite(s): ACC 630*

This course analyzes federal income tax rules relating to the definition, formation, operation, and liquidation of corporations including property distributions, stock redemptions, and tax/book income reconciliations. The planning and business aspects of these corporate items are emphasized. (YR)

**ACC 634  Advanced Corp Income Taxation**  
**3.000 Credits**  
Prerequisite(s): ACC 633

This course analyzes federal income tax rules relating to corporations, including acquisitive and divisive reorganizations, transfers of corporate attributes, consolidated, corporate tax returns, and limitations on consolidated corporate loss deductions. The planning and business aspects of these corporate items are emphasized. (YR)

**ACC 636  Flow through Entities**  
**3.000 Credits**  
Prerequisite(s): ACC 630*

A study of advanced income tax problems involving partnerships and S-Corporations, including organization, operation, distributions, liquidations, basis, family partnerships, and sales
and exchanges. The planning and business aspects of partnerships and S-Corporations are emphasized.

**ACC 637 Small Bus & Estate/Trust Tax**  
**3.000 Credits**  
Prerequisite(s): ACC 630*  

This course covers the basics of estate, gift, and trust taxation and tax issues encountered by small businesses. Topics include tax planning techniques to minimize the tax-burden on intergeneration transfers of wealth, tax planning for the closely held business, capital formation and preservation, tax compliance and tax alternatives.

**ACC 638 State/Local Tax & Emerg Issues**  
**3.000 Credits**  
Prerequisite(s): ACC 630*  

This course studies the basics of state and local taxation and their relationship to the federal tax structure. Topics include state/local income, property, and sales taxation structures. The second segment of the course will focus on emerging tax issues on the federal, state and/or local level.

**BUSINESS ADMINISTRATION (BA)**

**BA 690 Graduate Research**  
**1.000 TO 3.000 Credits**  
To provide masters candidates with the opportunity to undertake a research project under the supervision of a faculty member. The research topic is chosen by the student, in consultation with a faculty member in the appropriate discipline. Written approval must be obtained at least two weeks prior to registration on a form available in the Graduate Office. The request must include a comprehensive description of the proposed research project, as well as a time line for the project's completion.

**BA 691 Graduate Seminar**  
**1.000 TO 3.000 Credits**  
Topics course. To provide masters candidates with an opportunity for study of selected advanced topics in particular fields. Topics vary. See Schedule of Classes for current offerings. May be elected more than once if topics differ.

**BUSINESS ECONOMICS (BE)**

**BE 530 Econ Analysis: Firm & Consumer**  
**3.000 Credits**  
This is a microeconomics course with a managerial emphasis designed for graduate students. Microeconomics is a branch of economics that studies the behavior of individual consumers, producers, and industries. This course emphasizes business applications of economic theories. Among the topics covered are supply and demand, production functions, cost minimization, profit maximization, competitive markets, monopoly and monopsony, monopolistic competition, oligopoly, decision making in uncertain situations, and asymmetric information. The School of Management calculus admission prerequisite is required of students prior to electing this course.

**BE 580 Econ Analysis: Nat'l & Int'l**  
**3.000 Credits**  
Prerequisite(s): BE 530  

This is a macroeconomics course designed for graduate management students. Macroeconomics is a branch of economics that studies the performance of entire economies. Accordingly, this course develops an understanding of both the domestic economic situation and the importance of global interactions. Topics include analysis of the levels of aggregate output, employment and prices, the roles of aggregate supply and aggregate demand, monetary and fiscal systems and policies; and the impacts of international trade and financial flows. The calculus admission prerequisite must be satisfied prior to electing BE 580

**BUSINESS INTERNSHIP (BI)**

**BI 500 Business Internship**  
**3.000 Credits**  
The internship provides full-time paid experience for students in a professional business environment. Participating employers hire students within parameters set by the internship program. Students are required to submit a report and evaluation documents at the end of each work assignment and participate in an assessment session with the internship staff.

**BI 560 International Business Intern**  
**1.000 TO 3.000 Credits**  
This internship allows flexibility to engage in applied practical work experience outside of the United States, through paid or unpaid and full or part time work experiences. Participating organizations hire students within parameters set by the Internship Program. Students are required to maintain contact with the Internship Office throughout their experience. Students are required to submit reports, evaluation documents and participate in an assessment session with the internship staff. Students are responsible for their own legal, housing and transportation issues. This course will satisfy non-resident academic credit, which may be applied to elective credit for the student's degree requirements.

