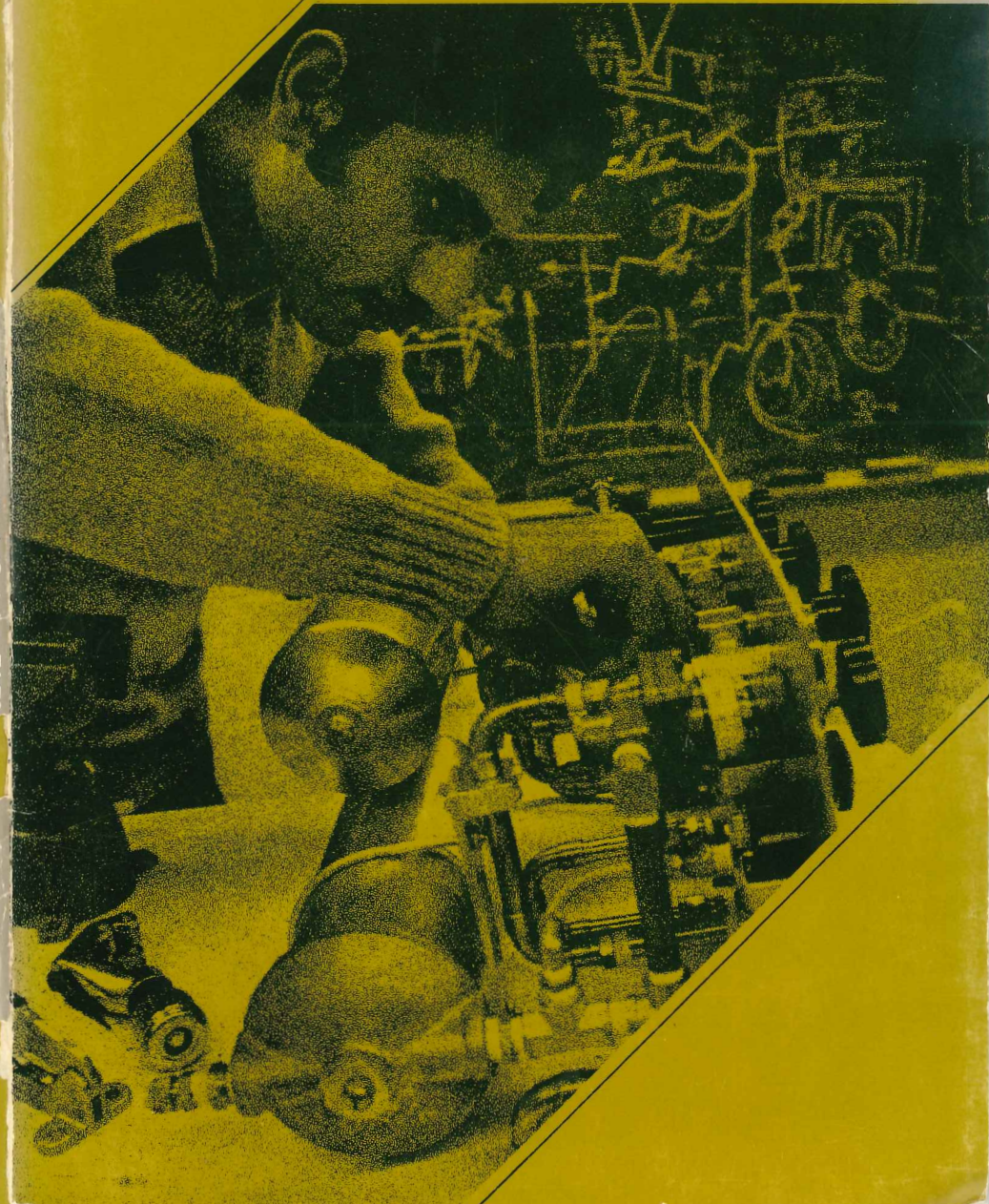


Oakland  
University

Graduate  
Study  
Catalog  
76|78





## CORRESPONDENCE DIRECTORY

Mailing Address: Oakland University  
Rochester, Michigan 48063.

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Oakland University affirms that an Assurance of Compliance with Title VI of the Civil Rights Act of 1964 has been executed and is fully applicable to the policies and practices of this university. Specifically, admission to the university or employment by the university is provided to qualified persons without discrimination on the grounds of race, creed, color, sex, or national origin.

All announcements in this catalog are subject to revision at the discretion of the university.

January, 1976

Published by Oakland University, Rochester, Michigan 48063

# Oakland University

## Graduate Study Catalog

1976 - 1978

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*Office  
of the Provost*

College of Arts and Sciences  
School of Economics and Management  
School of Education  
School of Engineering  
*School of Nursing*

## UNIVERSITY CALENDAR

### SPRING SESSION 1976

|                |                    |                      |
|----------------|--------------------|----------------------|
| April 27       | Tuesday            | Registration         |
| April 28       | Wednesday          | Classes begin        |
| May 31         | Monday             | Memorial Day holiday |
| June 1         | Tuesday            | Classes resume       |
| June 5         | Saturday           | Commencement         |
| June 18        | Friday             | Classes end          |
| June 21 and 22 | Monday and Tuesday | Final examinations   |

### SUMMER SESSION 1976

|                  |                    |                          |
|------------------|--------------------|--------------------------|
| June 24          | Thursday           | Registration             |
| June 25          | Friday             | Classes begin            |
| July 5           | Monday             | Independence Day holiday |
| July 6           | Tuesday            | Classes resume           |
| August 13        | Friday             | Classes end              |
| August 16 and 17 | Monday and Tuesday | Final examinations       |

### FALL SEMESTER 1976

|                    |                     |                        |
|--------------------|---------------------|------------------------|
| August 30 and 31   | Monday and Tuesday  | Registration           |
| September 1        | Wednesday           | Classes begin          |
| September 6        | Monday              | Labor Day holiday      |
| September 7        | Tuesday             | Classes resume         |
| November 25 and 26 | Thursday and Friday | Thanksgiving recess    |
| November 29        | Monday              | Classes resume         |
| December 10        | Friday              | Classes end            |
| December 13-17     | Monday-Friday       | Final examinations     |
| December 17        | Friday              | Close of fall semester |

### WINTER SEMESTER 1977

|                 |                    |                          |
|-----------------|--------------------|--------------------------|
| January 3 and 4 | Monday and Tuesday | Registration             |
| January 5       | Wednesday          | Classes begin            |
| March 2-4       | Wednesday-Friday   | Winter recess            |
| March 7         | Monday             | Classes resume           |
| April 15        | Friday             | Classes end              |
| April 18-22     | Monday-Friday      | Final examinations       |
| April 22        | Friday             | Close of winter semester |

### SPRING SESSION 1977

|                |                    |                      |
|----------------|--------------------|----------------------|
| April 26       | Tuesday            | Registration         |
| April 27       | Wednesday          | Classes begin        |
| May 30         | Monday             | Memorial Day holiday |
| May 31         | Tuesday            | Classes resume       |
| June 4         | Saturday           | Commencement         |
| June 17        | Friday             | Classes end          |
| June 20 and 21 | Monday and Tuesday | Final examinations   |

### SUMMER SESSION 1977

|                  |                        |                          |
|------------------|------------------------|--------------------------|
| June 24          | Friday                 | Registration             |
| June 27          | Monday                 | Classes begin            |
| July 4           | Monday                 | Independence Day holiday |
| July 5           | Tuesday                | Classes resume           |
| August 16        | Tuesday                | Classes end              |
| August 17 and 18 | Wednesday and Thursday | Final examinations       |

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|                        |                                                                                      |
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| Francis M. Butterworth | Professor of Biology                                                                 |
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| George E. Coon         | Professor of Education                                                               |
| John W. Dettman        | Professor of Mathematics                                                             |
| David H. Evans         | Professor of Engineering                                                             |
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| Laszlo J. Hetenyi      | Dean, School of Education<br>Professor of Education                                  |
| Boaz Kahana            | Associate Professor of Psychology                                                    |
| Joseph Klaitz          | Associate Professor of History                                                       |
| Abraham R. Liboff      | Professor of Physics                                                                 |
| David W. Mascitelli    | Associate Professor of English                                                       |
| Richard A. Mazzara     | Professor of Modern Languages                                                        |
| Paul R. Paslay         | Dean, School of Engineering<br>Professor of Engineering                              |
| Roderic E. Righter     | Professor of Education                                                               |
| James C. Schmidt       | Assistant Professor of Education                                                     |
| Norton C. Seeber       | Dean, School of Economics<br>and Management<br>Professor of Economics and Management |
| Michael Sevilla        | Associate Professor of Chemistry                                                     |
| Doris M. Sponseller    | Assistant Professor of Education                                                     |
| Sue Tenorio            | Assistant Professor of Education                                                     |
| Reuben Torch           | Dean, College of Arts and Sciences<br>Professor of Biological Sciences               |
| Michael J. Wozny       | Associate Professor of Engineering                                                   |
| Alan G. Weinstein      | Associate Professor of Economics                                                     |
| Elizabeth Conner       | Secretary to the Graduate Council<br>Assistant to the Dean of Graduate Study         |

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## GENERAL INFORMATION OAKLAND UNIVERSITY

### Academic Structure

Oakland University, an institution supported by the State of Michigan, offers programs in liberal arts and sciences and professional training in economics and management, engineering, teacher education, and the performing arts. The university comprises the College of Arts and Sciences, the School of Economics and Management, the School of Education, the School of Engineering, the School of Performing Arts, and the Faculty of the Library. Diversified noncredit courses are given by the Division of Continuing Education.

*Nursing*

### Graduate Programs

The College of Arts and Sciences offers programs leading to the degree of Master of Arts in area studies, English, history, mathematics, and psychology and to the degree of Master of Science in biology, chemistry, and physics. The School of Education offers programs of instruction leading to the degree of Master of Arts in guidance and counseling, and to the degree of Master of Arts in Teaching in early childhood education, in elementary education, in reading instruction, and in special education. The College of Arts and Sciences and the School of Education jointly offer programs leading to the degree of Master of Arts in Teaching in English and in mathematics. The School of Engineering offers the Doctor of Philosophy degree in systems engineering, a professional development degree, and the degree of Master of Science in engineering, with concentrations in systems engineering, energy engineering, and electromagnetic and optical engineering. The School of Economics and Management offers the degree of Master of Science in management. Additional programs at both the master's and doctoral levels are in prospect.

In each of the programs the university seeks to provide its students with intellectual challenge and opportunity for scholarly and professional growth. Its substantial resources in faculty, research facilities and support functions are all directed to these ends. A graduate program should not be solely a collection of courses and certainly should not be such if the courses are only casually related to each other. Rather, it should be a carefully-structured combination of studies and research designed in the aggregate to serve specific needs of the student. Students share responsibility with their advisers for constructing programs of study manifesting this character. They can expect close attention from the faculty while planning their studies and while pursuing them. In turn they should ask of themselves wholehearted commitment to the programs' demands.

### Accreditation and Affiliations

All Oakland University baccalaureate and master's degree programs are fully accredited by the North Central Association of Colleges and Secondary Schools, and the university is authorized to begin new programs at these levels without prior association approval. The doctoral program in engineering is also accredited by the North Central Association. The American Chemical Society has accredited the undergraduate program of the Department of Chemistry, and the Engineers' Council for Professional Development has accredited the undergraduate program of the School of Engineering.

The university is an institutional member of the following associations:

- American Association of Colleges for Teacher Education
- American Association of Collegiate Schools of Business
- American Chemical Society
- American Council on Education



American Institute of Physics  
 American Mathematical Society  
 Council of Graduate Schools in the United States  
 Institute of International Education, Incorporated  
 Latin American Scholarship Program of American Universities  
 Midwestern Association of Graduate Schools  
 The Society of the Sigma Xi

### Michigan Intercollegiate Graduate Studies (MIGS)

The MIGS program is a cooperative inter-institutional arrangement which permits graduate students to take advantage of educational offerings available at another participating institution but not available at their own. It is open to any student in good standing in a graduate program at a member institution. Courses must be approved in advance by the student's graduate adviser and the MIGS liaison officer at both the home institution and the host institution. Admission by the host university is contingent on the availability of space and resources. The member institutions are Central Michigan University, Eastern Michigan University, Michigan State University, Michigan Technological University, Northern Michigan University, Oakland University, University of Michigan, Wayne State University, and Western Michigan University. Additional information is available in the Office of Graduate Study and from program directors.

## CENTRALIZED AND SPECIALIZED RESEARCH FACILITIES

### The Office of Computer Services

The Office of Computer Services (OCS) provides centralized computing resources to support the instructional, research, and administrative activities at Oakland University. Two general-purpose computer systems, an IBM 360/40 and a Burroughs B5500, are housed in Dodge Hall. The IBM 360/40 batch processing computer is primarily engaged with administrative applications, while the Burroughs B5500 time-sharing computer offers on-line and batch processing services, oriented to academic applications. Users may interact with this system either directly at the computing center, or from a number of time-sharing terminals located across campus. A broad range of problem-solving software is available, including the programming languages COBOL, FORTRAN IV, ALGOL and BASIC. An Academic Services staff develops and maintains a comprehensive scientific and technical program library and offers consulting services to faculty and students.

OCS also maintains a student services room at the central facility, which contains a keypunch machine, user work space, reference material, and an information desk. Faculty and students are encouraged to avail themselves of these services throughout the development and implementation of their computing assignments.

### Institute of Biological Sciences

The Institute of Biological Sciences is a major research center of the university, with laboratories and offices in Dodge Hall. These facilities were constructed with the aid of a matching-funds grant from the National Institutes of Health. The facilities of the institute include six main research units, each with an office for the principal investigator, and central facilities consisting of a cold room, a computer facility, a radioactive isotope laboratory, an animal holding room, an animal surgery room, an instrument room for major pieces of apparatus, and a conference room.

In this modern and well-equipped center a group of research scientists performs grant-supported basic research having applications to medicine and centering on living systems. The aim of the institute is to bring together many disciplines to concentrate on biological problems. A broadly interdisciplinary program of re-

search in molecular biology, biochemistry, physiology, and pharmacology draws on the combined insights of specialists in engineering, chemistry, physics, and mathematics. Current research is related to eye neurology, eye chemistry, and ophthalmology.

### The Instructional Materials Center

The Instructional Materials Center is a teaching and resource agency of the School of Education. The center contains a variety of printed materials, such as pamphlets, curriculum guides, and manuals, for research and instructional purposes. Multi-media instructional devices are also concentrated here. In addition to the simpler equipment, such as film strips, tape, and overhead projectors, the center has facilities to produce and make available video tapes and educational television materials. Students have the opportunity to acquaint themselves with new developments in instructional techniques, and educational researchers have at their disposal the technological and recording facilities needed for their investigations.

### The Kettering Magnetics Laboratory

The Kettering Magnetics Laboratory, built with money given by the Kettering Foundation, constitutes another important research facility. This building is constructed of nonferrous material and is particularly suited for research requiring accurate cancellation of the earth's magnetic field. The laboratory is used for very accurate measurements of gyromagnetic ratios of ferrous materials (the Einstein-de Haas effect). This work is done in an area in which the ambient magnetic field is reduced to less than one gamma by large Helmholtz coils. Research is also in progress on a new gas torque effect which appears capable of giving information about the rotational gyromagnetic ratios of gas molecules and about collision cross sections of molecules.

### The Library

Oakland University's library collections are housed in Kresge Library, and in a small Performing Arts Library in Varner Hall which contains a specialized collection of materials on the performance of music, theatre, and dance. The collections of the university libraries now contain approximately 300,000 volumes, 250,000 units of microform, and 7,000 recordings on disc or tape — all in open stacks. The Matilda R. Wilson Memorial Collection of works of reference, amassed through gifts of money from the university's students and the Matilda R. Wilson Fund, constitutes a large part of the collections and provides a substantial research facility. Other special collections include one of the largest collections of underground newspapers in the midwest, and the Hicks Collection of books by and about women.

The library offers many services: an audio center in Varner Hall; a microform reading room; a documents department, which houses United States and United Nations publications and is a partial depository for the official documents of the United States and the State of Michigan; a science area that houses the monographs, indexes, periodicals, and abstracts that pertain to this broad field; a general reference department; a circulation department with a computerized check-out system; and a serials department in charge of about 40,000 periodical volumes and other serials.

### The Learning Strategy Center

The Learning Strategy Center is an agency in the School of Education, financed through cooperative ventures with neighboring school districts. The center produces experimental devices in a variety of areas and develops teaching units for demonstration and model purposes. Scholars and experimentalists from across the nation have prepared special units of instruction, and these units have been



made available to cooperating school districts for field trials. Similarly, gifted teachers in cooperating schools have prepared video tapes and other materials demonstrating successful approaches to specific teaching problems. These materials are also disseminated by the Learning Strategy Center.

### Office of Institutional Research

The Office of Institutional Research maintains research-oriented student information files and analyzes these data to aid the university in planning and program development. It also assists faculty and students in organizing, systematizing, and carrying out research on student behavior and learning. The staff is available for consultation on problems in social research.

### University Instrument and Electronics Shop

The university maintains several machine shops to serve the academic community. The Student Shop has a basic complement of machine tools for students who wish to construct devices for their research projects. The Instrument Shop is completely equipped with precision machine tools. It constructs devices for both faculty and student research projects. A faculty committee works with the University Instrument and Electronics Shops manager to ensure an equitable allocation of resources.

### Other Research Facilities

Further descriptions of research facilities and activities of the departments and schools offering graduate programs may be found in the appropriate sections of the catalog.

## ADMISSIONS

### Requirements for Admission to a Degree Program

The graduate admissions policy of Oakland University is selective. Degree program applicants must have official transcripts and letters of recommendation sent directly by their originators to the Office of Graduate Study. Detailed instructions are included in the "Application for Admission to Graduate Study," available from this office. Additional admissions information may be found in the sections of this catalog describing the programs offered by the various schools and departments. Admission will be granted by the Dean of Graduate Study on recommendation by the department or school concerned and is based on the applicant's undergraduate record, letters of recommendation, and other evidence that may be required.

An applicant must hold a baccalaureate or its equivalent from an accredited undergraduate institution. Some graduate departments offer Oakland undergraduate students the opportunity to take their bachelor's and master's degrees concurrently, but this is done only with the written permission of the department. A planned course of study to satisfy the requirements for both degrees is necessary and a copy of the plan will be included in the student's official graduate file.

### Conditional Admission

If an applicant's grade point is below program requirements a conditional admission may be authorized by the department or school involved with the concurrence of the Dean of Graduate Study. Occasionally students are admitted who are judged insufficiently prepared to undertake course work for graduate credit. Such students are required to complete additional course work, specified by the program area involved, without credit toward a degree. Students who do not meet the conditional requirements stipulated on admission are subject to dis-

missal. While in a conditional status students will not be eligible to receive their degree or transfer credits from other institutions.

### Continuing Certificate Status

Admission into Continuing Certificate status is confined to teachers working on an 18-hour planned program to meet the state requirements for continuing certification. An application for admission, official transcripts, letters of recommendation and a \$15 application fee are required. Admission into the Continuing Certificate program will be granted by the School of Education on recommendation by the department concerned. The Graduate Dean will notify the student of the admission decision and send copies of his/her planned programs. Records will be maintained by the Office of the Dean of Graduate Study. Credit earned in Continuing Certificate status may be applied toward degree requirements if the student is subsequently admitted to a degree program, if the credit is appropriate to the program, and if it is within the six-year time limit. If a student in this status wishes to apply to a degree program, a request for change of status must be submitted to the Office of the Dean of Graduate Study. Admission as a Continuing Certificate student does not assure future admission into a degree program.

### Special Graduate Status

Special Graduate status may be granted by some departments to a student who wishes to take graduate courses but not to work toward a degree. For example, an applicant wishing to work toward permanent or continuing teacher certification might choose to apply for admission under this status. A student in Special Graduate status is not assigned an adviser. Credit earned at Oakland University under Special Graduate status — but none that has been earned at another institution — will be officially recorded. This credit may be applied toward degree requirements if a student later gains admission to a degree program and if the credit is appropriate to the degree objective. However, admission as a Special Graduate student in no way assures subsequent admission to a degree program. If a student in this status wishes to apply for admission to a program, he/she must file a request for change of status with the Office of Graduate Study and provide official transcripts and letters of recommendation. A decision on the admission is then made by the academic department or school with concurrence of the Dean of Graduate Study.