**BUSINESS POLICY AND STRATEGY (BPS)**

**BPS 535 Strategic Plan and Dec Making**  
**3.000 Credits**  
Prerequisite(s): OB 510 and MKT 515 and (OM 521 or IMSE 580 or EMGT 520) and FIN 531  

To study management of the business in relationship to its external environment. Emphasis is on strategic analysis, strategy formulation, and strategy implementation. Topics include: the strategic management process; developing a strategic vision; setting objectives; company, industry, and competitive analysis; strategic analysis and competitive advantage; crafting strategy at
the functional, business, corporate, and international levels; designing the organizational structure; and designing operational policies and procedures, and reward systems.

**BPS 585 Managing Strat Innov & Change**

3.000 Credits  
Prerequisite(s): ACC 505 and OB 510 and MKT 515 and (DS 520 or IMSE 514) and (OM 521 or IMSE 580) and BE 530 and FIN 531 and BPS 535

Effective managers are able to develop organizational architectures, strategies, cross-functional competencies, and linking systems that produce innovations, and manage organizational changes that accompany innovation. This course will examine how core competencies, career patterns, culture, power and organization structure all interact jointly to determine whether the organization can achieve and maintain a high degree of fit with a fast changing environment. Students will learn, through theoretical readings, practical examples, and extensive case analysis and research, how top managers manage innovation and strategic change and how effective leadership nurtures, sustains, and exploits innovation to build an adaptive organization. Student must have 45 credits toward program completed prior to electing BPS 585.

### DECISION SCIENCES (DS)

**DS 500 Accelerated Statistics**

2.000 Credits

This course will introduce fundamental concepts and methods in data analysis, probability, estimation, and statistical inference for application in management and management science. Topics include: basic probability theory, discrete and continuous random variables and distributions, sample and data analysis, sampling distributions, estimation, confidence intervals and hypothesis testing, introductory regression analysis, and utilization of statistical software packages. The course is designed to fulfill the statistics prerequisite for admission to SOM graduate degree programs, and is open only to those with strong mathematics backgrounds. Prerequisite: By permission of the Graduate Programs Office.

**DS 503 Managerial Stats and Opt I**

3.000 Credits

To develop basic competence and judgment in the application of quantitative methods for the analysis of probabilistic decision problems. Topics include: structure of probabilistic decision problems, probability theory and applications, statistical estimation and hypothesis testing, data collection and analysis, and applications. Selected software packages are used in homework and laboratory sessions.

**DS 520 Applied Statistical Modeling**

3.000 Credits  
Prerequisite(s): DS 300

This course explores statistical modeling and analysis techniques for aiding managerial decision making. Topics include: univariate and multivariate linear and polynomial regression, one-way and two-way analysis of variance (ANOVA), correlation, and parametric techniques. Selected software packages are used in laboratory exercises and in a statistical modeling project. Satisfaction of the School of Management statistics admission prerequisite is required of students prior to electing this course.

**DS 553 Managerial Stats and Opt II**

3.000 Credits  
Prerequisite(s): DS 503

To develop basic competence and judgment in the application of quantitative analysis to the solution of decision problems. Topics include: univariate and multivariate regression analysis, one-way analysis of variance (ANOVA), linear programming, integer programming, and network models. Selected software packages are used in homework and laboratory exercises.

**DS 570 Management Science**

3.000 Credits

To develop basic competence in introductory management science and operations research. Topics include: problem formulation and model development in optimization, linear programming (LP), duality theory, economic interpretation, and sensitivity analysis, introduction to integer programming (IP), special linear programs, network modeling, and introduction to non-linear programming (NLP). Selected software packages are used in laboratory exercises and in optimization project.

**DS 630 Applied Forecasting**

3.000 Credits  
Prerequisite(s): DS 520

This course explores various quantitative modeling methods used in forecasting. Topics include: moving averages, various smoothing techniques, trend- and seasonal forecasting, univariate- and multivariate regression based time series analysis (ARMA, ARIMA). Selected software packages are used in laboratory exercises and in an applied forecasting project.

### ENTREPRENEURSHIP (ENT)

**ENT 626 Intro to Entrepreneurship**

3.000 Credits

This course focuses on the process of new enterprise creation. It will examine how the interplay of personal and group creativity and market demand provides a basis for the conception, design and launch of new ventures. Although a variety of business options will be considered, emphasis will be placed on the creation of technology-driven growth enterprises. The course content will familiarize students with the tasks of capital formation, business planning, staffing, systems design, and operations management in the entrepreneurial context. Students taking the course should have an interest in creating a new firm or initiating an entrepreneurial venture within a larger organization. All students will develop a plan for their venture.
ENT 627  Managing the Entrepreneurial Firm  
3.000 Credits

This course addresses the issues of managing an existing enterprise. It gives special emphasis to the challenges associated with growth and maturation of the firm. These include second round and mezzanine financing, market penetration and new market entry, expanding the product lines, building the management team, formulating operating policies and procedures, strengthening the firm’s competitive position and establishing market entry barriers, and creating harvest options.

FINANCE (FIN)

FIN 531  Financial Management I  
3.000 Credits  
Prerequisite(s): ACC 505

This course examines the financial goals of a corporation with an emphasis on value creation. Capital budgeting techniques are extensively developed. Valuation of securities is presented along with an introduction to modern portfolio theory and market efficiency. Issues related to international financial management are also addressed.

FIN 581  Financial Management II  
3.000 Credits  
Prerequisite(s): FIN 531 and BE 530

This course addresses topics related to the theory and practice of corporate financial management, with special emphasis on financing the assets and operations of the firm. Topics studied include capital structure, option and option-like securities, leasing, dividend policy, mergers and acquisitions, and corporate governance. Risk management and short-term financial management are also addressed. Topics are addressed in a global context, where appropriate.

FIN 650  Corporate Finance Applications  
3.000 Credits  
Prerequisite(s): FIN 581

This course addresses practical and theoretical issues in corporate financial management. The format of the course may include case studies, practitioner and academic readings, and lectures. The format and topics may vary. Topics may include corporate governance, strategic valuation, venture capital financing, project finance, initial public offerings, cost of capital estimation, capital structure, asset management, and dividend policy.

FIN 651  Investment Analysis & Mgt  
3.000 Credits  
Prerequisite(s): FIN 531 and (DS 520 or IMSE 514)

This course provides an examination of the investment process and environment. Topics include: analysis of the risks and returns of alternative investment media, including fixed income securities, stocks, and derivative securities, within the framework of various valuation models. This course will also include an introduction to the portfolio theory and management. Wherever it is appropriate, the above topics will also be discussed in a global context.

FIN 652  Derivatives & Risk Management  
3.000 Credits  
Prerequisite(s): FIN 531

The focus of this course is on understanding the derivative securities and their use in risk management. This course provides an in-depth introduction to options and option pricing as well as an extensive overview of forward, future and swap contracts. This course will draw upon the intuition and analytic tools developed to examine sophisticated financial products or strategies which firms and investors have used in their risk management. The calculus admission prerequisite must be satisfied prior to electing FIN 652.

FIN 653  Issues Investments & Cap Mkts  
3.000 Credits  
Prerequisite(s): FIN 651 or FIN 652

This course prepares students for career development and advancement in the challenging investment profession. The course provides an in-depth study of advanced contemporary theoretical and practical issues in global investments and capital markets that parallel the body of knowledge of the Chartered Financial Analysts (CFA) program. Topics may include: advanced investment theory and valuation techniques, asset allocation, behavioral finance, derivative securities and their applications, emerging markets and global investing, ethics for investment professionals, financial statements and security analysis, fixed income securities and markets, market efficiency, market microstructure, portfolio management and performance evaluation, etc. The format and the topics may vary.

FIN 654  Financial Intermediation  
3.000 Credits  
Prerequisite(s): FIN 531

Financial Intermediaries provide services to borrowers and lenders, often creating new securities or providing brokerage services broadly defined. Intermediaries include depository institutions such as commercial banks and non-depository institutions such as security firms, pension funds and insurance companies. This course studies the functions of intermediaries, the industry regulations, and competition in a deregulated environment. Special emphasis is placed on financial markets and fiscal instruments created by intermediaries, risk of intermediation, risk management, and financial innovations in the industry.