### Post Master's Status

Post Master's status may be granted by some departments to a student who holds a master's degree and wishes to take additional graduate courses but not to work toward a second degree. The Post Master's status is similar to that of the Special Graduate student and the same rules and procedures apply. Subsequent admission to a program to work toward a second master's degree requires filing a request for a change of status with the Office of Graduate Study and providing official transcripts and letters of recommendation.

### Post Baccalaureate Status

Post baccalaureate status may be granted applicants who have a bachelor's degree from an accredited college or university and who wish to enroll in undergraduate courses, either to develop an additional major or to prepare for admission to a degree program. Application for this type of admission should be made through the undergraduate admissions office.

### Application for Admission by Foreign Students

Foreign students should write to the Office of Graduate Study at least six months prior to the date they hope to enter the university. They will be sent instructions and application forms, which they should complete and return



promptly. If their applications are approved, they will receive a certificate of admission to the university. Foreign students are normally required to submit scores from the Graduate Record Examination Aptitude Tests prior to admission, and scores from one or more Advanced Tests of the Graduate Record Examination may be required at the discretion of the department or school concerned. Scores from the Test of English as a Foreign Language (TOEFL) or a comparable examination are also required.

## PROCEDURES

### Time Limit

Credit earned more than six calendar years before a master's degree is to be granted may not be used to fulfill the degree requirements.

### Academic Advising

Every student admitted to a graduate program is assigned an adviser or an advising committee upon admission. The advisers will be faculty members, usually in the school or department in which the student is enrolled. Graduate students not in a degree program do not have access to formal advising arrangements; they should contact the appropriate academic department if advice regarding course selection is needed.

### Transfer Credit

Graduate students who are in good standing (not probationary or conditional) in a degree program and wish to transfer credit from other colleges or universities must have such credit approved by their academic advisers and the Dean of Graduate Study. Applications should be filed after the first semester is completed at Oakland and, in any event, not later than the first week of the semester in which the student expects to graduate. Transfer-of-credit applications are available in the academic offices. A maximum of 12 semester hours (10 in the Department of Chemistry) is acceptable toward a graduate degree. Conversely, 20 or 24 semester hours constitute the normal minimum residence requirement, depending on the number of hours required by the department or the school for a degree. After its approval, transfer credit will appear on the student's official transcript in the Office of the Registrar. Credit earned more than six years before the degree is to be granted may not be applied toward master's degree requirements.

### Courses Taken as an Undergraduate

Up to 12 credits taken while a student is an Oakland undergraduate may be applied to a graduate program if the courses have not been used to fulfill the requirements for the bachelor's degree. They must be applicable to the student's graduate program, approved by the student's adviser or program committee and the Dean of Graduate Study, and graduate fees paid. Transfer request forms are available in the Office of the Dean of Graduate Study.

### Course Competency Credit

Competency examinations are offered by some departments. Students should consult with their advisers for specific information and must register and pay fees during the normal registration period. University legislation stipulates that the examination must be taken not more than six weeks after the close of registration.

## Changes in Enrollments (Add/Drop)

A graduate student wishing to add or drop a course may secure the appropriate form from the academic office of the area in which he/she is enrolled. A student who is simply dropping a course will need only the signature of the instructor; a student adding a course will also need the signature of the instructor of the new course. The Add/Drop form is then presented to the registrar for processing. If a refund is involved it will be mailed to the student. The first two weeks of a semester (one week in spring or summer sessions) are a no-grade period for dropping courses.

### Withdrawal

A graduate student wishing to withdraw from the university may do so by notifying the Office of Graduate Study which will initiate a withdrawal form and process it through the Office of the Registrar. The withdrawal is recorded by the registrar and the amount of refund, if any, determined. If a refund is due it will be mailed to the student. When a student withdraws from the university a grade of "W" will be assigned in all unfinished courses.

### Inactive Status Requiring Readmission

A student who has been admitted to a program but has not registered for an Oakland University course for 12 months or more is considered inactive. In order to return to degree-seeking status, the student must apply for readmission and pay a readmission fee. The application will be reviewed by the appropriate admissions committee for decision on readmission.

### Credit System

The unit of credit is the semester hour. Courses carry four credits unless otherwise specified. No graduate student may register for more than 12 credits without written authorization of his/her adviser.

### Course Numbering System

Courses numbered 100 to 299 are introductory or intermediate undergraduate courses. Courses numbered 300 to 499 are advanced courses primarily for undergraduates. Courses numbered 500 and above are primarily for graduate students. A department or school may authorize or refuse to authorize graduate credit for any course numbered 300 to 499.

### Grading

To qualify for a master's degree a student must have an average of at least 3.00 in all courses taken at Oakland University as a graduate student. No grade below 2.0 may be applied toward a graduate degree. In programs of the School of Education and Developmental Psychology two courses below 3.0 automatically render a student subject to dismissal, as does one grade below 2.5 in Developmental Psychology and one below 2.0 in the School of Education.

In addition to Oakland's numerical grading system, non-numerical grades are assigned in selected courses. The non-numerical grades are:

"S" Grade — A grade of "S" (Satisfactory) is given in selected courses and implies 3.0 or better. Prior approval must be obtained from the Dean of Graduate Study for each course in which "S" grades are to be assigned.

"I" Grade — The "I" (Incomplete) grade is a temporary grade that may be given only in the last week of a course in which a student is unable to complete the required work because of severe hardship. The instructor does not need approval to assign an "I" grade. The work must be completed within the first four weeks of the next semester in which a student registers. Extensions are permitted on request of the instructor to the dean of the school or college in which the course is offered.

The "I" converts to an "N" at the end of the four-week period if the work is not



completed and an extension is not given or requested. If more than three semesters pass before the student resumes residence, the "I" grade becomes an "N" grade.

**"N" Grade** — The grade of "N" (No grade) is assigned by the instructor if a student does not officially withdraw from a course at least one week before the final examination period in the same semester. The student does not receive credit for the course. The "N" grade means that the student has not completed the course successfully.

"W" is assigned by the registrar if a student withdraws from a course between the end of the no-grade period and the end of the refund period.

The registrar assigns a "W" in all courses if a student withdraws officially from the university any time before the end of the semester.

The instructor assigns a "WS" or "WN" in a course from which he permits a student to withdraw officially between the end of the refund period and one week before the beginning of the final examination period. "WS" is assigned if the student's performance at the time of withdrawal is satisfactory; otherwise, a "WN" is assigned.

To request a "WS" assignment a student must obtain a form in the office of the department that offers the course from which the withdrawal is sought. If the instructor approves the withdrawal, the student and the instructor each keep a copy of the completed form, and the instructor records the grade on the final grade report. Only the student and the instructor are involved in this transaction. If the instructor does not approve the withdrawal, a numerical or "N" grade must be assigned.

**"P" Grade** — The grade of "P" (Progress) is a temporary grade that may be given only in a course that could not be completed in one semester. Prior approval must be obtained from the appropriate committee on instruction for each course in which "P" grades are to be assigned. The "P" grade is given only for satisfactory work. "P" grades must be removed within two calendar years of the date of assignment. Otherwise, the "P" converts to an "N."

## Restriction of Student Records

Students may not register for classes or apply for a degree if their records have been restricted because they failed to pay fees, to submit complete application forms, or to satisfy admission or retention conditions. Transcripts of work done at Oakland and information to prospective employers may also be withheld until the restriction is lifted.

## Application for Degree

Students who intend to graduate at the end of a semester (or session) must fill out an application for degree either when registering for the last semester or by the date indicated in the schedule for that semester. A candidate who does not graduate in that semester must re-apply.

## Master's and Doctoral Theses, Terminal Projects

Copies of theses and final reports describing the results of terminal projects will be sent to the Graduate Office after the reports have been approved by the project director. They will be available to students and other interested members of the university community. "A Guide to the Preparation of Graduate Theses and Project Reports" is available in the University Bookcenter.

## FEES

### General Policy

The Oakland University Board of Trustees reserves the right to change any and all rates of charge when circumstances make change necessary. All charges are assessed and payable in U.S. dollars. Checks and money orders should be made payable to Oakland University. The university urges students to use checks or money orders instead of cash to pay fees. If the checks or money orders are in excess of the required payments, the balance will be given to the student.

### Application Fee

A fee of \$15 must accompany an application for admission to a degree program. This is a nonrefundable processing fee.

### Readmission Fee

A student who has been admitted to a degree program but has not been registered in any Oakland course or research activity for 12 months or more must apply for readmission. A nonrefundable fee of \$15 will be assessed at that time.

### Course Fees

Course fees for each semester are assessed on the basis of the credit value of the course. Students have the option of making partial payment at early registration, but no registration is considered final until all fees are paid. Students who have not registered early must pay all course fees in full at registration. On-campus graduate course fees for Michigan residents are \$32 per credit. Nonresidents are assessed \$62 per credit. The fee for off-campus classes is \$39 per credit. One credit hour is the equivalent of one semester hour.

### Program Transfer Fee

Students who wish to transfer from one graduate program to another must submit a transfer request and a \$15 transfer fee. Their files will then be forwarded for consideration by the admissions committee of the new program.

### Late Registration Fee

Students who register or pay fees after the regular registration date are required to pay a nonrefundable \$15 late fee.

### Special Fees

Graduate students who register for 10 or more credits are charged an additional \$18 (\$10 Oakland Center fee and \$8 transportation use fee). Those who register for less than 10 credits are assessed \$9 (\$5 Oakland Center fee and \$4 transportation use fee).

### Resident Housing: Reservations, Deposit, Fees

The residence halls are financially self-supporting. Room and board fees reflect the annual cost of operation and are established by the university's Board of Trustees. The 1975-76 rate for room and board was \$1418 for the academic year. Special options such as room only, single rooms, and cooperative housing are available to graduate students. If a student signs a housing contract before or during the fall semester, that contract is binding for both the fall and winter semesters. If the contract is signed during the winter semester or spring or summer session, it is binding for the single semester or session. The room and board fee is due at registration or may be paid in four installments, the first of which is due at registration. The second, third, and fourth installments are due on the



first day of the three months following registration. If a student withdraws from the university, housing fees are refunded on a prorated basis.

### Refund of Fees

A student who withdraws from the university or drops a course that reduces his/her credit load may receive a refund of fees upon application to the appropriate office. Graduate students withdrawing from the university apply to the Office of Graduate Study. Changes in enrollment are processed in the Office of the Registrar. The amount of refund is specified in each schedule of classes.

### Out-of-State Tuition Regulations

Students enrolling at Oakland University shall be classified as in-state or out-of-state students for purposes of assessing tuition charges. It is the student's responsibility to register each semester or session under the proper in-state or out-of-state classification. For the purpose of these regulations, an in-state resident shall be defined as a person who has a Michigan domicile and has resided in Michigan 12 months immediately preceding enrollment.

A student who was originally classified as an out-of-state student may be reclassified as an in-state student only if he/she has become a bona fide domiciliary of Michigan for at least 12 consecutive months, primarily as a permanent resident and not merely as a student. A student shall not be considered domiciled in Michigan unless he/she is in continuous physical residence in this state and intends to make Michigan his/her permanent home, not only while in attendance at the university, but indefinitely thereafter.

An alien who has been lawfully admitted for permanent residence in the United States shall not, by reason of that status alone, be disqualified from classification as a resident, provided, however, that aliens who are present in the United States on a temporary or student visa shall not be eligible for classification as a resident.

Any student who has acquired a bona fide domicile in Michigan subsequent to being classified as an out-of-state student may apply for reclassification to in-state status by obtaining an application for reclassification from the university registrar. The student shall complete the application and list in detail the reason(s) he/she is a bona fide domiciliary of Michigan, primarily as a permanent resident and not merely as a student, and attach documentary data in support thereof, and return the application to the university registrar 30 days prior to the beginning of classes of the semester for which the reclassification shall be effective. The following facts and circumstances, although not necessarily conclusive, have probative value in support of a claim of a residence reclassification:

1. Continuous presence in Michigan when not enrolled as a student.
2. Reliance upon Michigan sources for financial support.
3. Domicile in Michigan of family, guardian, or other relative or persons legally responsible for the student.
4. Former domicile in the state and maintenance of significant connections therein while absent.
5. Ownership of a home.
6. Long-term military commitments in Michigan.
7. Acceptance of offer of permanent employment in Michigan.
8. Other factors indicating an intent to make Michigan the student's permanent domicile will be considered by the university in reclassifying a student.

The following circumstances, standing alone, shall not constitute sufficient evidence of domicile to effect reclassification of a student as a resident under these regulations:

1. Voting or registration for voting.
2. Employment in any position normally filled by a student.
3. The lease of living quarters.

4. A statement of intention to acquire a domicile in Michigan.
5. Domicile in Michigan of student's spouse.
6. Automobile registration.
7. Other public records such as birth and marriage records.

Any student desiring to challenge his/her classification under the foregoing regulations of the Board of Trustees shall have the right to petition an appeal of the determination. Petitions of Appeal and inquiries regarding these out-of-state tuition regulations shall be addressed to Chairperson, Out-of-State Tuition Committee.

### FINANCIAL AID, ASSISTANTSHIPS, AND SCHOLARSHIPS

#### Student Loans

**FEDERAL STUDENT ASSISTANCE PROGRAMS:** National Direct Student Loans and College Work Study Program employment are offered on the basis of need. Loans have a low interest rate with a long repayment period. To be eligible for these programs a student must be able to prove need and must be (1) a citizen of the United States, or (2) have the status of an immigrant, or (3) possess a permanent visa. Application for federal student assistance should be made through the Financial Aid Office after admission to a program.

**FEDERALLY INSURED GUARANTEED LOAN PROGRAM:** This is a low-interest loan program with a long repayment period. Only citizens of the United States or those in immigrant or permanent visa status are eligible. Information may be obtained by writing the Financial Aid Office.

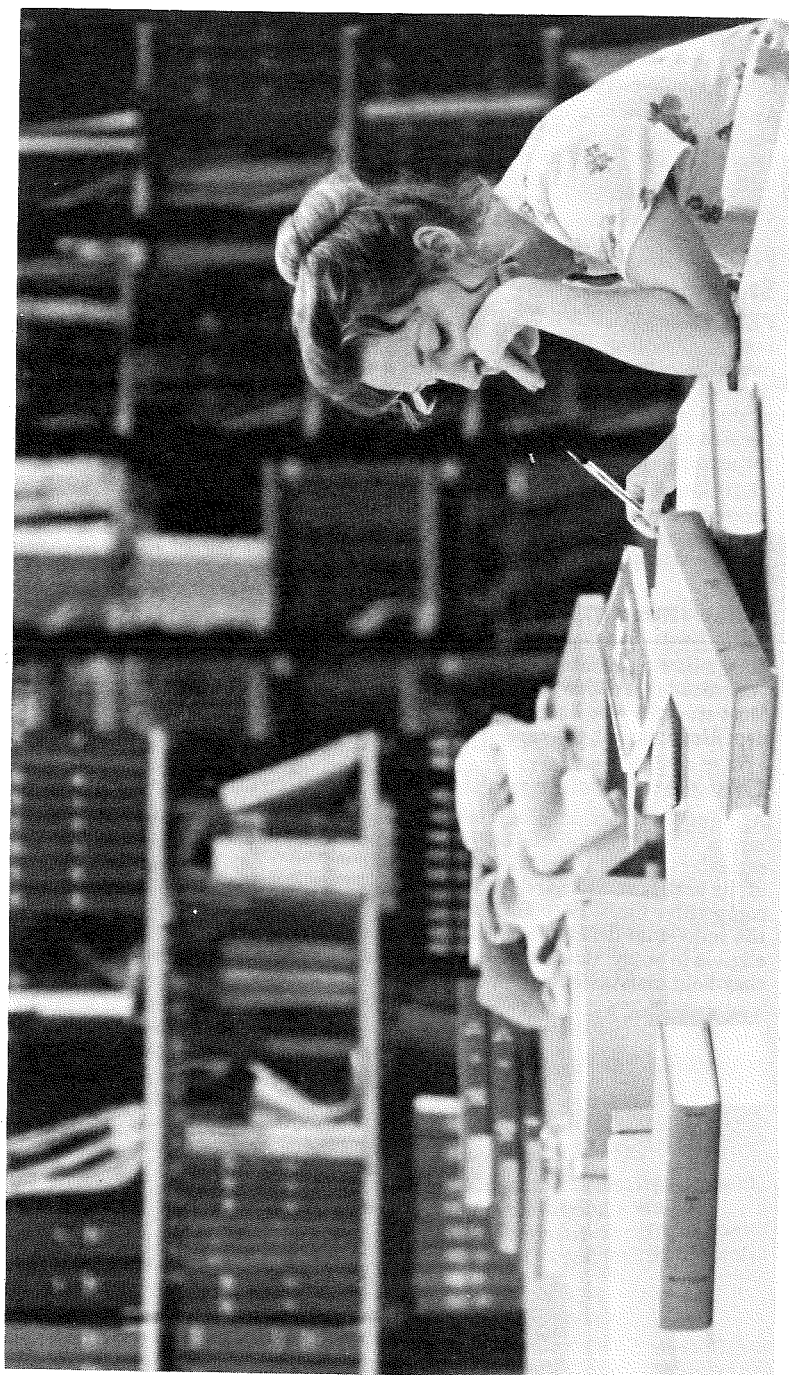
#### Part-Time Employment

Although demand usually exceeds supply, on-campus jobs of varying kinds and durations are provided for full-time students who wish to work during the school year. Students seeking employment should register in the Financial Aid Office. Most students who have part-time jobs work 10 to 20 hours each week. The Student Employment Office also assists with part-time off-campus jobs.

#### Graduate Assistantships and Scholarships

A limited number of graduate assistants are appointed in schools and departments offering graduate degree programs. Stipends range to \$3,200 for two semesters, depending on assignments, hours of work required, and qualifications of the assistant. Scholarships in the amount of tuition and fees are available on a competitive basis. Both assistantship and scholarship nominations are made by the individual departments offering graduate programs. Foreign students are eligible to apply. Graduate assistants must be registered each semester in which they hold assistantships.





## COLLEGE OF ARTS AND SCIENCES Area Studies

### Chairperson:

Robert C. Howes

*(Italics in the following list designate departmental affiliation)*

### Professors:

Sheldon L. Appleton, *Political Science*, Ph.D., University of Minnesota  
 Richard M. Brace, *History*, Ph.D., University of California (Berkeley)  
 William C. Forbes, Jr., *Biological Sciences*, Ed.D., Columbia University,  
 Ph.D., University of Connecticut  
 Edward J. Heubel, *Political Science*, Ph.D., University of Minnesota  
 Robert C. Howes, *History*, Ph.D., Cornell University  
 Helen Kovach, *Russian*, Ph.D., Elizabeth University (Hungary)  
 Richard A. Mazzara, *French and Portuguese*, Ph.D., University of Kansas  
 John Rue, *Political Science*, Ph.D., University of Minnesota  
 Amitendranath Tagore, *Chinese*, Ph.D., Visva Bharati University  
 S. Bernard Thomas, *History*, Ph.D., Columbia University

### Associate Professors:

Peter J. Bertocci, *Anthropology*, Ph.D., Michigan State University  
 Richard W. Brooks, *Philosophy*, Ph.D., University of Minnesota  
 William C. Bryant, *Spanish*, Ph.D., University of California (Berkeley)  
 Carlo Coppola, *Hindi-Urdu and Linguistics*, Ph.D., University of Chicago  
 James D. Graham, *History*, Ph.D., Northwestern University  
 Karl D. Gregory, *Economics and Management*, Ph.D., University of Michigan  
 James W. Hughes, *Education*, Ed.D., University of New Mexico  
 Dmytro Ijewliw, *Russian*, Ph.D., University of Ottawa (Canada)  
 Janet A. Krompart, *Library*, M.L.S., University of California (Berkeley)  
 Kathryn M. McArdle, *Spanish*, Ph.D., Universidad Central de Madrid  
 James R. Ozinga, *Political Science*, Ph.D., Michigan State University  
 Colin A. Palmer, *History*, Ph.D., University of Wisconsin  
 Munibur Rahman, *Hindi-Urdu*, Ph.D., University of London  
 Richard P. Tucker, *History*, Ph.D., Harvard University

### Assistant Professors:

James W. Dow, *Anthropology*, Ph.D., Brandeis University  
 Jerry M. Freeman, *Russian*, Ph.D., University of Michigan  
 Alice C. Gorlin, *Economics*, Ph.D., University of Michigan  
 Bruce R. Harker, *Education*, Ph.D., University of Chicago  
 Marvin D. Holladay, *Music*, B.M.Ed., Phillips University  
 William D. Jaymes, *French*, Ph.D., University of Kansas  
 Mary Karasch, *History*, Ph.D., University of Wisconsin  
 Cecelia F. Klein, *Art History*, Ph.D., Columbia University  
 John Marney, *Chinese*, Ph.D., University of Wisconsin  
 Lawrence D. Orton, *History*, Ph.D., Indiana University  
 Gayle H. Partmann, *Linguistics*, Ph.D., Stanford University  
 I. Michael Solomon, *History*, Ph.D., Columbia University



Robert J. J. Wargo, *Philosophy*, Ph.D., University of Michigan  
Carla Zainie, *Art History*, Ph.D., University of Washington

#### Instructors:

Brian Coyer, *Political Science*, M.A., Michigan State University  
Lawrence T. Farley, *Political Science*, Ph.D., University of Denver  
Vincent B. Khapoya, *Political Science*, M.A., University of Denver  
Richard B. Stamps, *Anthropology*, M.A., Brigham Young University

#### Special Instructors:

Anna R. Barnes, *Spanish*, M.A., University of Michigan  
Cordell W. Black, *French*, M.A., Wayne State University  
Lee M. Corrigan, *Russian*, M.A., Middlebury College  
Shih-Chen Peng, *Chinese*, M.A., Seton Hall University

## THE MASTER OF ARTS IN AREA STUDIES

Area studies are concerned with the understanding of living civilizations whose physical bases and cultural manifestations — art, government, history, language, literature, music, philosophy, religion, and social organizations — are the subject of study of a number of departments in a university. The interdepartmental area studies faculty of Oakland University offers coordinated programs of instruction in many aspects of the civilizations of five major geographical-cultural areas of the world: East Asia (China and Japan), South Asia (India, Pakistan, Bangladesh), Africa, Latin America, and the Slavic world.