FIN 655  International Financial Mgt  
3.000 Credits  
Prerequisite(s): FIN 531

This course views international finance at the micro level, but of necessity it will cover some aspects of macro-level international finance as well, such as the international financial system and balance of payments mechanism. The following topics will be covered: the international financial system, balance of payments, foreign exchange, exchange risk management, international financial markets, foreign investment, and foreign trade financing.
The fixed income market, accompanied by the introduction of sophisticated financial engineering techniques, has grown enormously over the last two decades. Today, the fixed income market has been a vital segment of the global financial market. This course covers major topics associated with this market, including bond pricing, yields, and volatility; term structure of interest rates and yield curve; market structure and analytical techniques for Treasury, municipal, corporate bonds, mortgage-backed securities, CMOs, asset-backed securities, bonds with embedded options; and bond portfolio management strategies. The fundamental objective of this course is to help students develop analytical skills for pricing fixed income securities and managing interest rate risk. In addition, materials covered in this course are compatible with the Common Body of Knowledge in Analysis of Debt Investments that is required by the Chartered Financial Analysts (CFA) examination.

**HUMAN RESOURCE MANAGEMENT (HRM)**

**HRM 561 Human Resource Management**
3.000 Credits  
Prerequisite(s): OB 510 and (DS 520 or IMSE 514)

This course provides managers from different business functions with the principles, knowledge, and techniques for managing employees. Incidents and cases are used to diagnose human resource problems, and design and implement solutions. Topics include: employment law, job design and analysis, performance evaluation, human resource planning, recruiting, selection and assessment, training, managerial development, compensation and incentives, reductions-in-force, collective bargaining and labor relations, and human resource management for international operations. The course stresses the evaluation of human resource programs, and the need for human resource practices to be compatible with one another and to be supportive of the firm's strategy.

**HRM 611 Staffing Training and Development**
3.000 Credits  
Prerequisite(s): HRM 561

The course examines the design and management of personnel staffing, selection, training, and development activities as mechanisms for predicting and influencing individual and organizational performance. Key topics to be covered include: staffing strategy and planning; job design and analysis; external and internal recruiting; employee testing and assessment methods; measurement, validation, and decision-making issues in selection; instructional design and delivery; methods for developing employees and managers; career management; laws and regulation affecting staffing and training; evaluation methods for staffing and training activities; and issues in staffing and training of an international workforce.

**HRM 613 Management-Union Relations**
3.000 Credits  
Prerequisite(s): OB 510

To study the rationale for, and processes of, union-management relations. Topics include: contract negotiation and administration; processes of organizing and collective bargaining; and content and philosophy of labor-management relations law. A major portion of the course is devoted to a bargaining simulation exercise.

**LAW & ENVIRONMENT (LE)**

**LE 523 Legal Environment for Managers**
3.000 Credits

This course equips the student to develop a logical approach to problem solving based on critical legal thinking, sound business judgment, and ethical considerations. The student will be introduced to the principal ways the law is made and enforced, including the development of the common law, statutory interpretation, and agency processes. The course surveys the impact of regulation on the relationships between the business and its customers, suppliers, products or services, employees, and owners. Graduate standing required.

**LE 556 Business Govt & Regulatory Env**
3.000 Credits  
Prerequisite(s): BE 530

This course focuses on an interdisciplinary approach to the evaluation of contemporary business issues utilizing elements of law, political economy, international business, ethics, social responsibility and management. Heavy emphasis is placed on case analysis and the development of legal research and critical thinking skills. The goals of the course are to enhance student awareness of the societal influences on business; establish the context from which government regulation arises; and, explore the roles of the free market, government intervention, and individual and corporate ethics in affecting business behavior. Credit not given for more than one of: LE 556, LE 649, BA 649.

**MANAGEMENT INFORMATION SYSTEMS (MIS)**

**MIS 525 Computer and Info Systems**
3.000 Credits

This course focuses on the management concepts and information technology needed to create effective information systems. Topics include: a survey of information technology, information systems and organizations, strategic information systems, management support systems, and ethical and social issues in information systems.