The Master of Arts in area studies is designed to meet the needs of two types of students: those who desire cross-cultural breadth of study and those who prefer to specialize in one geographical-cultural area. To this end, two tracks, or concentrations, are offered: the Concentration in Comparative Area Studies and the Concentration in a Major Civilization. Successful completion of either concentration leads to the degree of Master of Arts in area studies.

### Admission to Course

An applicant for admission to the Master of Arts program in area studies must hold a bachelor's degree from an accredited institution. Admission decisions are based on transcripts and recommendations. These must give evidence of academic distinction and promise. A grade point average of 3.00 in undergraduate work will ordinarily be the minimum standard for admission although other candidates of superior promise may be admitted if their academic deficiencies are removed. Credentials should be submitted to the Office of Graduate Study at least six weeks before the beginning of the term in which the student wishes to enter the program. Students will be admitted for any of the four terms of the academic year. After acceptance into the program each candidate will select two area faculty members who are willing to serve as his/her program coordinator. One of these members will accept primary responsibility for advising and assisting the student in planning the individual program.

## THE CONCENTRATION IN COMPARATIVE AREA STUDIES

This concentration is designed for persons who wish to emphasize geographical and cultural breadth through interdisciplinary study of two or more areas. Although designed especially for secondary school teachers, the program is open to other qualified candidates.

Each candidate's program will be organized, in consultation with his/her program committee, along a broad integrating concept, or theme. Possible themes

are: classical civilizations, revolution, peasants and urbanization, comparative literature, development, and modernization.

### Requirements for the Degree

Nine courses (36 hours) are required. Of these, seven — including AS 690 — must be from the list below. With permission of the candidate's program committee, two related courses may be taken for credit. Each candidate must complete AS 690 The Master's Project, consisting of either an independent research paper or a curriculum design. Language study, although strongly recommended as the most basic and reliable means for penetrating a foreign culture, is not a formal requirement. The alternative to a reading knowledge of an appropriate foreign language is satisfactory completion of at least two courses in an appropriate foreign literature in translation.

## THE CONCENTRATION IN A MAJOR CIVILIZATION

This concentration is designed for research-oriented students who wish to specialize in advanced, interdisciplinary study of a major geographical-cultural area. Presently, this concentration is available in Latin American studies and in Slavic studies. All candidates' programs will be organized in consultation with their program committees.

### Requirements for the Degree

Nine courses (36 hours) are required. Of these, eight must be from the list below and must deal primarily with the area of the student's primary interest (Latin America or the Slavic world). One elective is allowed.

A reading knowledge of a foreign language appropriate to the student's area of concentration is required. Each candidate must complete a graduate seminar and AS 690 The Master's Project. The latter includes the preparation of a detailed research thesis.

### Overseas Studies and Tours

Area Studies sponsors overseas studies programs and/or tours in China (Taiwan), Mexico, and the Soviet Union. Students interested in participating in one of these programs or tours, for graduate credit, should consult the Area Studies Office, 467 Vandenberg Hall.

### Course Offerings

Most of the courses listed below are offered by academic departments of Oakland University as part of their degree programs. As such, many of them have prerequisites. Therefore, all area studies M.A. candidates wishing to register for any of these courses must secure the permission of their program committees and of the instructors of the courses before registering. Forms for recording the instructor's permission are available in the Area Studies Office.

#### AH 300 Chinese Art (4)

The development of architecture, sculpture, and painting in China from the Shang Dynasty, ca. 1550 B.C., until the founding of the Chinese Republic, A.D. 1912.

#### AH 301 Japanese Art (4)

The development of architecture, sculpture, and painting in Japan from the fifth to the 19th century A.D.

#### AH 320 Byzantine Art (4)

The development of architecture, sculpture, and painting in the Eastern Roman Empire from A.D. 350 until the Turkish conquest of Constantinople in A.D. 1453.



**AH 490 Problems in Art History (4 or 8)**

Seminar in specific subject areas of, or approaches to, art history. May be taken in different semesters under different instructors for a total of eight credits or, with permission of instructor and departmental chairman, may be taken in one semester for a total of eight credits.

**AN 361 Peoples and Cultures of India (4)**

A study of contemporary rural and urban society in India and Pakistan. Emphasis is placed on social, economic, political, and religious life, as well as on problems of cultural change.

**AN 371 Cultures of Mesoamerica (4)**

Anthropological studies of Indian and Mestizo societies in Mexico and Guatemala, including their separate socio-economic patterns and their integration into a dualistic social system.

**AN 372 Indians of South America (4)**

A survey of the cultures of the native South Americans. Includes warriors of the jungles, peasants and herders of the mountains, nomads of the plains and forests, and subsistence fishermen of the southern coasts.

**CHE 310 Literary Chinese (4)**

Studies based on literary texts of Confucius, Mo Tzu, etc.

**CHE 320 Readings in Chinese Newspapers (4)**

Selections from newspapers of mainland China, Taiwan, and Southeast Asia.

**CHE 330 Readings in Chinese Communist Documents (4)**

Studies in documentary style of Chinese, selected mainly from writings of 20th century political leaders of China.

**CHE 340 20th Century Chinese Literature (4)**

Studies in the modern pai-hua literature, including short stories, poems, essays, pamphlets.

**CHE 410 Chinese Fiction and Drama (4)**

Studies in texts and criticism of fiction and drama, modern or classical.

**CHE 421 Selected Classical Texts (4)**

Studies of texts in advanced literary Chinese.

**CHE 431 Classical Chinese Stories (4)**

Studies of selected stories from different classical Chinese sources.

**CHE 440 Chinese Poetry (4)**

Selections from either classical T'ang and Sung Dynasty poems or from the post-May 4th movement of poetry.

**CHE 490 Directed Readings and Research in Chinese (4)**

For students with a high degree of competence in the language. Might be conducted either in literary or modern Chinese.

**ECN 323 International Economic Relations (4)**

An introduction to elementary international trade theory, the international monetary mechanism, exchange-rate regimes, the balance of payments, and economic interdependence.

**ECN 326 Economic Development (4)**

Application of the tools of economic analysis to the problems of economic development and growth.

**ECN 327 African Economic Development (4)**

Application of the tools of economic analysis to the historical development of African economies, the evaluation of current strategies for their economic development, and the role of the developed countries.

**ECN 350 Comparative Economic Systems (4)**

Comparative analysis of alternative forms of economic organization. The relationships between the economic system and resource allocation, pricing, income distribution, and growth. Capitalism, market socialism, and central planning are emphasized.

**ECN 418 Selected Topics in Economic Policy (4)****ED 581 Teaching about Black Africa in the Public Schools (4)**

See Page 96.

**ED 586 Education of the Spanish-Speaking of the United States (4)**

See Page 97.

**ED 587 Social Studies in the Elementary School (4)**

See Page 97.

**HST 370 China: Beginnings to Mid-T'ang, ca. 750 (4)**

The history of China from the most ancient times until the rebellion of An Lu-shan in A.D. 755.

**HST 381 History of Early India (4)**

The history of India from the most ancient times to the coming of the Mughals in the early 16th century. Offered fall semester.

(Descriptions of the following history courses may be found in the section on the M.A. in history in this catalog.)

**HST 520 U.S. Diplomatic History to 1898 (4)****HST 521 U.S. Diplomatic History since 1898 (4)****HST 552 Kiev and Muscovy (4)****HST 553 Imperial Russia (4)****HST 554 Soviet Russia (4)****HST 559 Russian Intellectual History to Peter the Great (4)****HST 560 Russian Intellectual History since Peter the Great (4)****HST 563 History of Southern South America (4)****HST 565 The Response to European Colonialism (4)****HST 566 Slavery and Race Relations in the New World (4)****HST 567 Pre-Columbian and Colonial Mexico (4)****HST 571 China: Mid-T'ang to the Peak of Manchu Power, ca. 1800 (4)**

The institutional, intellectual, and aesthetic responses to the failure of Tang cosmopolitanism, the elaboration of gentry economic controls, neo-Confucian orthodoxy, the literati ethos, and Chinese accommodations to problems of foreign encroachment and foreign rule.



**HST 573 19th Century China (4)**

Imperial China during the half century before the Opium War of 1839-42, China's growing crisis in the context of the massive Western impact during the second half of the 19th century, and the collapse of the traditional Chinese order in the first two decades of the 20th century.

**HST 574 Nationalism and Communism in China (4)**

The patterns of revolutionary nationalism in China from 1919 to the present, focusing on the Nationalist (Kuomintang) and Communist periods.

**HST 582 The Muslim Tradition in India and Pakistan (4)**

The establishment of Muslim power and culture in South Asia, its accommodation with Hindu culture, the Mughal empire and its decline, and the rise of modern Islamic nationalism, leading to the creation of Pakistan and Bangladesh. Offered in alternate years.

**HST 583 British Imperialism and Hindu Nationalism in India, 1740-1947 (4)**

Society and politics in 18th-century India, changing patterns of imperial rule, the Hindu Renaissance, and nationalist politics, religious, liberal, and Marxist. Offered every winter.

**HST 586 African Socialism (4)**

The ideologies, tactics, and techniques of various recent socialist revolutions in Africa and the relation of African socialist aims to traditional and colonial Africa as well as to other forms of socialist thought and practice.

**HST 587 Northwestern Africa (The Maghrib) since 1830 (4)**

The Maghrib from the time of the French occupation to present.

**HST 588 20th Century Africa (4)**

African resistance and nationalism movements from 1875 to the present and the development of Pan-Africanism and Négritude in colonial and contemporary times.

**HST 602 Colloquium in Latin American History (4)****HST 603 Colloquium in European History (4)****HST 604 Colloquium in African History (4)****HST 605 Colloquium in East Asian History (4)****HST 606 Colloquium in South Asian History (4)****HST 692 Seminar in Latin American History (4)****HST 693 Seminar in European History (4)****HST 694 Seminar in African History (4)****HST 695 Seminar in East Asian History (4)****HST 696 Seminar in South Asian History (4)****PHL 351 Chinese Philosophy (4)**

Systematic study of the rise and development of Chinese philosophy with emphasis on the classical (Chou) period, especially Confucianism and Taoism. The impact of Buddhism on Chinese philosophical thinking will be examined. Reference to modern developments as time permits.

**PHL 352 Indian Philosophy (4)**

An examination of the presuppositions and doctrines of India's major philosophic systems. Both Indian logic and metaphysical speculation will be covered. Realistic, idealistic, pluralistic, dualistic, and monistic systems will be considered, with some reference to contemporary developments. Offered every other year.

**POR 390 Directed Readings in Portuguese (2 or 4)**

A reading course for students interested in research in a particular Portuguese-language area. Especially suited to students in area studies. Bibliography to be determined by students and instructor. Discussions in Portuguese or English. Paper optional. May be repeated for credit.

**PS 330 Comparative Political Theory (4)**

An examination of the various approaches and theories that are used in comparative political research, including theories of development and modernization.

**PS 332 Politics of the Middle East and North Africa (4)**

The cultural and historical factors that influence the contemporary politics of the area will be emphasized. Topics include religion, social structures, economic problems, the impact of the West, and the Arab-Israel conflict.

**PS 333 African Politics (4)**

Examination of politics of selected African states. The primary focus is on political development. Attention to traditional and colonial politics as well as to individuals, groups, and institutions that make up the present political process. Offered winter semester.

**PS 334 Political Systems of Southern Asia (4)**

Study of the elements of political life in India and Pakistan. The cultural, historical, social, and economic factors that influence contemporary political institutions, and the issues and processes by which political conflicts are resolved will be examined. Politics in Ceylon, Nepal, and Himalayan border kingdoms may also be considered.

**PS 335 Politics of Latin America (4)**

Analysis of Latin American political systems and the historical, social, and economic factors underlying them. The major countries are studied intensively, and a comparative approach is used to examine the variations from democracy to dictatorship and the political instability in the area. Offered fall semester.

**PS 337 The Soviet Political System (4)**

Descriptive analysis of the Soviet society as a political system: its origins, institutions, and political behavior. Trends and developments in the system will be assessed, and comparisons with other political systems will be studied. Offered winter semester.

**PS 338 Modern Chinese Politics (4)**

Analysis of the rise of social movements in China after the breakdown of the traditional order; the emergence of the Nationalist and Communist regimes and the triumph of the Communists; the political processes of the People's Republic of China, stressing the role of elites in policy formation, ideology, mass support, and the exercise of central power. Offered fall semester.

**PS 339 Sino-Soviet Relations (4)**

The relations between the People's Republic of China and the U.S.S.R., emphasizing the reaction to the Russian experience by the leaders of China and the split between the U.S.S.R. and the People's Republic. Offered winter semester.



**RUS 320 Applied Linguistics of Russian (4)**

Treats the essential linguistic principles which affect foreign language learning: phonological, morphological, and syntactic interference; sound/spelling correspondences; and language learning, error analysis, and remediation. Language-specific drills and exercises included. Identical to ALS 320.

**RUS 370 Introduction to Russian Literature (4)**

A sample of critical approaches to the study of some masterpieces of Russian literature. Conducted in Russian.

**RUS 400 Special Topics in Language (4)**

Special problems on topics selected by the instructor. May be repeated for credit.

**RUS 480 Seminar in Russian Literature (4)**

Study of individual authors, selected themes, or critical problems.

**RUS 490 Independent Reading and Research (2, 4, or 8)**

Directed individual research and reading designed for advanced Russian majors. May be taken for one or more semesters.

**SOC 300 Social Stratification in Cross-Cultural Perspective (4)**

The concepts of class, caste, and race in relation to social conflict and social integration. Students will study these problems in a cross-cultural perspective with emphasis on comparative materials.

**AS 500 Special Problems in Area Studies (4)**

Interdisciplinary study of a foreign area, or a particular aspect of a foreign area, for which no regular course offerings exist.

**AS 581 Graduate Seminar in East Asian Studies (4)**

Advanced, intensive study of selected topics dealing with East Asia.

**AS 582 Graduate Seminar in South Asian Studies (4)**

Advanced, intensive study of selected topics dealing with South Asia.

**AS 583 Graduate Seminar in Slavic Studies (4)**

Advanced, intensive study of selected topics dealing with the Slavic world.

**AS 584 Graduate Seminar in African Studies (4)**

Advanced, intensive study of selected topics dealing with Africa.

**AS 585 Graduate Seminar in Latin American Studies (4)**

Advanced, intensive study of selected topics dealing with Latin America.

**AS 590 Graduate Readings in Area Studies (2, 4, 6, or 8)**

Advanced readings from diverse disciplines with focus on the student's area of specialization in East Asian, South Asian, African, Latin American, Slavic, or comparative studies.

**AS 690 The Master's Project (4 or 8)**

An independent research project culminating in a formal paper or a curriculum design.

## Department of Biological Sciences

**Chairperson:**

Nalin J. Unakar

**Professors:**

Francis M. Butterworth, Ph.D., Northwestern University  
William C. Forbes, Ed.D., Columbia University, Ph.D., University of Connecticut  
V. Everett Kinsey, Ph.D., University of Pittsburgh  
Venkat N. Reddy, Ph.D., Fordham University  
Reuben Torch, Ph.D., University of Illinois  
Nalin J. Unakar, Ph.D., Brown University  
Walter L. Wilson, Ph.D., University of Pennsylvania

**Associate Professors:**

John D. Cowlishaw, Ph.D., Pennsylvania State University  
Moon J. Pak, M.D., Yonsei University, Ph.D., University of Minnesota  
John R. Reddan, Ph.D., University of Vermont  
Michael V. Riley, Ph.D., Liverpool University  
Arun K. Roy, Ph.D., Wayne State University

**Assistant Professors:**

Thomas B. Friedman, Ph.D., University of Michigan  
Esther M. Goudsmit, Ph.D., University of Michigan  
L. Nichols Grimes, Ph.D., Brown University  
Egbert W. Henry, Ph.D., The City University of New York  
Robert D. Hunter, Ph.D., Syracuse University  
Paul A. Ketchum, Ph.D., University of Massachusetts  
Charles B. Lindemann, Ph.D., State University of New York at Albany  
Brian P. Livermore, Ph.D., University of Minnesota  
Asish C. Nag, Ph.D., University of Alberta  
John T. Romeo, Ph.D., University of Texas at Austin  
Barry S. Winkler, Ph.D., State University of New York at Buffalo

**Adjunct Associate Professors:**

Philip Clampitt, Ph.D., University of Iowa  
Nasirul Haque, M.D., Dacca Medical College, M.A.C.P., Royal College of Physicians of United Kingdom  
James R. Wells, Ph.D., Ohio State University

**Adjunct Professor:**

Clifford V. Harding, Ph.D., University of Pennsylvania

## THE MASTER OF SCIENCE IN BIOLOGY

The program leading to a Master of Science degree in biological sciences is designed to provide students with a broad background in four major areas of biology: biochemistry-biophysics, cell physiology, developmental biology-morphology, and genetics. The program offered will satisfy the needs of students seeking further professional training for an advanced degree, for employment in governmental agencies, and for students seeking additional training for teaching at the secondary school or two-year college level.

## Admission to Course

Admission to the program requires a bachelor's degree or its equivalent from an accredited institution and an undergraduate grade point average of 3.00 or better (on a 4.00 scale). Exceptions to this requirement may be made if evidence of the capacity for graduate study is provided. Students should have completed not fewer than 20 credits in biology, eight credits in mathematics, eight credits in

physics, and 15 credits in chemistry. Students with deficiencies in these areas may be admitted but will be asked to correct them. Applicants should have transcripts of all college-level work, two letters of reference, and scores on the Graduate Record Examination (the advanced test should be in biology) sent to the Office of Graduate Study.

### Requirements for the Degree

The candidate for the degree of Master of Science in biology must complete 36 credits in biology (16 of which must be in courses numbered 500 and above) including at least four credits in each of the four areas, developmental biology-morphology, biochemistry-biophysics, cell physiology, and genetics. At least eight credits must be a combination of credits received in graduate laboratory courses and credits received in graduate research (BIO 690). One credit in the biology seminar course and an acceptable thesis are also required. The completed thesis must be approved by a thesis committee appointed by the departmental graduate committee in consultation with the student's thesis adviser. These requirements may be modified for special cases by petitioning the departmental graduate committee. Undergraduate courses which may be used to satisfy the overall credit requirements are listed below. By petition to the departmental graduate committee, a maximum of 10 credits of graduate work may be transferred from another institution.

### Research Fields and Facilities

The Department of Biological Sciences is composed of faculty whose research interests are in the areas of cell biology, molecular biology, biochemistry, developmental biology, biophysics, virology, neurophysiology, microbial physiology, genetics, parasitology, ecology, invertebrate physiology, and botany. Research in these areas is being conducted at the cellular and molecular level and is supported by adequate equipment, space and library facilities.

These facilities include six teaching laboratories, 12 research laboratories, a large common laboratory for advanced student research, cold rooms, an incubation room, a sterile room, an electron microscopy laboratory, three darkrooms, a radioactive isotope room, preparation and storerooms, an instrument shop, animal quarters, and marine aquaria. Both in functional design and specialized equipment these facilities constitute a major research resource of the university. In addition, the faculty in the Institute of Biological Sciences is performing basic research on biochemistry and physiology of mammalian vision.

### Course Offerings

Selected 300-level courses which may carry graduate level credit.

The following courses may be recommended to the student by the departmental graduate committee.

#### BIO 301 Ecology (4)

Basic principles of environmental biology, illustrated through field study and having applications to man.

#### BIO 302 Ecology Laboratory (1)

Corequisite: BIO 301.

#### BIO 309 Parasitology (4)

A survey of parasitic relationships: taxonomy and anatomy of involved organisms, life cycles, nutrition, pathology, immunology, and preventive methods. Opportunity for involved projects.

#### BIO 310 Parasitology Laboratory (1)

Observation and description of type specimens, postmortem of selected animals, histological techniques in slide preparation.

#### BIO 323 Developmental Biology (4)

The principles of embryology and related topics. A consideration of events in the progressive development of the egg into the adult organism. The physiological aspects of morphogenesis, differentiation, growth, and regeneration will be included. Offered winter semester.

Prerequisite: BIO 113, 114. Corequisite: BIO 324.

#### BIO 324: Developmental Biology Laboratory (1)

To accompany BIO 323. A study of the anatomy of developing vertebrate animals. Individual and group research projects in experimental morphogenesis. Offered winter semester.

Corequisite: BIO 323.

#### BIO 331 Microbiology (4)

A discussion of the classification, morphology, and physiology of microorganisms.

Prerequisite: BIO 113 and one year of chemistry.

#### BIO 341 Genetics (4)

The physical and chemical basis of inheritance. Selected topics in human genetics, microbial genetics, biochemical genetics, and cytogenetics.

Prerequisite: BIO 113.

#### BIO 342 Genetics Laboratory (1)

Corequisite: BIO 341.

#### BIO 343 Aquatic Biology (4)

A general study of energy flow and biomass production up the trophic series, including energy transfer and limiting factors at each level. The finite nature of aquatic resources and their exploitation in relation to the future protein requirements of man will be explained and examined.

Prerequisite: BIO 111, 112, 113, 114.

#### BIO 344 Aquatic Biology Laboratory (1)

Corequisite: BIO 343.

#### BIO 350 Physiology of the Central Nervous System (2)

A course on the functional organization and integrative operation of the central nervous system. Topics include neuronal activity, synaptic transmission, regional network properties, organization of cerebral function, sensation (including special senses), and control of motor activity.

Prerequisite: Introductory biology course or equivalent.

### Upper Level and Graduate Courses

#### BIO 403 Protozoology (4)

Recognition, morphology, reproduction, and physiology of the more important taxonomic groups of the protozoa.

#### BIO 407 Cellular Biochemistry (4)

Advanced-level discussion of the cellular function in the perspective of recent developments in molecular biology. Topics include macromolecular chemistry, enzymology, metabolic interrelationships, subcellular organelles, protein, and nucleic acid biosynthesis and cellular control mechanisms. Offered fall semester.

Prerequisite: BIO 225, CHM 204, PHY 102.



**BIO 408 Cellular Biochemistry Laboratory (1)**

An introduction to modern research techniques in biochemistry. The laboratory work will include: different chromatographic techniques (paper, column, thin-layers, etc.), electrophoresis and immuno-electrophoresis, enzyme chemistry (purification and kinetic analysis), ultracentrifugation and cell fractionation, isolation and density gradient analysis of the nucleic acids. Offered fall semester. Corequisite: BIO 407.

**BIO 411 Experimental Embryology (4)**

Lectures and student seminars on current topics in gametogenesis, fertilization, and development. Emphasis on the critical evaluation of current and classic publication. Offered winter semester. Prerequisite: BIO 323 and permission of instructor.

**BIO 412 Laboratory in Experimental Embryology (2)**

The development of a variety of living embryos will be followed. When the stages of normal development have been observed, an experimental analysis of some of embryogenesis will be undertaken. Corequisite: BIO 411.

**BIO 415 Differentiation (4)**

A consideration of the theories relating to the control of differentiation and development. Prerequisite: BIO 323.

**BIO 425 Biophysics (4)**

An examination of the relationship of biology to the other sciences. Quantitative analysis of living systems will be emphasized, particularly at the cellular and subcellular levels. Offered in the winter semester. Prerequisite: BIO 225 or equivalent, calculus, organic chemistry, and general physics.

**BIO 426 Biophysics Laboratory (1)**

Corequisite: BIO 425.

**BIO 429 Cytochemistry (4)**

A survey of techniques currently used in microscopy to analyze the distribution and quantity of specific chemicals within cells and their organelles. Techniques included are specific staining reactions, enzyme digestion, metabolic inhibition, and autoradiography. Prerequisite: BIO 223, 224, and permission of instructor.

**BIO 430 Cytochemistry Laboratory (2)**

Individual research projects employing cytochemical techniques to study and compare and chemical compositions of several types of cells. Corequisite: BIO 429.

**BIO 435 Developmental Genetics (4)**

An integrated discussion of the concepts of biochemical genetics derived from microbial systems, and their application to the problems of development in multicellular organisms. Offered in the fall semester. Prerequisite: BIO 341 and 342, BIO 323, 225, and 226 or permission of instructor.

**BIO 436 Developmental Genetics Laboratory (1)**

Corequisite: BIO 435.

**BIO 437 Virology (4)**

Molecular biology of viruses, predominantly bacterial. Prerequisite: BIO 225, 331, or 341.

**BIO 438 Virology Laboratory (1)**

Corequisite: BIO 437.

**BIO 441 Microbial Genetics (4)**

A discussion of the genetics of microbial systems, including molds, bacteria, protozoa, and viruses. Prerequisite: BIO 331 and BIO 341.

**BIO 442 Microbial Genetics Laboratory (1)**

Corequisite: BIO 441.

**BIO 445 Ultrastructure (4)**

A consideration of the fine structure of cells and cell products as revealed by electron microscopy and other procedures. Offered in the winter semester. Prerequisite: BIO 223 and permission of instructor.

**BIO 446 Ultrastructure Laboratory (2)**

Corequisite: BIO 445.

**BIO 463 Cell Biology (4)**

Prerequisite: BIO 223 and permission of instructor.

**BIO 464 Cell Biology Laboratory (1)**

Corequisite: BIO 463.

**BIO 471 Advanced Physiology-Nerve (4)**

Review and analysis of the modern concepts of membrane excitation phenomena of nerve and synapse. Electrophysiological phenomena discussed mostly at cellular and molecular levels. Offered in the fall semester in alternate years. Prerequisite: BIO 221 and permission of instructor.

**BIO 472 Advanced Physiology Laboratory (1)**

An introduction to research techniques in electrophysiology. Work will include use of oscilloscope, amplifiers, and stimulator; extracellular potential recording technique; microelectrode technique. Corequisite: BIO 471.

**BIO 473 Advanced Physiology-Muscle (4)**

Review and analysis of the modern concepts of muscular activity and molecular mechanism of contraction. The discussions will include the ultrastructural correlation of muscle function and mechanics, biochemical approaches to elucidate energetics of muscle contraction, theories of molecular basis of muscular contraction. Offered in the fall semester in alternate years. Prerequisite: BIO 221 and permission of instructor.

**BIO 474 Advanced Physiology Laboratory (1)**

An introduction to research techniques in muscle physiology. Work will include neuromuscular transmission study; isometric force measurements; isotonic level design problems; length-tension, force-velocity relations; stress-strain relations of series elastic component; contractile properties of isolated actomyosin system, and glycerinated muscle fiber. Corequisite: BIO 473.

**BIO 511 Advanced Topics in Cellular Biochemistry and Biophysics (4)**

A discussion and lecture course offered by faculty members with research interests in biophysics and biochemistry. Topics will be announced.

**BIO 512 Graduate Tutorial Lab in Cellular Biochemistry and Biophysics (2)**

Techniques course offered to small groups of students in faculty research laboratories.

Corequisite: BIO 511.

**BIO 513 Advanced Topics in Cell Physiology (4)**

A discussion and lecture course offered by faculty members with research interests in cell physiology. Topics will be announced.

**BIO 514 Graduate Tutorial Lab in Cell Physiology (2)**

Techniques course offered to small groups of students in faculty research laboratories.

Corequisite: BIO 513.

**BIO 515 Advanced Topics in Developmental Biology and Morphology (4)**

A discussion and lecture course offered by faculty members with research interests in developmental biology and morphology. Topics will be announced.

**BIO 516 Graduate Tutorial Lab in Developmental Biology and Morphology (2)**

Techniques course offered to small groups of students in faculty research laboratories.

Corequisite: BIO 515.

**BIO 517 Advanced Topics in Genetics (4)**

A discussion and lecture course offered by faculty members with research interests in genetics. Topics will be announced.

**BIO 518 Graduate Tutorial Lab in Genetics (2)**

Techniques course offered to small groups of students in faculty research laboratories.

Corequisite: BIO 517.

**BIO 611 Graduate Biology Seminar (1)**

Graduate student presentation of scientific data dealing with biological problems.

**BIO 690 Graduate Research (4 or 8)**

Research credits limited to graduate students in the biological sciences. This research will serve as the basic course leading to the preparation of a thesis.

## Department of Chemistry

**Chairperson:**

Paul Tomboulia

**Professors:**

Gottfried Brieger, Ph.D., University of Wisconsin  
Kenneth M. Harmon, Ph.D., University of Washington  
Lewis N. Pino, Ph.D., University of Buffalo  
Paul Tomboulia, Ph.D., University of Illinois

**Associate Professors:**

Julien Genyey, Ph.D., Cornell University  
Steven R. Miller, Ph.D., Massachusetts Institute of Technology  
Frederick W. Obear, Ph.D., University of New Hampshire  
Joel W. Russell, Ph.D., University of California (Berkeley)  
Parbury P. Schmidt, Ph.D., University of Michigan  
Michael D. Sevilla, Ph.D., University of Washington  
Robert L. Stern, Ph.D., Johns Hopkins University  
Robert C. Taylor, Ph.D., Princeton University

**Assistant Professors:**

Denis M. Callewaert, Ph.D., Wayne State University  
Christine S. Sloane, Ph.D., Massachusetts Institute of Technology  
Donald C. Young, Ph.D., University of North Carolina

### THE MASTER OF SCIENCE IN CHEMISTRY

The Master of Science in chemistry can be viewed as either a terminal or an intermediate degree. By itself it serves as preparation for employment in chemical and related industries, a wide range of government agencies, and two-year college teaching. It also prepares the student for further study toward advanced degrees in chemistry, oceanography, medicine, environmental sciences, and related fields. The program is designed especially for full-time students, but provision is made for part-time students who wish to pursue an advanced degree and can arrange to include the research component during the daytime. All graduate students must receive approval of the departmental graduate program adviser before enrolling in courses.

### Admission to Course

An applicant for admission to regular status in the Master of Science program should have received a bachelor's degree within the past five years from an accredited institution. Students should have completed at least 36 credits in chemistry (including all major areas), 12 credits in mathematics (calculus and above), and eight credits in physics. Students with deficiencies in these areas may be asked to correct these deficiencies, and their graduation may thus be delayed. A grade point average of at least 2.75 (on a 4.00 scale) in these courses is usually required, but applicants will be considered on their individual merits upon recommendation of persons familiar with each applicant's academic background. The Graduate Record Examination may be required, especially if the applicant does not hold an American degree.

By petition to the department, a maximum of 10 credits of graduate work may be transferred from another institution.

Applicants who do not meet the above requirements may be admitted with probationary status, into special graduate status, or into post baccalaureate status.

### Requirements for the Degree

The candidate for the degree of Master of Science in chemistry ordinarily must complete the following minimum requirements: 32 credits in courses carrying



graduate credit, of which 26 credits must be in chemistry. Of these 26 credits, 16 must be from four of the following areas: biochemistry, inorganic chemistry, organic chemistry, physical chemistry, environmental studies, and analytical chemistry. (Permission of the graduate program adviser is required if 300-level courses are to be used.) Of the remaining 10 credits in chemistry, a minimum of eight credits must be in CHM 690. The candidate must have demonstrated accomplishment in research and must have a thesis approved by a departmental committee before receiving the degree. Since the degree is awarded for the attainment of a level of proficiency and maturity, no minimum amount of time can be specified for the degree program.

### Research Fields and Facilities

Because graduate work in chemistry involves research and presentation of a master's thesis, the programs, facilities, and staff available are important. The various current research activities of the staff include high-resolution infrared spectroscopy, photochemistry of natural products, insect biochemistry, electron spin resonance of solid-state and biological systems, microwave spectroscopy, quantum mechanical models, organoboranes, ionic aromatic polymers, atmospheric chemistry, gas reaction kinetics, molecular structure and dynamics, Fourier spectroscopy, chromatographic pollutant analysis, limnological chemistry, instrumentation design, theoretical quantum mechanics, non-equilibrium statistical mechanics, lanthanide shift reagents, organophosphorus chemistry, coordination chemistry, kinetics and thermodynamics of rearrangement processes in solution, electrochemistry, and relaxation techniques for slow proton transfers.

Among research facilities available to chemistry students are electronic computers, high- and low-resolution infrared spectrophotometers, analytical and preparative gas-liquid chromatographs including fraction collectors, catalytic hydrogenation equipment, a nuclear magnetic resonance spectrometer, radiochemical counting equipment, a scintillation counter, polarographic and automatic titration equipment, an electron spin resonance spectrometer, spinning-band fractionating columns, variety of high- and low-resolution visible and ultraviolet spectrophotometers, a high-resolution far-infrared interferometer, an ultracentrifuge, fluorometric and nephelometric equipment, and a large amount of electronic and vacuum instrumentation. Nearby facilities include two digital computers, an electron microscope, and a helium leak detector.

### Course Offerings

(300-level courses may carry graduate credit only with permission of adviser.)

#### CHM 345 Physical Chemistry (4)

Physical chemistry of microscopic systems: elementary quantum chemistry, bonding theories, introductory statistical mechanics.  
Prerequisite: CHM 305 or 344, MTH 254.

#### CHM 348 Physical Chemistry Laboratory (2)

Experimental measurements of thermodynamic, equilibrium, and kinetic properties of selected chemical systems. Emphasis on quality of data, analysis of error, and validity of results.  
Prerequisite: CHM 305 or 344 and PHY 158.

#### CHM 351 Biochemistry (4)

An introduction to molecular biology and the chemistry of biological macromolecules; proteins and nucleic acids, enzymology, bio-energies, and metabolic cycles.  
Prerequisite: CHM 235 or 204.

#### CHM 357-358 Biochemistry Laboratory (2 each)

Training in the techniques of extraction, separation, identification, and

measurement of activity of substances of biological importance.  
Prerequisite (or corequisite): CHM 351.

#### CHM 372 Air Chemistry (4)

A technical evaluation of the nature and composition of the earth's atmosphere, both in its natural state and as it has been affected by man. Some discussion of air pollution control will be included. Identical with ENV 372.  
Prerequisite: CHM 203 or 234 and 305 or 344.

#### CHM 373 Water Resources (4)

A technical introduction to the nature and composition of all types and bodies of water, including streams, rivers, lakes, and oceans. Some discussion of water pollution control will be included. Identical with ENV 373.  
Prerequisite: CHM 203 or 234 and 305 or 344.

#### CHM 405 Selected Topics (1, 2, 4, or 6)

Advanced study in special areas: seminars, laboratory work, and readings. May be repeated for credit.  
Prerequisite: Permission of instructor.

#### CHM 413 Advanced Inorganic Chemistry (4)

Chemical applications of group theory with special emphasis on inorganic and organo-metallic chemistry. MO theory and VB theory, introduction to ligand-field theory, and molecular vibrational and electronic spectroscopy.  
Prerequisite: CHM 312 and 345.

#### CHM 422 Advanced Analytical Chemistry (4)

Detailed treatment of theory and applications of modern analytical methods.  
Prerequisite: CHM 344.

#### CHM 426 Electroanalytical Chemistry (Lecture 1, laboratory 2)

Basic electronics, passive networks, Laplace transforms, operational amplifier circuits, building of instruments with emphasis on electroanalytical instrumentation. Lectures and laboratory.  
Prerequisite: CHM 217 or equivalent, PHY 158; pre- or corequisite, CHM 344.

#### CHM 434 Advanced Organic Chemistry (4)

Detailed discussion of aspects of modern synthetic methods, stereochemistry, and reaction mechanisms.  
Prerequisite: CHM 204 or 235.

#### CHM 444 Advanced Physical Chemistry (4)

Application of quantum mechanics and statistical mechanics to chemical kinetics, molecular structure, and molecular spectroscopy.  
Prerequisite: CHM 345.

#### CHM 448 Spectroscopy Laboratory (2)

Experimental techniques of spectroscopy: infrared, ultraviolet, nuclear magnetic resonance, electron spin resonance, mass spectroscopy.  
Prerequisite or corequisite: CHM 444.

#### CHM 452 Advanced Biochemistry (4)

Topics in intermediary metabolism, cellular regulation, and molecular genetics.  
Prerequisite: CHM 351 or BIO 407.

#### CHM 487 Advanced Preparations (2 or 4)

Specialized laboratory work in selected areas emphasizing advanced techniques.  
Prerequisite: Permission of instructor.

Chemistry courses on the 500-level are graduate level courses available to well-prepared undergraduate students with permission of the department. These



courses may be offered as reading courses on a tutorial basis or as small lecture courses.

**CHM 512, 513 Topics in Inorganic Chemistry (4 each)**

Advanced treatment of selected topics of inorganic chemistry.

Prerequisite: CHM 413 or equivalent.

**CHM 523, 524 Topics in Analytical Chemistry (4 each)**

Advanced treatment of selected topics of current analytical chemistry such as separation methods, instrumentation, electrochemistry.

Prerequisite: CHM 422 or equivalent.

**CHM 531, 532, 533 Topics in Organic Chemistry (4 each)**

Advanced treatment of selected special topics: natural products, organometallics, reaction mechanisms, synthesis.

Prerequisite: CHM 434 or equivalent.

**CHM 543, 544 Topics in Physical Chemistry (4 each)**

Special topics in physical chemistry such as quantum mechanics, statistical mechanics and thermodynamics, kinetics, group theory.

Prerequisite: CHM 444 or equivalent.

**CHM 552, 553 Topics in Biochemistry (4 each)**

Advanced treatment of selected topics in biochemistry. This course is usually conducted as tutorial with topics chosen according to the interests and backgrounds of the students.

Prerequisite: CHM 452 or equivalent.

**CHM 690 Research (1, 2, 4, 6, or 8)**

Prerequisite: Permission of department.

## Department of English

**Chairperson:**

Joseph W. DeMent

**Professors:**

Maurice F. Brown, Ph.D., Harvard University  
John P. Cutts, Ph.D., University of Birmingham  
Joseph W. DeMent, Ph.D., Indiana University  
Peter G. Evarts, Ph.D., Wayne State University  
Thomas Fitzsimmons, M.A., Columbia University  
James F. Hoyle, Ph.D., Princeton University  
Donald E. Morse, Ph.D., University of Connecticut  
William Schwab, Ph.D., University of Wisconsin  
Gertrude M. White, Ph.D., University of Chicago

**Associate Professors:**

Herbert Appleman, M.A., Columbia University  
Robert L. Donald, M.A., University of Detroit  
Jane D. Eberwein, Ph.D., Brown University  
Robert T. Eberwein, Ph.D., Wayne State University  
Daniel H. Fullmer, Ph.D., University of Michigan  
Nigel Hampton, Ph.D., University of Connecticut  
David W. Mascitelli, Ph.D., Duke University  
Brian F. Murphy, Ph.D., University of London  
Joan G. Rosen, M.A., Wayne State University  
Helen J. Schwartz, Ph.D., University of Washington

**Assistant Professors:**

William F. Horwath, Ph.D., University of Michigan  
Beverley F. Jones, Ph.D., University of Michigan

**Instructors:**

Daniel P. Armstrong, M.A., Indiana University  
James E. Hart, B.A., St. Francis College

The Department of English offers programs leading to the degrees of Master of Arts in English and Master of Arts in Teaching in English. The latter program is jointly sponsored by the College of Arts and Sciences and the School of Education.