**MIS 527 Programming & Data Structures**
3.000 Credits  
Prerequisite(s): MIS 525*

This course introduces the basic concepts of program design, emphasizing an event-driven environment. Students will
develop an understanding of fundamental programming logic and learn to use basic programming structures to solve simple business problems. Students are introduced to the program development cycle and programming principles, basic programming logic and structures, and common data types. Topic coverage may include an introduction to object-oriented programming and other next generation programming environments.

**MIS 575  Information Management**  
3.000 Credits  
Prerequisite(s): MIS 525

This course examines the basic concepts of information management for business organizations. Database systems are examined as a key tool for managing information. The goal of this course is to provide adequate technical detail while emphasizing the organizational and implementation issues relevant to the management of computerized information in an organizational environment. Topics include data modeling, database design, data definition and manipulation languages, database administration, data standards and policies, data quality, data integration, data warehousing, and data mining.

**MIS 640  Info Systems Development**  
3.000 Credits  
Prerequisite(s): MIS 575*

This course provides a foundation in systems analysis and design concepts, methodologies, techniques, and tools. Students will learn to analyze an organizational program, define user requirements, design an information system, and plan an implementation. Methodologies covered include the traditional life cycle approach as well as newer methodologies such as an object-oriented approach, joint application development (JAD), and prototyping. A semester-long project gives students the opportunity to apply these techniques to a business problem. This project will use technologies such as computer-aided software engineering (CASE) tool, a database management system (DBMS), fourth generation language.

**MIS 641  Computer Networking**  
3.000 Credits  
Prerequisite(s): MIS 525

This course provides an introduction to data communication, networks, distributed processing, and collaborative computing. The course will study the technical and management aspects of computing networks and distributed systems supporting a wide range of organizational functions from organizational processes to strategic decision making. Significant emphasis will be placed on understanding business applications of the Internet and the development of Internet-based information systems. The social and organizational implications of computer networking are also examined.

**MARKETING (MKT)**

**MKT 515  Marketing Management**  
3.000 Credits

This course examines the concepts, problems and techniques associated with the activities of bringing both consumer and industrial products to the marketplace. Topics include: consumer and industrial buyer behavior, market segmentation, target marketing, as well as product, place, promotion and pricing strategies. Particular emphasis is placed on analysis of cases.

**MKT 565  Advanced Marketing Management**  
3.000 Credits  
Prerequisite(s): MKT 515

This course examines the current challenges facing the marketers, ranging from industry deregulation, Internet revolution to globalization. Looked at closely are the emerging issues impinging on marketing decision, particularly in regard to focused marketing, relationship marketing, competitive advantage, positioning, and the marketing mix strategies. Term project and case analyses are important components of the course.

**MKT 620  Consumer Behavior**  
3.000 Credits  
Prerequisite(s): MKT 515

This course introduces students to concepts and theories developed in the behavioral sciences (economics, marketing, psychology, sociology, and anthropology) in relation to their influence on consumer behavior. The course is designed to provide students with an in-depth understanding of consumer markets in order to develop effective marketing strategies.

**MKT 621  Advertising and Promotion**  
3.000 Credits  
Prerequisite(s): MKT 515

This course approaches advertising and promotional strategies and tactics from an integrated marketing communications perspective. The course is designed to provide students with an understanding of the various marketing mix elements, including advertising, sales promotion, public relations, direct marketing, event sponsorship, and the Internet in order to develop effective marketing communication strategies.

**MKT 622  International Marketing**  
3.000 Credits  
Prerequisite(s): MKT 515

This course provides students with an understanding of the various components and functions of international marketing. The course develops a keen appreciation for the international marketing function. The course develops a keen appreciation for the international marketing environment and the complex forces impacting on the international marketing function. The focus is on evolving an integrating and functional framework for international marketing decisions.

**MKT 623  Business to Business Marketing**  
3.000 Credits  
Prerequisite(s): MKT 515

This course examines the differentiating aspect of industrial (business to business) marketing and the operational and strategic issues associated with them. Covers target marketing, marketing mix and strategic decisions involved in business
markets. Case studies are an important feature of the course.

MKT 624 Service Marketing
3.000 Credits
Prerequisite(s): MKT 515

This course examines the development and management of services in a changing and growing global marketplace. Among the challenges addressed will be the development of global service marketing strategies, the process for the development of new services, the role of climate and culture within the organization, strategies for customer retention, quality management and measurement in a service organization, and insights into service demand and the structure of the service industry.