### Admission to Course

Admission to either of the department's advanced degree programs is selective. Chief qualifications are the degree of Bachelor of Arts from an accredited institution, academic ability as indicated by past record, and interest in continued study of letters. An English major, as such, is not regarded as indispensable background, but a substantial number of undergraduate English courses will normally be expected to appear in the applicant's record. Evidence of additional reading in the literature of history, philosophy, and theology is welcome; prior study in linguistics and philology is also recommended.

All entering graduate students must meet minimal university graduate admission standards. All will be enrolled conditionally until they are admitted by the department to degree candidacy. Consideration for candidacy comes after the student has successfully completed 16 hours of graduate work at Oakland University including at least eight credits in the Department of English. Normally, all courses offered toward candidacy must be completed with grades of 3.0 or better. The M.A.T. candidate must also receive the approval of the School of Education before candidacy is granted.

When students of specially recommended ability, but with insufficient back-



ground — in extent or balance of previous studies — are admitted, they will be advised on improving their preparation and will usually be asked to take an appropriate number of departmental undergraduate courses before commencing graduate work. Their degree programs, accordingly, may require a proportionately longer period to complete.

Students in either the M.A. or M.A.T. program whose undergraduate records show no course in English language or linguistics may be asked to include one such course among their graduate undertakings.

Enrollment for all courses is subject to the approval in writing of a graduate English adviser.

## THE MASTER OF ARTS IN ENGLISH

The program leading to the degree of Master of Arts in English has been designed to provide training for students interested in increasing their proficiency in the study of English and American language and literature.

The basic curriculum is rather prescriptive, directing the student's attention not so much to literary materials or specialization in an historical period, but to major critical approaches. Opportunity is offered for scholarly, pedagogical, and creative application of basic approaches to literature and language. The program is of use to those whose eventual goal is the Ph.D. degree, but it is primarily directed to the needs of teachers of English in advanced high school classes and to those preparing for teaching in junior and community colleges.

### Requirements for the Degree

Nine courses (36 credits) are required, two of which must be 600-level courses in English. The seven additional courses are to be chosen in consultation with the student's program adviser. Within the 36 credits required for the degree, a student may be permitted to take one course in a cognate liberal arts field, or ENG 510 in lieu of a cognate, but only with specific approval of the adviser.

## THE MASTER OF ARTS WITH ENGLISH LANGUAGE CONCENTRATION

The program leading to the degree of Master of Arts with English language concentration is not a separate degree program but a concentration within the existing Master of Arts in English program. The Master of Arts with English language concentration is provided for students who wish to study linguistic theory, and the structure and history of the English language on the graduate level.

### Admission to Course

Any students admitted into the M.A. program may, in consultation with their advisers, arrange a program with English language concentration. The only added prerequisite for this program is any one of the following three courses: ENG 376, History of the English Language; ENG 377, Modern English Grammar; or ENG 382, Old English. The equivalent of any one of these will also be accepted.

### Requirements for the Degree

Nine courses (36 credits) are required, six of which are specified in the normal program: the two undergraduate courses from the above list (ENG 376, 377) which were not taken as prerequisites; ENG 534, Language History; ENG 642, Studies in Old and Middle English Literature; ENG 647, Studies in the Structure of Old English; and ENG 690, The Master's Project. The other three courses will be elected from graduate offerings in English literature. The standard program may be modified for an individual student depending on background and interests.

## THE MASTER OF ARTS IN TEACHING IN ENGLISH

The program leading to the degree of Master of Arts in Teaching in English is designed more particularly for students who wish to pursue graduate study to improve their competence as teachers of English and American literature and language. It is sponsored jointly by the College of Arts and Sciences and the School of Education.

### Requirements for the Degree

Nine courses (36 credits) are required, five of which are specified: ENG 510, two 600-level courses in English; one course chosen from the following five alternatives: ED 601, ED 602, ED 603, ED 604, or ED 605, described on pages 98 and 99, and one course from the following group of two: PSY 510 or PSY 512, described on page 65. The four remaining English courses are to be chosen in consultation with the student's program adviser.

## CLASSIFICATION OF COURSE OFFERINGS

The graduate program of the Department of English offers four kinds of courses:

### 1. Undergraduate Courses (300 and 400 levels)

The student may take up to two undergraduate courses to be chosen from regular departmental 300- and 400-level offerings. Such courses are deemed useful principally in preparing students for seminars in areas of language and literature for which they are not adequately trained. No more than five graduate students may enroll in any 300- or 400-level course. ENG 499 is not open to graduate students. ENG 498 is not normally acceptable for graduate credit. Students must have prior written permission of a graduate adviser to register in an undergraduate course.

### 2. Core Courses (500 level)

Core courses are designed to familiarize the student with principal approaches to language and literature and with methods and tools appropriate to those approaches. The department considers these courses to be central to the graduate program and recommends that the student take at least four of them. They should be considered as helpful aids in coping with the more specialized work of the seminars. Each of these courses will be offered at least once during the year. (ENG 500, 510, and 597, as noted below in the course offerings, are specialized courses, not core courses.)

### 3. Seminars and the Master's Project (600 level)

The purpose of the graduate seminar is to allow the student to do independent work in an area in which the instructor has special sophistication, and at the same time to gain criticism and support from other students working in the same area. The instructor will prescribe the subject matter of each course during any given semester. First-semester students may not enroll in a seminar without permission of the department committee on graduate programs. Seminars are limited to 12 students.

ENG 690, The Master's Project (optional) involves completion of a modest project of creative, scholarly, or pedagogical nature, proposed initially by the candidate. Any written work to be submitted in partial or total fulfillment of a project should not exceed 7,500 words. Projects normally arise out of graduate course work, and candidates are advised to register for ENG 690 any time after they complete 12 credits. The course is open only to students who can propose an independent project and have made arrangements with a member of the department interested in supervising it. Applications for ENG 690 are available in the



department office. They must be used by students submitting a conspectus of the project and seeking approval to proceed.

#### 4. Summer Institutes

Concentrated four-week institutes in Shakespeare, linguistics, and other topics of interest to high school teachers and post-baccalaureate students are offered in summer term. They are designed as refresher courses or as introductions to topics of particular contemporary concern. Institutes grant four hours of graduate credit and are usually graded S/N. Students may not offer more than four credits of work in institutes toward fulfillment of requirements for advanced degrees except by permission of the graduate committee of the department. Candidates for degrees must consult with their advisers before electing summer institutes.

#### Cognate Courses (M.A. Program)

Students in the M.A. program may, with written approval of the chairman of the Graduate Programs Committee, offer one course from another department for credit toward their degrees. Such courses should be advanced work in a field relevant to the students' special interests and needs.

#### Course Offerings

##### ENG 500 Advanced Topics in Literature and Language (4)

Special topics and problems selected by the instructor. Not a core course.

##### ENG 510 Literature and Composition (4)

Form and style in prose and poetry. Exploration of relationships among the study of literature, the study of language, and composition. Experience in writing and criticism of writing. Designed for the teacher of English language and literature. Required of M.A.T. candidates. Not a core course.

##### ENG 515 Shakespeare Institute (4)

An intensive four-week consideration of Shakespeare's theatre and selected plays directed to the needs of secondary school teachers. Lectures, discussions, workshops, and trips to Stratford productions.

##### ENG 533 Formal Analysis (4)

An intensive study of approaches to specific works of literature in and of themselves and an examination of techniques appropriate to those approaches.

##### ENG 534 Language History (4)

An intensive study of the development of standard English through an examination of texts that are representative of Early Modern English, Middle English, and Old English.

##### ENG 543 Literary History: Early British (4)

The course will concentrate on some period of British literary history before the 18th century. Emphasis on concepts, approaches, methodology appropriate to the literary historian. Literature in historical perspective and in cultural and social contexts.

##### ENG 544 Literary History: Later British (4)

The course will concentrate on some period of literary history from the 18th century to the present. Emphasis on concepts, approaches, methodology appropriate to the literary historian. Literature in historical perspective and in cultural and social contexts.

##### ENG 545 Literary History: American (4)

The course will concentrate on some period of American literary history. Em-

phasis on concepts, approaches, methodology appropriate to the literary historian. Literature in historical perspective and in cultural and social contexts.

##### ENG 546 Literary History: Special Topics (4)

As designated by instructor.

##### ENG 563 Literary Kinds: Fiction (4)

Studies of the novel and/or shorter fiction, including definitions of the form and attention to variations among different examples of the form.

##### ENG 564 Literary Kinds: Drama (4)

Studies of drama including definitions of the form and attention to variations among different examples of the form.

##### ENG 565 Literary Kinds: Poetry (4)

Studies of poetry including definitions of the form and attention to variations among different examples of the form.

##### ENG 566 Literary Kinds: Modes or Special Forms (4)

Studies of a particular mode (such as comedy, tragedy, satire, romance) or of an approach to literature through modes; or studies of another form such as film, biography, non-fictional prose.

##### ENG 597 Apprentice College Teaching (4)

An introduction to teaching English at the college level. Internship with assigned professor in a course offered at Oakland or a cooperating community college. To be arranged in the semester preceding that in which the course is taken. By permission only. Not a core course.

##### ENG 600 Studies in Language and Literature (4)

Special topics and problems as selected by instructor.

##### ENG 640 Studies in American Literature: Focus Pre-Civil War (4)

##### ENG 641 Studies in American Literature: Focus Post-Civil War (4)

##### ENG 642 Studies in Old and Middle English Literature (4)

##### ENG 643 Studies in Renaissance Literature (4)

##### ENG 644 Studies in 18th Century Literature (4)

##### ENG 645 Studies in 19th Century Literature (4)

##### ENG 646 Studies in Modern Literature (4)

##### ENG 647 Studies in the Structure of English (4)

##### ENG 648 Studies in Literary Theory (4)

##### ENG 690 The Master's Project (4)

Completion of a modest project of a creative, scholarly, or pedagogical nature proposed by the degree candidate.  
Prerequisite: Permission of the Committee on Graduate Programs.

#### Related Courses

##### ED 601 History in Education (4)

See page 98.

##### ED 602 Philosophy in Education (4)

See page 98.



**ED 603 Cross-Cultural Studies in Education (4)**

See page 98.

**ED 604 Sociology in Education (4)**

See page 98.

**ED 605 Politics in Education (4)**

See page 99.

**PSY 510 Developmental Psychology (4)**

See page 65.

**PSY 512 Test and Measurements (4)**

See page 65.

## Department of History

**Chairperson:**

John Barnard

**Professors:**

Charles W. Akers, Ph.D., Boston University  
 John Barnard, Ph.D., University of Chicago  
 Richard M. Brace, Ph.D., University of California (Berkeley)  
 Melvin Chernov, Ph.D., Stanford University  
 Robert C. Howes, Ph.D., Cornell University  
 George T. Matthews, Ph.D., Columbia University  
 W. Patrick Strauss, Ph.D., Columbia University  
 S. Bernard Thomas, Ph.D., Columbia University

**Associate Professors:**

DeWitt S. Dykes, Jr., M.A., University of Michigan  
 Leonardas V. Gerulaitis, Ph.D., University of Michigan  
 James D. Graham, Ph.D., Northwestern University  
 Gerald C. Heberle, Ph.D., Ohio State University  
 Joseph A. Klaitis, Ph.D., University of Minnesota  
 Roy A. Kotynek, Ph.D., Northwestern University  
 Anne H. Tripp, Ph.D., University of Michigan  
 Richard P. Tucker, Ph.D., Harvard University

**Assistant Professors:**

Mary C. Karasch, Ph.D., University of Wisconsin  
 Lawrence D. Orton, Ph.D., Indiana University  
 Carl R. Osthaus, Ph.D., University of Chicago  
 Colin A. Palmer, Ph.D., University of Wisconsin  
 I. Michael Solomon, Ph.D., Columbia University

### THE MASTER OF ARTS IN HISTORY

This program may serve either as a terminal degree or as a bridge to more advanced study and is designed to accommodate both full- and part-time students. In addition to a complete daytime schedule, late afternoon and evening courses are also available.

#### Admission to Course

The department will consider applicants who hold the degree of Bachelor of Arts or Bachelor of Science from an accredited institution and whose credentials, including transcripts and letters of recommendation, give evidence of academic distinction. An undergraduate major in history is not an absolute requirement for admission, but a significant number of undergraduate history courses should appear on the applicant's record.

A grade point average of 3.00 (on a 4.00 scale) in undergraduate history courses and a GPA of 2.80 in all undergraduate work will ordinarily be considered the minimum standards for admission. These minima may be waived in individual cases; the department, at its discretion, may admit students of superior promise but with deficient preparation if such students correct their deficiencies before commencing graduate work.

Students may be admitted in any of the four terms of the academic year.

#### Transfer Credits

Up to 12 semester hours of credit may be accepted toward the master's degree subject to the following conditions:

- a. They must be graduate credits.

- b. They must be from history courses or from allied fields. The department's graduate committee examines each request individually for compliance with this condition.
- c. The credits should have been earned within six years of the student's completion of the M.A. program at Oakland.

### Requirements for the Degree

The degree will be awarded on successful completion of 38 credits — 36 in nine graduate courses and two additional credits for completion of a comprehensive examination in the student's major field. At the time of admission, each student will choose a major field from among the following areas of historical study: United States; Europe (including Great Britain and Russia); or Africa, East and South Asia, and Latin America.

At least 20 credits (five courses) of the student's work must be in the major field. Each student must complete at least two colloquia (HST 601-606) and two research seminars (HST 691-696). At least one of the colloquia and at least one of the research seminars must be in the student's major field. Both the colloquia and the seminar courses will be limited in size to afford opportunity for discussion with fellow students and the instructor. Successful completion of the written comprehensive examination on the student's major field (HST 600) will be the final step in the degree program.

The department imposes no general foreign language study requirement for the master's degree. However, the study of certain fields may necessitate reading knowledge of a foreign language. Students will confer with their advisers to determine the adequacy of their linguistic preparation for specific courses and programs.

Subject to approval by the departmental graduate committee, as many as 12 credits toward the degree may come from work outside the Department of History. The credits may consist of work in graduate courses in other departments at Oakland University or from graduate history courses at other institutions.

### Course Offerings

#### HST 502 History of the American Worker in the 20th Century (4)

Study of the composition of the work force, the economic and social conditions of work, the rise of organized labor, the political programs and the activities of workers and their responses to new technology and new economic structures, and the problems of the contemporary worker.

#### HST 506 Colonial and Revolutionary America (4)

The transplantation of European society to continental North America; the subsequent development of political, economic, and social institutions in the colonies; the Anglo-French struggle for the continent, and the American Revolution.

#### HST 507 American Religious History (4)

A study of the religious history of the American people with emphasis on social aspects. Within the general outline of chronological development, attention is given to such selected topics as religious elements in immigration, the separation of church and state, denominationalism and sectarianism, religion and nationalism, religious leadership, and religion as an influence in social change. Offered each winter.

#### HST 510 The Young Republic and the Age of Jackson, 1787-1850 (4)

The making of the Constitution, the social, political, and economic development of the new nation, and the subsequent forces affecting expansion, social protest, and sectionalism to 1850.

#### HST 512 The Civil War and Reconstruction, 1850-1876 (4)

The origins of secession, the wartime problems of the Union and the Confederacy, the principal military campaigns, the Reconstruction Era and the creation of a new Union, and the significance of the Civil War and Reconstruction in American history.

#### HST 513 American History, 1876-1900 (4)

The New South, industrial consolidation, the origins of the modern labor movement, the rise of the city, immigration, agrarian protest movements, the businessman's philosophy, and the challenge to laissez faire.

#### HST 514 American History, 1900-1928 (4)

The social, political, and economic developments in the United States during the progressive era and the decade of the 1920's.

#### HST 515 American History Since 1928 (4)

The myth of the New Era, the social and political impact of the Great Depression, New Deal programs and radical alternatives, the isolationist-internationalist debate, modern Republicanism, and the New Frontier.

#### HST 516 American Intellectual History to 1860 (4)

The intellectual and cultural history of the American people from the colonial period to the Civil War.

#### HST 517 American Intellectual History Since 1860 (4)

Major intellectual and cultural trends in the United States from the Civil War to the present.

#### HST 519 History of the American South (4)

The South from colonial times to the 1960's, emphasizing the transition from the agrarian, slave South of the antebellum period to the modern South of the 20th century.

#### HST 520 U. S. Diplomatic History to 1898 (4)

The origins, formulation, and development of American foreign policy and diplomacy from the Revolution to the Spanish-American War, including such topics as neutrality and isolationism, the Monroe Doctrine, Manifest Destiny, and the Civil War.

#### HST 521 U. S. Diplomatic History Since 1898 (4)

American foreign policy and diplomacy from the Spanish-American War to the present, including such topics as American imperialism, Caribbean and Far Eastern policies, involvement in the world wars and the Cold War, and nuclear diplomacy.

#### HST 522 The Social History of American Education (4)

The educational impact of school, family, and church on American social and cultural life from the colonial period to the present.

#### HST 523 Advanced Study in Afro-American History (4)

Group reading and discussion, combined with independent research, on such subjects as the nature and scope of Afro-American history, bibliographical materials, the history of Afro-American history, and the Afro-American intellectual.

#### HST 525 Medieval Europe (4)

The European Middle Ages from about A. D. 400 to 1300, with special emphasis on intellectual developments.



**HST 526 The Italian Renaissance (4)**

The European Renaissance period, with special emphasis on the Italian experience.

**HST 527 The Northern Renaissance (4)**

European humanism, with special emphasis on the Lowlands, France, and Germany.

**HST 528 Europe in the 16th Century (4)**

A comparative analysis of European society, including such themes as the varieties of humanism; the spiritual crisis of Christendom; the structure of the Renaissance state and formulation of sovereignty, political rebellion, and social revolution; dynastic and ideological warfare, and the effects of the expansion of the West upon European society.

**HST 529 Europe in the 17th Century (4)**

A comparative analysis of European society, including such themes as the articulation of absolutism and constitutionalism, the emergence of the European states system, the origins of modern science and rationalism, the culture of the baroque, the development of commercial capitalism, and the tension between new bureaucratic standards of relationship and the personalized nature of pre-modern society.

**HST 534 Victorian and Edwardian England (4)**

The political, cultural, and intellectual life of England from 1837 to the outbreak of World War I. Offered irregularly.

**HST 535 20th Century Britain (4)**

The British adjustment to global wars, the later industrial revolution, mass democracy, and social change. Offered in alternate years.

**HST 541 Europe Since 1914 (4)**

An analysis of Europe in world perspective since World War I.

**HST 542 The Origins of Modern Germany (4)**

The ancient and medieval roots of German civilization, the political fortunes of the Holy Roman Empire and its member states, the development of the concept of German nationality, and the rise of the German nation-state in the 19th century.

**HST 543 Germany Since 1870 (4)**

The history of the German nation-state, concentrating on constitutional and political developments in their social context.

**HST 545 France Since 1789 (4)**

The political development of modern France as a nation-state and the cultural and economic movements connected with French public life. Offered every year.

**HST 547 Tools of Historical Research (4)**

A course to acquaint students of history with the auxiliary sciences of that discipline, with special emphasis on historical bibliography and the use of the library.

**HST 548 Europe in the 18th Century (4)**

A comparative analysis of European society, including such themes as the old regime in Europe, the beginnings of industrial development and the resistance to modernization, the Enlightenment as a political and social movement, reform under the monarchy and the emergence of democratic ideologies, and the onset of the French Revolution.

**HST 549 France in the Age of Absolutism and Enlightenment (4)**

The ancient régime in France from the end of the wars of religion to the beginning of the Revolution (1589-1789).

**HST 550 European Intellectual History to 1800 (4)**

The main developments in European thought and their implications for art and literature and social change, from the God-oriented world views of the Middle Ages to the application of Newtonian scientific concepts in the 18th century Enlightenment. Emphasis will be on the reading of original materials.

**HST 551 European Intellectual History Since 1800 (4)**

New ways of thinking established by European intellectuals of the 19th and 20th centuries, especially in their critiques of the traditional rationalist assumptions of earlier ages and the broad cultural implications of their evolutionary, utilitarian, or existentialist attitudes and beliefs. Emphasis will be on reading original materials.

**HST 552 Kiev and Muscovy (4)**

Russian history from the ninth to the 17th century with emphasis on the origins of the Kievan state and society, the struggle against the steppes, and the formation of a centralized Russia under the leadership of Moscow.

**HST 553 Imperial Russia (4)**

Russian history from Peter the Great to the Bolshevik Revolution: the growth of Russian national power, westernization, serfdom, reform, and revolution.

**HST 554 Soviet Russia (4)**

Russia and the Soviet Union from 1917 to the present: revolution and civil war, collectivization and industrialization, Stalinism, World War II, de-Stalinization, the Soviet Union, and the world communist movement.

**HST 559 Russian Intellectual History to Peter the Great (4)**

Main intellectual and cultural developments in Russia prior to Peter the Great. The Russian Church and religious thought, literature, and the development of political ideology will be emphasized.

**HST 560 Russian Intellectual History Since Peter the Great (4)**

Main intellectual and cultural developments since Peter the Great, with emphasis on the 19th century. Particular attention is devoted to the slavophiles, the westernizers, the populists and socialists, and several of the great realistic writers.

**HST 563 History of Southern South America (4)**

The social, political, and economic history of Argentina, Brazil, and Chile in the 19th and 20th centuries; frontier expansion and Indian warfare, slavery and Empire in Brazil, regionalism and nationalism, industrialization and urbanization, and international relations.

**HST 565 The Response to European Colonialism (4)**

A comparative examination of the responses of the peoples of Africa and Latin America to European expansion, with emphasis on such themes as acculturation, resistance movements, nationalism, and modernization.

**HST 566 Slavery and Race Relations in the New World (4)**

A comparative study of slavery in North America, Latin America, and the Caribbean, and the present state of race relations in the three areas.

**HST 571 China: Mid-T'ang to the Peak of Manchu Power, ca. 1800 (4)**

The institutional, intellectual, and aesthetic responses to the failure of T'ang cosmopolitanism, the elaboration of gentry economic controls, neo-Confucian orthodoxy, the literati ethos, and Chinese accommodations to the problems of foreign encroachment and foreign rule.

**HST 573 19th Century China (4)**

Imperial China during the half-century preceding the Opium War of 1839-42, China's growing crisis in the context of the massive Western impact during the second half of the 19th century, and the collapse of the traditional Chinese order in the first two decades of the 20th century.

**HST 574 Nationalism and Communism in China (4)**

The patterns of revolutionary nationalism in China from 1919 to the present, focusing on the Nationalist (Kuomintang) and Communist periods.

**HST 582 The Muslim Tradition in India and Pakistan (4)**

The establishment of Muslim power and culture in South Asia, its accommodation with Hindu culture, the Mughal empire and its decline, and the rise of modern Islamic nationalism, leading to the creation of Pakistan and Bangladesh. Offered in alternate years.

**HST 583 British Imperialism and Hindu Nationalism in India, 1740-1947 (4)**

Society and politics in 18th century India, changing patterns of imperial rule, the Hindu Renaissance, and nationalist politics, religious, liberal, and Marxist. Offered every winter.

**HST 586 African Socialism (4)**

The ideologies, tactics, and techniques of various recent socialist revolutions in Africa and the relation of African socialist aims to traditional and colonial Africa as well as to other forms of socialist thought and practice.

**HST 587 Northwestern Africa (The Maghrib) Since 1830 (4)**

The Maghrib from the time of the French occupation to the present.

**HST 588 20th Century Africa (4)**

African resistance and nationalist movements from 1875 to the present and the development of Pan-Africanism and Négritude in colonial and contemporary times.

**HST 591 Directed Readings for Graduate Students (4)**

Directed individual research on specific topics.

**HST 592 Summer Institute in History (4)**

A four-week course offering intensive study of selected topics. May be repeated once for credit, with the approval of the departmental graduate coordinator.

**HST 600 Comprehensive Examination (2)**

A written comprehensive examination is taken at the conclusion of the student's course of study. The student registers for HST 600 in the term he/she wishes to take the exam; usually, the term in which the degree award is anticipated. At the beginning of the semester the adviser should be informed of the student's plan

to take the exam. An examining committee, usually consisting of the student's adviser and two other instructors from the student's major field who are familiar with the candidate's work, will counsel the student for the examination. This counseling may include a list of books with which the student will be expected to develop familiarity during the session. Toward the end of the term the student will take the exam and it will be graded by the three-member committee. Note that the comprehensive exam is limited to the student's major field and is individually tailored to the experience of each candidate. In case of failure the comprehensive examination can be retaken in any succeeding term.  
Prerequisite: Permission of student's adviser.

**Graduate Colloquia**

Intensive research and discussion on a significant period or broad topic in history. Students will present the results of study for group discussion. May be repeated for credit.

**HST 601 Colloquium in American History (4)****HST 602 Colloquium in Latin American History (4)****HST 603 Colloquium in European History (4)****HST 604 Colloquium in African History (4)****HST 605 Colloquium in East Asian History (4)****HST 606 Colloquium in South Asian History (4)****Research Seminars**

Research seminars are designed to develop the students' skills in historical investigation and exposition. Usually they involve writing a major paper on a carefully-selected topic. May be repeated for credit.

Prerequisite: Permission of supervising instructor.

**HST 691 Seminar in American History (4)****HST 692 Seminar in Latin American History (4)****HST 693 Seminar in European History (4)****HST 694 Seminar in African History (4)****HST 695 Seminar in East Asian History (4)****HST 696 Seminar in South Asian History (4)**



## Department of Mathematical Sciences

**Chairperson:**

Louis R. Bragg

**Professors:**

Harvey J. Arnold, Ph.D., Princeton University  
 Louis R. Bragg, Ph.D., University of Wisconsin  
 John W. Dettman, Ph.D., Carnegie Institute of Technology  
 Ronald A. DeVore, Ph.D., Ohio State University  
 George F. Feeman, Ph.D., Lehigh University  
 William C. Hoffman, Ph.D., University of California (Los Angeles)  
 G. Philip Johnson, Ph.D., University of Minnesota  
 James H. McKay, Ph.D., University of Washington  
 Harvey A. Smith, Ph.D., University of Pennsylvania

**Associate Professors:**

J. Curtis Chipman, Ph.D., Dartmouth College  
 Jon Froemke, Ph.D., University of California (Berkeley)  
 Donald G. Malm, Ph.D., Brown University  
 Louis J. Nachman, Ph.D., Ohio State University  
 Irwin Schochetman, Ph.D., University of Maryland  
 Yel-Chiang Wu, Ph.D., Cornell University

**Assistant Professors:**

Charles Ching-an Cheng, Ph.D., Rutgers University  
 Richard E. Ewing, Ph.D., University of Texas (Austin)  
 Jerrold W. Grossman, Ph.D., Massachusetts Institute of Technology  
 Richard K. Molnar, Ph.D., University of North Carolina (Chapel Hill)  
 Richard L. Rubin, Ph.D., Washington University (St. Louis)  
 Bradley L. Sands, Ph.D., Oregon State University  
 Robert C. Sharpley, Ph.D., University of Texas (Austin)  
 Sze-kai Tsui, Ph.D., University of Pennsylvania

The Department of Mathematical Sciences offers programs leading to the degrees of Master of Arts in mathematics and Master of Arts in Teaching in mathematics. The latter program is jointly sponsored by the College of Arts and Sciences and the School of Education. It has two tracks: one to serve the needs of teachers in secondary schools and community colleges, and the other for teachers in elementary schools.

**THE MASTER OF ARTS IN MATHEMATICS**

The curriculum leading to the degree Master of Arts in mathematics can be used as the first phase of a doctoral program. However, suitable options are provided for students whose primary interests lie in careers in education, government, industry, or the business world after they complete their master's degree programs.

The student's course of graduate study is designed on an individual basis according to his/her preparation and interests. A student with the usual undergraduate preparation and making normal progress can, while holding a teaching assistantship, satisfy all the requirements for the degree of Master of Arts in four semesters by taking an average of nine credits per semester. Because of the relatively small enrollment in the mathematics graduate program, students can expect to receive a greater than usual amount of individual attention and encouragement from the faculty.

**Admission to the Program**

Applicants for the program should have strong undergraduate backgrounds in mathematics. It is desirable that their preparation include courses in elementary real variable theory or advanced calculus, linear algebra, and abstract algebra. Students who are deficient in these areas will be required to take appropriate courses early in their graduate programs.

**Requirements for the Degree**

A total of 36 credits and satisfactory completion of a comprehensive examination are required for the Master of Arts degree. Of the 36 credits, a maximum of 12 credits may be in 400-level courses; the remainder must be in 500-level courses. Each student's program is supervised by an advising committee of two faculty members. The committee is charged with passing on the acceptability of the student's program and with setting and administering the comprehensive examination after the student has completed 20 credits in the master's degree program.

**Course Offerings**

Courses are listed and grouped according to the following designations

MTH—mathematics

APM—applied mathematics (applicable analysis and mathematical modeling)

MOR—operations research

STA—statistics

**MTH 405 Special Topics (2 or 4)**

Advanced study of some topic in mathematics. May be taken more than once.

**MTH 415 Foundations of Mathematics (4)**

Examination of the logical foundations of mathematics including analysis of the axiomatic method, basic set theory, cardinal and ordinal numbers, and the axiom of choice.

**MTH 453 Multivariable Analysis (4)**

Topology of  $R_n$ , curves in  $R_n$ , derivatives and differentials, Lagrange multipliers, Taylor's formula, inverse and implicit function theorems, manifolds, multiple integrals, multilinear forms, differential forms, closed and exact forms.

**MTH 561-562 Topology (4 each)**

Study of topological spaces and continuous functions. Separation and countability properties, connectedness, compactness, and local properties will be covered.

**MTH 465 Differential Geometry (4)**

Theory of curves and surfaces in Euclidean space with an introduction to the theory of matrix Lie groups.

**MTH 475-476 Abstract Algebra (4 each)**

Algebra of sets and mappings, groups and homomorphisms, rings and ideals, factorization and divisibility, vector spaces, linear transformations, fields and field extensions.

**MTH 505 Special Topics (2 or 4)**

Study of some topics in mathematics. May be taken more than once.

**MTH 551-552 Real Analysis (4 each)**

The general theory of measure and integration, including development of the Lebesgue integral, and elements of functional analysis with applications to probability theory.

**MTH 555-556 Complex Analysis (4 each)**

Analytic functions, Cauchy's theorem, representation theorems, analytic continuation, conformal mapping, and Riemann surfaces.

**MTH 561-562 Topology (4 each)**

MTH 561 is an introduction to algebraic topology. Topics include elementary homotopy and homology theory. MTH 562 will cover various topics in algebraic and general topology at the discretion of the instructor.

**MTH 565 Topological Algebraic Structures (4)**

A brief survey of topological groups, vector spaces, and algebras followed by detailed study of one or more special cases, such as locally compact groups, Lie groups, Lie algebras, Banach spaces, or Banach algebras.

**MTH 566 Tensor Analysis on Manifolds (4)**

Topology of differentiable manifolds, tensor algebra, vector analysis on manifolds, integration on manifolds, Riemannian manifolds, symplectic manifolds, and applications in science.

**MTH 571-572 Algebra (4 each)**

Group theory, rings and modules, linear and multilinear algebra, and field extensions. Emphasis is placed, where possible, on categorical properties and functorial relationships.

**MTH 590 Directed Reading and Research (2,4,6,8)**

**APM 431 Elements of Partial Differential Equations (4)**

Derivation of partial differential equations of physics, characteristic surfaces and classification, Fourier methods, Laplace transforms, orthogonal functions, initial and boundary value problems, the Riemann method, and numerical methods.

**APM 435 Introduction to Mathematical Science (4)**

The mathematical structures of scientific phenomena, differential equations and dynamical systems, partial differential equations of the physical and life sciences, and introduction to mathematical modeling.

**APM 455 Intermediate Ordinary Differential Equations (4)**

Review of elementary techniques, existence and uniqueness theory, series methods, systems of equations, oscillation and comparison theorems, Sturm-Liouville Theory, stability theory, and applications.

**APM 463 Graph Theory and Combinatorial Mathematics (4)**

An introductory course in combinatorics. Topics include techniques of enumeration, fundamental concepts of graph theory, and applications to transport networks, matching theory, and block design.

**APM 541-542 Advanced Mathematical Science (4 each)**

Structure of dynamical systems; application to mechanics, wave motion, diffusion, and statistical mechanics; dynamical systems and control theory in economics and the life sciences; fundamental mathematical structures of the physical, life, and social sciences, and the role of probability and statistical inference.

**APM 553 Advanced Ordinary Differential Equations (4)**

Existence and uniqueness, dependence on initial point, asymptotic behavior of solutions, periodic solutions, self-adjoint problems, stability theory, Liapunov functions, Poincaré-Bendixson theory, and topological methods.

**APM 554 Advanced Partial Differential Equations (4)**

Characteristic surfaces and classification; existence, uniqueness, and stability; fundamental solutions and Green's functions; variational principles; spectral theory, distributions, and generalized solutions.

**MOR 442-443 Mathematical Methods of Operations Research (4 each)**

Decision problems in operations research, classical optimization techniques, mathematical programming, queueing theory, game theory, graphs, and networks.

**MOR 543 Advanced Operations Research I (4)**

Topics from convexity and optimization: mathematical programming, dynamic programming and the calculus of variations, graph theory and networks, game theory, and queueing theory.

**STA 425 Elements of Stochastic Processes (4)**

Random walk models, Markov chains and processes, birth and death processes, queueing processes, diffusion processes, and non-Markov processes.

**STA 427-428 Introduction to Mathematical Statistics (4)**

The distribution of random variables, conditional probability and stochastic independence, special distributions, functions of random variables, interval estimation, sufficient statistics and completeness, point estimation, tests of hypothesis, and analysis of variance.

**STA 525-526 Mathematical Statistics (4)**

Combinatorial analysis, random variables, central limit theorem, recurrent events, distribution theory, sampling, statistical estimation, hypothesis testing, regression analysis, analysis of variance, and applications.

**THE MASTER OF ARTS IN TEACHING IN  
MATHEMATICS—SECONDARY EDUCATION OPTION**

The program leading to the degree of Master of Arts in Teaching in mathematics is sponsored jointly by the College of Arts and Sciences and the School of Education. It is intended to serve the needs of teachers in secondary schools or community colleges in southeastern Michigan and is designed to accommodate those who are not only primarily interested in the teaching of mathematics but also wish to complete a program with substantial mathematical content. The program will prepare participants for leadership positions in teaching advanced mathematics courses and determining directions of curriculum development. The courses are designed to provide the student with not only a sound knowledge of modern mathematics but also opportunity to learn about the applications of mathematics, the construction of mathematical models, and the art of problem-solving. An important part of the program is an in-depth study of problems of the secondary mathematics curriculum.

**Requirements for the Degree**

A background of at least 30 credits in undergraduate mathematics is normally required of the applicants. A special one-semester transitional course will be offered occasionally for those who are interested in the program but have not studied mathematics recently. To complete requirements for the M.A.T. degree, the student will need 30 credits of graduate work. In general, he/she will take seven four-credit courses arranged by the Mathematics Department, one four-credit course in education and one in psychology. Among the courses arranged by the Mathematics Department there must be four credits in independent read-



ing, either in mathematics or in an interdisciplinary area involving mathematics. The candidate must prepare a written report based on his/her reading.

In addition to the four credits in independent reading, and the accompanying report, each candidate must take a four-credit course in analysis or topology and a four-credit course in abstract algebra. At least one of these courses will be offered each fall so that candidates can complete requirements for the degree in approximately two and one-half years, if summer courses are taken. The other four mathematics courses may be chosen from Linear Mathematics, Probability and Statistics, Geometry, Number Theory, Computers and Secondary Mathematics, Numerical Analysis, Foundations of Mathematics, and the Secondary Mathematics Curriculum.

As soon as possible after the completion of the six mathematics courses arranged by the department, and before the independent reading assignment, candidates for the degree of Master of Arts in Teaching must take a special examination. The examination consists of approximately 10 problems, selected by the adviser, varied in context and difficulty. The candidate will have one month to work on these problems, after which he/she will give a verbal presentation on the solutions of some proper subset of the problems selected by the adviser.

Maximum flexibility is allowed in the choice of the required courses in education and psychology. Normally a candidate will choose the education course from among ED 601, 602, 603, 604, or 605. However, a course in the teaching of reading (ED 538) would be appropriate. In general, a course in developmental psychology (PSY 510), tests and measurements (PSY 512), or behavior and learning (PSY 540) is selected to fulfill the psychology requirement.

### Course Offerings

(One credit hour is equal to one semester hour.)

Courses are listed according to the following designations

MTH—mathematics

MOR—operations research

MTS—mathematics for teachers (secondary education)

#### MTH 405 Special Topics (2 or 4)

Advanced study of some topics in mathematics. May be taken more than once.

#### MTH 415 Foundations of Mathematics (4)

Examination of the logical foundations of mathematics including analysis of the axiomatic method, basic set theory, cardinal and ordinal numbers, and the axiom of choice.

#### MTH 416 Concepts of Geometry (4)

Development of geometry from an algebraic and metric viewpoint, concentrating on Euclidean geometry. Especially appropriate for Master of Arts in Teaching candidates.

#### MTH 461 General Topology (4)

A study of topological spaces and continuous functions. Separation and countability properties, connectedness, compactness, and local properties will be covered.

#### MTH 505 Special Topics (2 or 4)

Study of some topics in mathematics. May be taken more than once.

#### MTH 590 Directed Reading and Research (2,4,6, or 8)

#### MOR 342 Introduction to Operations Research (4)

Topics will be drawn from areas such as inventory control, dynamic programming, Markov decision problems, waiting-line phenomena, transport networks

and assignment problems, game theory, Boolean analysis, and scheduling problems.

#### MTS 510 The Secondary Mathematics Curriculum (4)

A seminar course that will examine problems of the secondary mathematics curriculum. Topics will be determined by the instructor and the students. Emphasis will be on the role and responsibility of the secondary teacher in developing curriculum.

#### MTS 514 Concepts in Abstract Algebra (4)

Designed for Master of Arts in Teaching candidates in secondary education. Includes topics from groups, rings, fields, matrices, linear transformations, and vector spaces. Offered every other year in alternation with MTS 517.

#### MTS 516 Computers and Secondary Mathematics (4)

An introduction to the computer with emphasis on use of the computer in secondary mathematics courses, along with selected mathematics laboratory activities.

#### MTS 517 Concepts in Analysis (4)

Designed for Master of Arts in Teaching candidates in secondary education. Includes a study of real and complex numbers, functions, limits, differentiation, integration, and infinite series, with emphasis on careful proofs of theorems. Offered every other year in alternation with MTS 514.

#### MTS 519 Linear Mathematics and Mathematical Models (4)

Includes topics from linear algebra, game theory, and linear programming with applications to the social sciences. Especially appropriate for M.A.T. candidates in secondary education.

#### MTS 614 History of Mathematics (4)

Mathematics from ancient to modern times: its growth, development, and place in man's culture. Designed for M.A.T. students in secondary education.

#### MTS 619 Foundations of Mathematics (4)

Examination of the logical foundations of mathematics including analysis of the axiomatic method, basic set theory, cardinal and ordinal numbers, and the axiom of choice.

#### MTS 620 Concepts of Geometry (4)

Development of geometry from an algebraic and metric viewpoint, concentrating on Euclidean geometry.

#### MTS 627 Elements of Stochastic Processes (4)

Random walk models, Markov Chains and processes, birth and death processes, multi-dimensional processes, queueing processes, diffusion processes, and non-Markovian processes.

#### MTS 635-636 Introduction to Numerical Analysis (4 each)

Introduction to mathematical methods appropriate to computer work. Topics include interpolation, approximation, quadrature, solution of differential equations, and matrix computation.

#### MTS 637-638 Statistical Methods and Experimental Design (4 each)

Hypothesis testing and estimation for location and spread for one- and two-sample problems. One- and two-way analysis of variance, multiple comparison techniques, analysis, non-parametric and sequential techniques, randomized blocks, Latin squares, balanced incomplete blocks, factorial and fractional fac-

torial designs, screening experiments, surface fitting methodology, non-linear estimation, and introduction to time series analysis.

**MTS 663 Graph Theory and Combinatorial Mathematics (4)**

Introduction to combinatorics. Topics include techniques of enumeration, fundamental concepts of graph theory, and applications to transport networks, matching theory, and block design.

**MTS 672 Number Theory (4)**

Number-theoretic functions, diophantine equations, congruences, and quadratic residues, including some experimental work aided by the computer.

**Related Courses**

**ED 538 Reading Development in Junior and Senior High Schools (4)**

See page 93.

**ED 601 History in Education (4)**

See page 98.

**ED 602 Philosophy in Education (4)**

See page 98.

**ED 603 Cross-Cultural Studies in Education (4)**

See page 98.