MKT 625 Global Sourcing and Logistics
3.000 Credits
Prerequisite(s): MKT 515

This course examines concepts in international purchasing and logistics to provide an in-depth understanding of the international supply chain. The 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 the opportunities, challenges, and changing customer requirements presented by trading blocs, emerging markets, and developing countries.

ORGANIZATIONAL BEHAVIOR (OB)

OB 510 Organization Behavior
3.000 Credits

To provide a basic understanding of individual, inter-personal and group behavior in organizations and how this understanding can be used in the practice of management. Topics for discussion include: motivation, communication and influence, group dynamics, structure design and inter-group relations, planning, control and reward systems, leadership, and organizational development.

OB 560 Management Skills Development
3.000 Credits
Prerequisite(s): OB 510 or EMGT 545

To present the concepts, problems, and techniques of managing the human resources of an organization with emphasis on application and skill building. Topics include skills development for interviewing, counseling, and appraising employees; work team leadership and development of inter-group relationships, and conflict resolution.

OB 610 Intnl Dimen of OB and HRM
3.000 Credits
Prerequisite(s): OB 510 and HRM 561*b

This course aims to provide a systemic review of international environmental forces and their influence on all management areas of corporate entities. Emphasis is placed on the issues confronting managers in international arenas as they attempt to plan, organize, staff and control global operations of multinational companies. The course will offer in-depth coverage of cross-cultural management, especially human resources management and behavioral dimensions of managing organizations in the global context.

OB 612 Org Change & Development
3.000 Credits
Prerequisite(s): OB 510

To introduce theories, methods, and practice of organizational change and development; to provide a conceptual framework for examples of planned organizational change. Topics include: sub-processes in organizational change, intervention methods, sequencing and integration of change processes, change roles and role relations, change objectives and criteria.

OPERATIONS MANAGEMENT (OM)

OM 521 Operations Management
3.000 Credits

Operations Management is concerned with the efficient transformation of inputs that will effectively achieve customer satisfaction. In dynamic, competitive world, a company’s effectiveness depends significantly on how well the firm’s resources are managed. This course focuses on managerial tools for understanding the processes that are required for developing and delivering appropriate products and services. It prepares managers to use the results of analysis to constantly improve the firm’s operational performance.

OM 571 Global Operations Management
3.000 Credits
Prerequisite(s): OM 521 or IMSE 580 or EMGT 520

This course aims to develop an understanding of key devices of global operations management performance and their interrelationship with the firm’s strategy. Special emphasis is given to tools and skills necessary to develop solutions for a variety of supply chain design problems and inter-firm and intra-firm coordination issues. The overarching course objective is to develop and in-depth understanding of integrative managerial issues and challenges related to developing and implementing a firm’s operations strategy.

OM 631 Service Operations Management
3.000 Credits
Prerequisite(s): OM 521 or IMSE 580 or EMGT 520

This course examines both traditional and new approaches for achieving operational competitiveness in service businesses. Major service sectors such as health care, banking and financial services, transportation, restaurants, hotels, and resorts are examined. The course addresses both strategic and operational decision making. Among topics covered are: the service concept and operations strategy, design of effective service delivery systems, productivity and quality management, response time (queuing) analysis, capacity planning, yield management, and the impact of information technology.
OM 660    Analy & Des of Supply Chains  
3.000 Credits  
Prerequisite(s): OM 521 or IMSE 580 or EMGT 520

The purpose of this course is to equip the student with the ability and the tools necessary to recognize, analyze, and resolve significant problems in the operation of a supply chain system through the application of quantitative techniques. This course focuses on the strategic role of the supply chain, key strategic drivers of supply chain performance, and the tools and techniques for supply chain analysis.

OM 661    Supply Chain Logis Mgmt  
3.000 Credits  
Prerequisite(s): OM 521 or IMSE 580 or EMGT 520

The overarching course objective is to develop and in-depth understanding of integrative managerial issues and challenges related to developing and implementing a firm’s logistics strategy. Attention is directed to the logistical mission confronted by varied types of business organization. Logistics is positioned as a value-added process that achieves time and place synchronization of demand stimulation and operations fulfillment. Emphasis will be place on challenges related to providing logistical support for procurement, manufacturing and market-distribution.
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