**ED 604 Sociology in Education (4)**

See page 98.

**ED 605 Politics in Education (4)**

See page 99.

**PSY 510 Developmental Psychology (4)**

See page 65.

**PSY 512 Test and Measurements (4)**

See page 65.

**PSY 540 Behavior Theory and Learning (4)**

See page 65.

**THE MASTER OF ARTS IN  
TEACHING IN MATHEMATICS—  
ELEMENTARY EDUCATION OPTION**

The program leading to the Master of Arts in Teaching in mathematics is sponsored jointly by the College of Arts and Sciences and the School of Education. It is intended to serve the needs of teachers in elementary schools in southeastern Michigan. It will prepare people for leadership positions in teaching elementary school mathematics and determining directions of curriculum development. An important part of the program is an in-depth study of problems of the elementary mathematics curriculum.

**Requirements for the Degree**

The requirement for the degree is 36 credits of graduate work. In general, the candidate will take six four-credit courses arranged by the Department of Mathematical Sciences, and three four-credit courses in education and psychology to be chosen from the following course listings. Among the courses arranged by the department there must be included four credits in independent study (MTH 590),

either in mathematics or an interdisciplinary area involving mathematics, to be concluded with a written report. Each candidate will make an oral presentation of his/her report before a joint committee of mathematics and education faculty, and the presentation and defense of the project are integral parts of the independent study. This committee will be formed when the candidate begins his/her independent study.

Each candidate's program will be supervised by a committee of two advisers, who will assist in formulating a meaningful plan of action for the candidate and periodically review progress toward the degree.

**Course Offerings**

Courses are listed according to the following designation:

MTH—mathematics

MTE—mathematics for teachers (elementary education)

The mathematics courses will normally be taken from the following list. The program is based on the assumption that students have had the equivalent of MTE 511 and MTE 512 (Mathematics for the Elementary School Teacher I and II) as prerequisites. Students without this background must take these courses or their equivalents before entering the degree program. Courses at the 500-level are open to undergraduates while 600-level numbers are used for courses restricted to graduate students only.

**MTH 505 Special Topics (2 or 4)**

Study of some topic in mathematics. May be taken more than once.

**MTH 590 Directed Reading and Research (2, 4, 6, or 8)**

**MTE 511 Mathematics for the Elementary School Teacher I (4)**

Study of the structure of the real number system, elementary number theory, and introduction to abstract mathematical structures.

**MTE 512 Mathematics for the Elementary School Teacher II (4)**

Study of set theory, logic, probability theory, statistics, and topics in geometry.

**MTE 610 Elementary School Mathematics and the Computer (4)**

Selected topics in mathematics useful to elementary school teachers in line with current curriculum developments. Computer-assisted programs will be emphasized. Designed for Master of Arts in Teaching candidates in elementary education.

**MTE 614 History of Mathematics (4)**

Mathematics from ancient to modern times, its growth, development, and place in man's culture.

**MTE 615 Problem Solving and Heuristics (4)**

Methods of approaching and solving problems in mathematics, with problems drawn from a variety of disciplines.

**MTE 617 Vector Geometry (4)**

Geometry of the plane and space studied by means of vectorial ideas, independence of a set of vectors, linear transformations, mathematics laboratory project.

**MTE 618 Theory of Equations (4)**

Solution of equations in one unknown, Descartes's rule of signs, intermediate value theorem, Euclidean algorithm for polynomials, basic numerical methods for finding roots using the computer, systems of equations.



**MTE 621-622 Mathematics for the Social Sciences (4 each)**

Elementary set theory, number systems, functions, linear systems, linear programming, and the basic concepts, theorems, and applications of calculus. Mathematics laboratory project.

**MTE 623 Mathematical Models in the Social Sciences (4)**

Formulation in mathematical terms of phenomena from the social sciences, solution of the resulting mathematical problems, and the interpretation of results.

**MTE 625 Probability and Statistics (4)**

Sample spaces, combinatorics, random variables, Chebyshev's inequality, Bernoulli trials, binomial and normal distributions, joint distributions, and introduction to statistics. Selected mathematics laboratory activities.

**MTE 628 The Elementary Mathematics Curriculum (4)**

This seminar will examine some problems of the elementary mathematics curriculum. Topics will be determined by the instructor and the students. Enrichment mathematics and materials of instruction.

The education and psychology courses will be chosen to suit the needs and interests of the candidate for the degree. The candidate will take a total of three courses from the following groups, including at least one course from each of group one and group two.

**Group 1**

(Psychology)  
PSY 510  
PSY 512  
PSY 513  
ED 562  
ED 501  
ED 591

**Group 2**

(Curriculum)  
ED 512  
ED 513  
ED 583  
ED 584

**Group 3**

(General)  
ED 500  
ED 571  
ED 589  
ED 580  
ED 503  
ED 585

Other education and psychology courses may be elected with permission of the adviser.

## Department of Physics

**Chairperson:**

Abraham R. Liboff

**Professors:**

Abraham R. Liboff, Ph.D., New York University  
John M. McKinley, Ph.D., University of Illinois  
Ralph C. Mobley, Ph.D., University of Wisconsin  
Robert M. Williamson, Ph.D., University of Wisconsin

**Associate Professors:**

Norman Tepley, Ph.D., Massachusetts Institute of Technology  
Paul A. Tipler, Ph.D., University of Illinois  
W. D. Wallace, Ph.D., Wayne State University

**Assistant Professors:**

Paul M. Doherty, Ph.D., Massachusetts Institute of Technology  
Jeffrey V. Mallow, Ph.D., Northwestern University

**Adjunct Professor:**

Gifford G. Scott, Sc. D. (Honorary)

**Adjunct Associate Professor:**

Norman H. Horwitz, Ph.D., Wayne State University

### THE MASTER OF SCIENCE IN PHYSICS

The program leading to the degree of Master of Science in physics consists of courses, research, seminar participation, and a final research report or critical essay. A formal thesis is not required. Students receiving the degree will be prepared to work toward the degree of Doctor of Philosophy in physics, to teach at the junior college level, or to work in industry.

The average candidate entering in the fall semester will usually require two academic years to complete the degree. A very well-prepared candidate should complete the required courses and research credits in three semesters. Each student's program will be adjusted to his/her interests and background. The only fixed requirements are PHY 673, research, and a final written report or critical essay.

### Admission to Course

An applicant for admission to the Master of Science program should have a bachelor's degree from an accredited institution or proof of equivalent achievement. The Graduate Record Examination may be accepted in lieu of a formal degree. The applicant's background should be strong in physics and mathematics.

### Requirement for the Degree

The basic degree requirement is successful completion of 36 credits of graduate courses distributed as follows: four credits of PHY 673, Quantum Mechanics; 24 credits of additional 400-, 500-, or 600-level courses approved by the department; eight credits of research, including a final written report or critical essay.

### RESEARCH FIELDS AND FACILITIES

The faculty of the Department of Physics is currently involved in research in a number of areas. The biophysics laboratory has been studying electrically mediated growth mechanisms in living systems, and protein aggregation in lenses by means of laser light scattering. The experimental nuclear physics group has been studying environmental radiation, particle scattering, gamma ray spectroscopy, and nuclear instrumentation development. The solid state and molecular

physics group has been studying electronic and magnetic properties of metals and gyromagnetic properties of solids and gases. The theoretical group has been concerned with nuclear structure studies, as well as investigation of hyperfine interactions, isomer shifts in ordinary and muonic atoms.

Research facilities include a two megawatt pulsed CO<sub>2</sub> laser for biophysics research; a megawatt pulsed tunable dye laser, probably the world's largest standard air ionization chamber for radiation monitoring; a 450 Kv Cockroft-Walton nuclear particle accelerator; a 1024-channel pulse-height analyzer; a time of flight analyzer and associated fast-pulse electronics for low energy experimental nuclear physics; a visible and ultraviolet grating monochromator; a transient pulse analyzer; a high field nine-inch Varian magnet; liquid helium cryostats; ultrasonic gear covering the frequency range from 100 KHz to GHz for measurements of superconductivity; electronic structures of metals and phase transitions in solids, liquids, and certain biological materials, and the Kettering Magnetism Laboratory, unique in the United States, which provides a non-magnetic environment for use in gyromagnetic studies of solids (Einstein de Haas effect) and in gases (Scott effect) or other research requiring a very stable magnetic and/or mechanical environment. An eight-inch Newtonian or Cassegrain reflecting telescope is housed in a separate observatory. In addition, an environmental radiation laboratory is operated. Supporting facilities include an electronics shop, a student shop, and a well-equipped machine shop staffed by experienced instrument-makers. Computer facilities include a Burroughs B5500 time-sharing computer and a Nova II minicomputer.

### Course Offerings

Selected 400-level courses may carry graduate credit.

#### PHY 417 Advanced Laboratory (2)

Methods of experimental physics. Experiments and projects in all areas of classical and modern physics, with emphasis on research techniques and detailed analysis of experimental data.

Prerequisite: PHY 317-318, 341 and 347-348, or equivalent. Prerequisite or co-requisite: PHY 331 and 361, and 371, or equivalent.

#### PHY 418 Modern Optics Laboratory (2)

Among the experiments for students are the Raman Effect, atomic and molecular fluorescence, measurements of protein molecular weight, macromolecular diffusion, laser Doppler velocimetry, laser radar, angular distributions of scattered light from various scatterers, radiative lifetimes, Brillouin scattering, surface acoustic waves, and astrophysical observations on binary stars and variable sources. Available devices include a pulsed tunable dye laser, a monochromator-spectrometer, a rapid-response low noise photomultiplier, a high-resolution Fabry-Perot interferometer, a data storage and retrieval system, and a fast digital photocounting autocorrelator.

Prerequisite: PHY 371.

#### PHY 421 Thermodynamics (4)

The zeroth, first, and second laws of thermodynamics with applications to pure substances. Introduction to the kinetic theory of gases and to statistical mechanics.

Prerequisite: PHY 361 and APM 255.

#### PHY 470 Relativity (4)

Special relativity in mechanics and electromagnetism. Introduction to general relativity and gravitation.

Prerequisite: PHY 361, 371, or 381.

#### PHY 472 Introduction to Quantum Mechanics (4)

Principles of nonrelativistic quantum mechanics, Schrodinger wave equation, expectation values of energy, position, momentum and angular-momentum opera-

tors, spin, perturbation theory, and identical particles, with applications to atomic systems.

Prerequisite: PHY 361 and APM 255, or equivalent.

#### PHY 482 Electricity and Magnetism II (4)

Multipole fields, solutions of Laplace and Poisson equations, electromagnetic waves in insulators and conductors, and the derivation of the laws of optics from Maxwell's equations.

Prerequisite: PHY 381 and APM 255, or equivalent.

### Graduate Courses

#### PHY 522 Statistical Thermodynamics (4)

Review of classical thermodynamics. Kinetic theory of gases, transport phenomena, classical and quantum statistics, partition functions and thermodynamic properties, ensembles, and fluctuations.

#### PHY 542 Advanced Electronics (4)

Selected topics in the analysis and design of electronic circuits.

Prerequisite: PHY 341 or equivalent.

#### PHY 548 Advanced Electronics Laboratory (2)

Prerequisite: PHY 348 or equivalent.

#### PHY 552 Theoretical Physics (4)

Applications in advanced physics in partial differential equations, eigenvalue problems, special functions, spherical harmonics, Green's functions, variational methods, linear vector spaces, and tensors.

Prerequisite: PHY 361, PHY 371, PHY 381.

#### PHY 562 Mechanics (4)

Methods of Lagrange and Hamilton, tensor algebra, rigid bodies in three dimensions, continuous media, and coupled systems.

Prerequisite: PHY 361 and MTH 255, or equivalent.

#### PHY 565 Physics of Continuous Media (4)

An introduction to elasticity and fluid mechanics, including tensors, stress, strain, flow, conservation principles, constitutive equations, elasticity, and fluid mechanics.

Prerequisite: PHY 361.

#### PHY 573 Nuclear Physics (4)

The properties of ground and excited states of nuclei, nuclear reactions, fundamental particles, nuclear forces; interaction of particles and protons with matter, and nuclear particle detectors.

Prerequisite: PHY 472 or equivalent.

#### PHY 574 Introduction to Solid State Physics (4)

An introduction to the thermal, electrical, and magnetic properties of solids, which includes periodic structure, lattice dynamics, electron interactions and behavior, transport properties, Fermi surface, optical behavior, and superconductivity. Emphasis on current experimental techniques.

Prerequisite: PHY 472 and 562, or equivalent.

#### PHY 600 Seminar (1)

#### PHY 673 Quantum Mechanics (4)

Review of Schrödinger wave mechanics, formal algebraic approach to quantum mechanics approximation methods, and elastic scattering.

Prerequisite: PHY 472 and 562, or equivalent.



search Design, and Abnormal Psychology. Theories of Personality is also recommended. Applications for admission will be accepted up to March 1 and decisions made on March 15 for admission the following September, which is the only time new students are admitted. The number of students admitted to this program is limited.

In the first year of the two-year clinical program, students take two courses each semester. These courses are generally offered in the late afternoon. The second year the student must have time for the practicums, which require half time during the traditional work week. Nine courses (36 credits) are required. All students must take the Research Methods and Project (PSY 692). In addition, the curriculum must include Advanced Abnormal (PSY 624), Individual Testing (PSY 620), Projective Test (PSY 621), Clinical Intervention (PSY 622), Child Clinical Psychology (PSY 623), and Practicum I and II (PSY 625). Students in the clinical program have the option of completing a research project (PSY 690) or of taking an elective course, such as Child Clinical Psychology: Intervention and Treatment (PSY 626). Students who plan to go on for a Ph.D. are urged to complete the research project.

Practicum placements are arranged and must be approved by the clinical faculty. Ordinarily, one semester (20 hours per week) is devoted to diagnostic workups and the second semester to therapy under intensive supervision. No practicum placements are made during the summer.

Two grades below 3.0, an overall GPA below 3.00, or one grade below 2.5 renders a student subject to dismissal from the degree program. In addition, each clinical student must receive at least a 3.0 in each of the testing courses and satisfactorily complete both practicums in order to graduate. The student is also required to satisfy acceptable professional ethical standards.

### Admission to and Requirements for Developmental Psychology

The developmental psychology program is designed to familiarize students with the theoretical and applied issues of life-span development as manifested in specified age groupings: childhood, adolescence, maturity, old age. Emphasis is on training the student in the application of developmental psychology in a wide variety of community settings.

An applicant for admission should have a bachelor's degree from an accredited institution or proof of equivalent achievement. An undergraduate major in psychology is strongly recommended, but it is not required. All applicants are expected, however, to be acquainted with the field to the extent of having had the following courses or their equivalents: Foundations of Introductory Psychology, Statistics and Research Design, Experimental Psychology, and at least one course in the developmental series, i.e., Child, Adolescence, Adulthood, and Aging. Applications for admission are reviewed and decisions rendered in March, May, and July each year for admission the following September, which is the only time that new students are admitted.

Students are offered two courses a semester (classes meet in the evening), requiring at least two academic years for acquiring a degree. Nine courses (36 credits) are required. The courses, in sequence, consist of: first year, first semester — Infancy and Childhood (PSY 672), Research Methods and Projects (PSY 692); first year, second semester — Assessment and Decision Making Procedures in Developmental Psychology (PSY 671), Adolescence and Youth (PSY 673); second year, first semester — Adulthood and Aging (PSY 674) and an elective (to be approved by faculty adviser); second year, second semester—Applied Developmental (PSY 670), Practicum in Applied Developmental (PSY 675), and the thesis, Research Project (PSY 690).

A grade point average of 3.00 is required for acceptable academic standing. Two

grades below 3.0 or one grade below 2.5 render a student subject to dismissal from the degree program.

### Course Offerings

#### PSY 510 Developmental Psychology (4)

Description and evaluation of principles and theories of development from birth to maturity. Maturation processes, learning, and emotional disturbances are considered.

Prerequisite: Permission of instructor or acceptance into the Master of Arts in Teaching program.

#### PSY 512 Test and Measurements (4)

Theories of measurement and evaluation. Construction and examination of tests and ability, achievement, interests, and special aptitudes. Objective tests of personality.

Prerequisite: Permission of instructor or acceptance into the Master of Arts in Teaching program.

#### PSY 513 Psychopathology of Childhood (4)

A survey of the psychopathology of children and adolescents emphasizing dynamic and cognitive-perceptual-motor variables.

Prerequisite: PSY 510 or 512 or acceptance into the Master of Arts in Teaching program in special education, or acceptance into the graduate program in psychology, or undergraduate major in psychology, or permission of instructor.

#### PSY 520 Advanced Psychopathology (4)

Theories of psychopathology, research literature, and in-depth review of approaches to classification and definition of deviant behavior in adults and children.

Prerequisite: PSY 220 and PSY 320.

#### PSY 540 Behavior Theory and Learning (4)

Conditioning, reinforcement, punishment, drives, and transfer of training will be studied in relation to such complex human processes as education, psychotherapy, and the development of motives.

Prerequisite: Permission of instructor or acceptance into the graduate program.

#### PSY 541 Advanced General Psychology (4)

A survey of the current frontiers of knowledge and new methodology in the whole range of psychology. Intended for senior majors and graduate students. Normally offered in the fall semester.

Prerequisite: Permission of instructor.

#### PSY 551 Advanced Statistics (4)

Following a review of descriptive and simple inferential statistics, major emphasis will be given to analysis of variance procedures.

Prerequisite: An undergraduate course in statistics.

#### PSY 570 Social and Personality Development (4)

Theory, research, and applied activity focusing on familial and extra-familial socialization, parent-child relations, peer influences, and impact of social change on personality. Field experiences.

Prerequisite: Acceptance into the graduate program in developmental psychology, or permission of instructor.

#### PSY 571 Perceptual and Cognitive Development (4)

Developmental nature of perception, learning, reasoning, concept formation, cognitive style, problem-solving behavior, and language. Field experiences.

Prerequisite: Admission to graduate program in developmental psychology, or permission of instructor.

### **PSY 572 Psychology of Adolescence and Aging (4)**

Examination of significant structural, functional, and behavioral changes during adolescence and old age. This material will be integrated with field experiences in relevant applied settings.

Prerequisite: Admission to graduate program in psychology or permission of instructor.

### **PSY 575 Theories of Development (4)**

Issues and theories of the developmental process from birth to old age. Approaches of such theorists as Lewin, Freud, Piaget, Erikson, and leading exponents of social-learning theory examined.

Prerequisite: Admission to graduate program in developmental psychology, or permission of instructor.

### **PSY 576 Socialization in the Family (4)**

Some of the areas of research and theory on socialization process. Areas of focus: attachment and separation, conscience development, sex-role identity, ego-identity, etc. Role of principal agents: e.g., family, peers, school, etc.

Prerequisite: PSY 271, Child Development.

### **PSY 590, 591, 592, 593, 594, 595 Seminar (4 each)**

Seminars offered occasionally by faculty to explore special topics not listed among regular offerings, either on own initiative or request of a group of students.

Prerequisite: Permission of instructor.

### **PSY 596 Seminar (1, 2, 3, or 4)**

Offered occasionally by faculty wishing to explore special topics not listed among regular offerings, either on own initiative or at the request of a group of students.

Prerequisite: Permission of instructor.

### **PSY 597, 598 Apprentice College Teaching (4 each)**

Supervised participation in teaching of undergraduate psychology courses. Discussion of teaching objectives and methods. Only one course may be offered to fulfill departmental requirements.

Prerequisite: Permission of instructor.

### **PSY 620 Individual Testing (4)**

Theory of intelligence testing. Administration and interpretation of Stanford-Binet and Wechsler tests.

Prerequisite: Admission to graduate program in clinical psychology.

### **PSY 621 Projective Tests (4)**

Theory, demonstration, and practical training in the use of projective techniques with special emphasis on Rorschach and the thematic apperception test.

Prerequisite: Admission to graduate program in clinical psychology.

### **PSY 622 Clinical Intervention (4)**

Presentation and discussion of various approaches of clinical intervention, with emphasis on major psychotherapeutic techniques.

Prerequisite: Admission to graduate program in clinical psychology.

### **PSY 623 Child Clinical Psychology: Normal and Abnormal Social-Personality Development (4)**

Examination of normal and abnormal social-personality development in children, with emphasis on causative factors and implications of clinical activity.

Prerequisite: Admission to graduate program in psychology.

### **PSY 624 Advanced Abnormal (4)**

Review of the major neurotic, psychotic, psychosomatic, and organic syndromes. Current issues and research in psychopathology.

Prerequisite: Admission to graduate program in clinical psychology.

### **PSY 625 Practicum I and II (8)**

Practical experience in areas of specialized training. Credit for the first semester will not be granted until the second semester has been successfully completed.

Prerequisite: Admission to graduate program in clinical psychology and permission of adviser.

### **PSY 626 Child Clinical Psychology: Technique of Assessment and Intervention (4)**

Examination of various techniques for assessing and modifying the behavior of children and families with problems.

Prerequisite: Admission to graduate program in clinical psychology and PSY 623.

### **PSY 670 Applied Developmental Psychology (4)**

Analysis of the role of the developmental psychologist specializing in primary prevention of psychological dysfunction; intervention to promote mental health in community, institutional, and social action settings; evaluation of programs.

Prerequisite: Admission to graduate program in developmental psychology.

### **PSY 671 Assessment and Decision-Making in Developmental Psychology (4)**

Examination of procedures assessing developmentally relevant characteristics of individuals, their relations to others, to groups (peers, family, etc.), and to setting (home, school, institution).

Prerequisite: PSY 692 or permission of instructor.

### **PSY 672 Infancy and Childhood (4)**

An in-depth consideration of research and theory on the development of the human organism from conception to puberty. The interaction between the various behavioral and social processes will be emphasized along with a consideration of abnormalities in development. Field work may be required.

Prerequisite: Admission to graduate program in developmental psychology.

### **PSY 673 Adolescence and Youth (4)**

Examination of significant age-related changes during adolescence and youth, with emphasis on the dynamic interactions between physical maturation, personality development, and social variables. Attention will also be given to the adjustment problems in making the transition from childhood to adulthood. Field experiences may be required.

Prerequisite: Admission to graduate program in developmental psychology.

### **PSY 674 Adulthood and Aging (4)**

An intensive study of developmental phenomena from adulthood to death. Topics will include marital and occupational adjustment as well as the relationship between personality and the aging process. Field experiences may be required.

Prerequisite: Admission to graduate program in developmental psychology.

### **PSY 675 Practicum in Developmental Psychology (4)**

Supervised experience in an agency relevant to the student's area of specialization. The student is expected to use skills developed during course work. In addition, the development of new skills through practicum experience is encouraged.

Prerequisite: Admission to graduate program in developmental psychology.



**PSY 690 Research Project (4)**

Individual research project related to the student's area of concentration.  
Prerequisite: Admission to graduate program in psychology and permission of adviser.

**PSY 691 Pro-Seminar (4)**

Overview of current major issues and research in developmental psychology.  
Prerequisite: Admission to graduate program in psychology.

**PSY 692 Research Methods and Projects (4)**

Study of issues in the formulation of research problems and hypotheses, design strategies, and techniques of data analysis. Students will be required to design individual research projects.  
Prerequisite: Admission to graduate program in psychology.

# SCHOOL OF ECONOMICS AND MANAGEMENT

**Dean:**

Norton C. Seeber

**Assistant to the Dean and Administrative****Director of the Graduate Program:**

Harvey A. Shapiro

**Professors:**

Karl D. Gregory, Ph.D., University of Michigan  
Robbin R. Hough, Ph.D., Massachusetts Institute of Technology  
Siddheshwar Mittra, Ph.D., University of Florida  
Norton C. Seeber, Ph.D., University of California (Berkeley)  
Andrew C. Stedry, Ph.D., Carnegie-Mellon University

**Adjunct Professor:**

Theodore O. Yntema, Ph.D., University of Chicago

**Associate Professors:**

Eleftherios N. Botsas, Ph.D., Wayne State University  
Daniel N. Braunstein, Ph.D., Purdue University  
David P. Doane, Ph.D., Purdue University  
John E. Tower, Ph.D., State University of New York at Buffalo  
Alan G. Weinstein, Ph.D., Wayne State University

**Assistant Professors:**

Nancy S. Barry, Ph.D., Northwestern University  
Alice C. Gorlin, Ph.D., University of Michigan  
Douglas D. Gregory, Ph.D., Northwestern University  
Yong-Ha Hyon, Ph.D., New York University  
Kenneth B. Moberg, Ph.D., Purdue University  
Gadis Nowell, M.B.A., Atlanta University  
Richard M. Reese, Ph.D., University of Texas at Austin  
Eugene F. Stone, Ph.D., University of California (Irvine)  
Socrates D. Tountas, Ph.D., Wayne State University

**Instructors:**

Diane B. Herker, M.B.A., University of Wisconsin  
Barnett R. Parker, M.S., University of Rochester

**Visiting Assistant Professors:**

Raymond M. Gydosh, Ph.D., Carnegie-Mellon University  
George Tzoannos, Ph.D., Wayne State University

## THE MASTER OF SCIENCE IN MANAGEMENT

The School of Economics and Management offers a program leading to the Master of Science in Management (M.S.M.). The program stresses common elements in management instead of narrow traditional specialties. Students are prepared for roles in the private, public, or not-for-profit sectors of the economy. While learning to integrate areas of economics, behavioral science, and quantitative methods with functional aspects of managerial problems, students are also prepared for entry-level jobs.

In the M.S.M. program, classes are kept small to encourage student-faculty interaction. Students may influence their education by electing voting representatives to the Graduate Policy Committee, which oversees the M.S.M. program and the admissions process. Students also operate the Visiting Managers Forum, a colloquium with business and professional people.

The program is based on the belief that management education should:

- Prepare students for careers where they will need to identify and solve problems, make decisions, and exert leadership in an organizational setting.
- Emphasize how to determine goals and how to use scarce resources to achieve those goals.
- Help students to understand and participate in their physical and social environments.
- Stress understanding of human behavior and organizational settings, since management is closely related to working with people.

### Admission to Program

Admissions are selective and depend on elements such as scholarship and the ability to communicate effectively. An applicant for graduate study must have the equivalent of a bachelor's degree from an institution of recognized standing. The program is designed primarily for students who may have had no previous management classes, and applications are welcome from students with bachelor's degrees in arts and sciences or in professional areas. Students are expected to possess certain basic skills in mathematics and social sciences or be able to acquire those skills early in their participation in the program. The applicants also must meet the university's general admission requirements for graduate studies for the year they apply. Applications are considered by the Graduate Admissions Committee of the School of Economics and Management, which reviews application forms, undergraduate records, letters of recommendation, and scores on the Graduate Management Admission Test (GMAT).

### Graduate Management Admission Test

Applicants must submit GMAT scores. Administered by the Educational Testing Service, the GMAT usually is given in November, January, March, and July. No applicant will be considered until this test score is received by the university's Office of Graduate Study, and no other test may be substituted. For information on examination dates and sites, write Educational Testing Service, Princeton, New Jersey 08540.

### Full-Time and Part-Time Status

All students, but especially those who wish to enroll as part-time students, should be aware of the very high demands placed upon them by graduate work in the M.S.M. program at Oakland University. Thus, prospective students should carefully consider the necessity of coordinating graduate study with commitments to work and/or family.

Students may elect to enter the M.S.M. core program on a full-time or part-time basis. Full-time students will take 12 or 13 credits (three courses) per semester in the fall and winter semester for two years. Part-time students will take eight or nine credits (two courses) per semester in the fall and winter semesters, plus one course in each of the spring and summer sessions, for two years. Thus, both full- and part-time students will find it possible to complete the program in two calendar years.

Because of the sequential, integrative nature of the program, students will not be permitted to take courses on a piecemeal, one-course-at-a-time basis. The "part-time" label should not mislead students about the workload or the commitment required for successful completion of the M.S.M. degree.

### FIVE-YEAR TRACK

The School of Economics and Management, in conjunction with other schools and departments of the university, offers a five-year track leading to the Master of Science in Management and a baccalaureate in a field other than management. Under this program, a student applies for acceptance during the winter

semester of the junior year to allow him/her to start the M.S.M. courses in his/her senior year. Any student who participates in this track must satisfy all requirements for an undergraduate degree and can do so in part by having the M.S.M. courses taken during the senior year counted as "free" undergraduate electives.

### Requirements for the Five-Year Track

- At the time of application for admission to the program, a student must have a GPA which is approximately in the top 15 percent of the class in the major field, as determined through consultation with the major department.
- Application will take place during the winter semester of the junior year and requires the approval of the student's major adviser.
- Upon acceptance into the program, a student is considered an undergraduate (paying undergraduate tuition) until the baccalaureate is earned and a graduate student (paying graduate tuition) thereafter.
- Formal admission to the M.S.M. program at the end of the senior year is presumed, subject to satisfactory performance in courses taken in the fourth year.
- Twenty-four credits applicable to the M.S.M. program should be taken in the senior year as "free" undergraduate electives. A student graduating at the end of the winter semester may complete this requirement by taking eight credits during the following spring or summer. The student must then take a minimum of 32 graduate credits.

Additional information and applications may be obtained from the Office of the Dean, School of Economics and Management, (313) 377-3282.

### Length of Program

The M.S.M. program consists of 50 to 58 credits depending on the student's experience, training, and interests. The basic program consists of 50 credits — 42 core credits required of every student and eight elective credits. Students also may be required or requested to take up to eight additional credits. The additional courses are MGT 500 and MGT 501. M.S.M. students also may choose to take one or both of the courses for a stronger background at the beginning of their programs.

### Time of Admission

Applications should be submitted before March 1 to ensure placement in the program in the fall semester. If MGT 500 and MGT 501 are required, those credits then may be completed in the spring and summer sessions. If no further credits are needed, applications submitted after March 1 may lead to fall admission. Otherwise, the applicant's entry date into the program will depend on availability of courses.

Candidates should take the GMAT exam at least one month before the application deadline, since it takes a month for the scores to be processed and sent to the university.

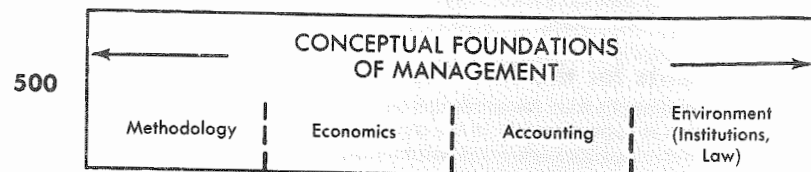
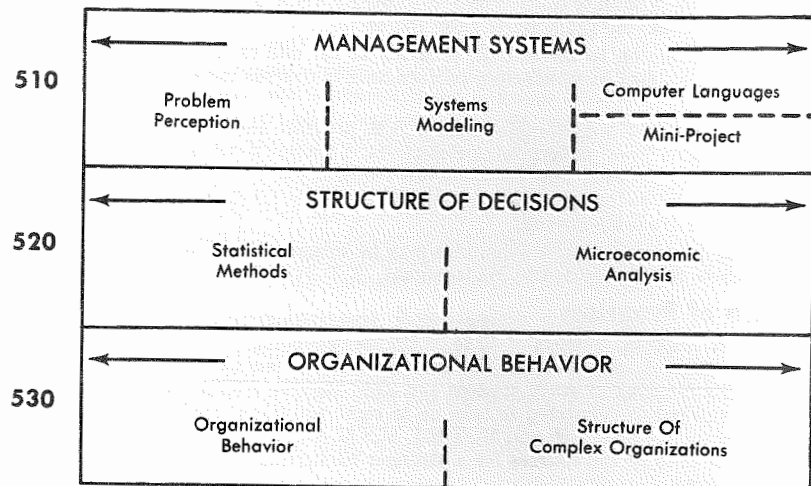
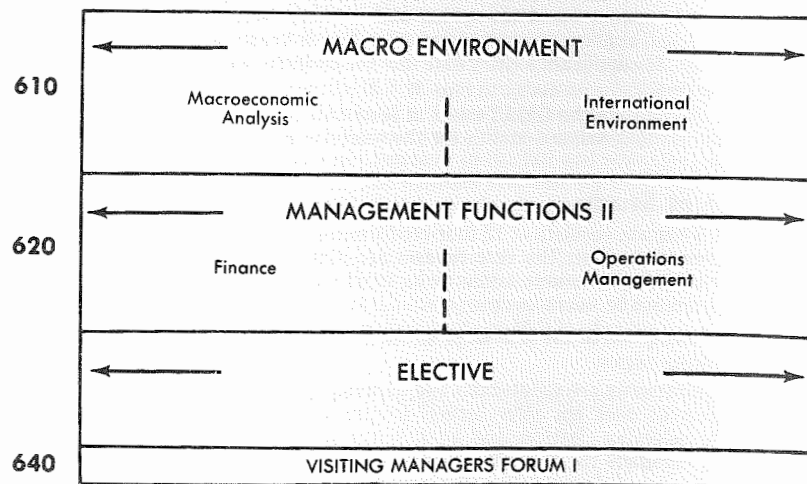
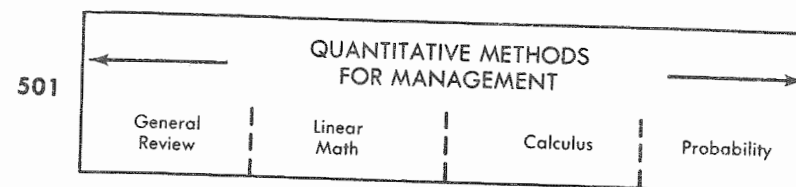
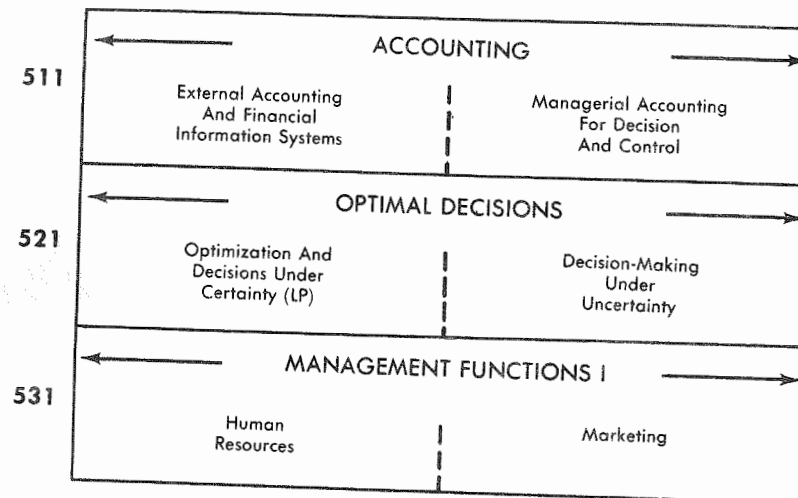
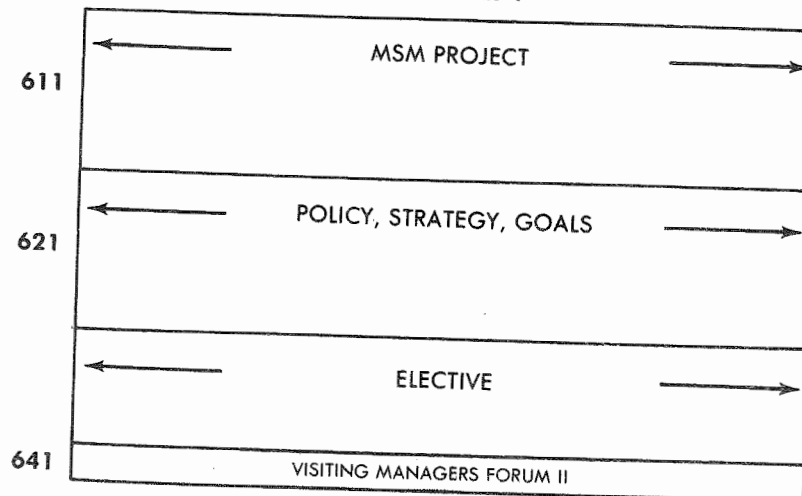
### Program of Study

The M.S.M. program consists of 12 four-credit courses (48 credits) and two one-credit courses (2 credits). The core courses are divided into "modules," which usually comprise half a course and may be taught by different instructors. All these courses must be taken in sequence.

A pictorial description of the M.S.M. program is contained on the block diagram on the following pages.

Because requirements are substantial and demanding, the School of Economics and Management does not offer formal majors within the M.S.M. program. However, by selecting electives and work on the second-year M.S.M. project, a student may complete the equivalent of a concentration in one of several areas.



**M.S.M. PROGRAM STRUCTURE****SEMESTER 1****SEMESTER 3****M.S.M. PROGRAM STRUCTURE****SEMESTER 2****SEMESTER 4**

### Master's Project

The master's project is designed to be a significant experience supporting the professional education goals of the M.S.M. program. The project applies classroom training to a practical management problem. Candidates must collect and analyze data in an organizational setting, with recommendations to management. The project is not a theoretical master's thesis. It should be considered an applied interdisciplinary problem, with inputs likely from more than one academic source, although one discipline may be dominant.

### Student Evaluation and Grading

Because M.S.M. courses may consist of several modules taught by more than one instructor, grades are a weighted average of module grades and based on the length of each module. M.S.M. students must maintain at least a 3.00 grade point average. If two or more module grades are below 3.0, a student will be warned or placed on probation. Probationary students may be dismissed if their work does not improve. Immediate dismissal may result from severe deficiencies, such as failure (less than 2.0) in any module or several module grades below 3.0.

A student also must be progressing satisfactorily toward a degree, by keeping up with the standard program requirements (at least six courses per calendar year, including spring and summer sessions).

### Transfer Credit and Course Exemption

The module system in the M.S.M. program makes transferring whole courses for program credit difficult. When such transferring is appropriate, letters requesting a transfer should be sent to the chairperson, School of Economics and Management Graduate Policy Committee, stating where the work was done and the name, number, and catalog description of the course, where taken, grade received, and texts used.

The module system permits exemption of specific modules within courses, depending on the qualifications of each student. The student must obtain module exemption forms from the School of Economics and Management office and register for the course that contains the module. The student's knowledge of the subject matter in the modules will be evaluated by the faculty who teach the modules. The faculty also may require the student to take an examination covering the module subject matter.

### M.S.M. Background Courses

#### MGT 500 Conceptual Foundations of Management (4)

Overview of the economic, social, legal, and institutional settings in which management decisions are made. Includes discussion of the role of theory and measurement in modeling decision-making for organizational policy and control.

#### MGT 501 Quantitative Methods for Management (4)

Theory and application of mathematical skills requisite for core courses in the graduate program. Includes preference and production theory, marginal analysis, capitalization and continuous growth analysis, and analysis under uncertainty.

### M.S.M. Core Courses

#### MGT 510 Management Systems (4)

The first module emphasizes the identification of goals and the use of resources for achieving them, including modeling of complex systems. This module is designed to develop students' skills in the use of tools, to facilitate the transferability of these skills, and to enhance the students' abilities to develop new skills as required by a given situation. The second module includes instruction in com-

puter programming. Concurrently, the student will undertake a short independent project, resulting in a paper dealing with an unstructured, realistic problem.

#### MGT 511 Accounting (4)

Focuses on accounting as the fundamental language of enterprise. The approach is strongly influenced by current research on the behavioral impact of accounting instruments, rather than solely on their mechanics. The first module stresses external reporting: communications addressed to shareholders, government agencies, potential investors, and the public. The second module emphasizes recording, reporting, and the use of data within the enterprise. Cost accounting, budgeting, and internal control are stressed.

#### MGT 520 Structure of Decisions (4)

First module covers basic statistical methods used in management, including statistical description, discrete and continuous probability models, estimation, hypothesis formulation and testing, and regression. Real-world applications are emphasized. Second module emphasizes microeconomic analysis of individual decision-makers in a market environment. Includes consumer theory, models of the firm, production processes, costs, pricing, resource allocation, markets, and industry structure.

#### MGT 521 Optimal Decisions (4)

Formal modeling of decisions under certainty and uncertainty, including linear programming, diagramming of sequential decision problems, and personal assessment of probability distributions and utility functions.

#### MGT 530 Organizational Behavior (4)

Analysis of organizational behavior at individual, group, and organizational levels. Individual and group processes such as perception, learning, motivation, communication, and conflict will be studied in depth. Organizational level topics include size, structure, complexity, and effectiveness. The course is designed to bring to bear theory and research in the behavioral sciences upon organizational problems.

#### MGT 531 Management Functions I (4)

The first module explores theoretical and empirical issues connected with the personnel function in modern organizations. Includes job analysis and design, employee recruiting, compensation policies and practices, personnel research techniques, government policy, law, social and environmental factors related to personnel decision making. The second module focuses on problems of product planning, market segmentation, demand analysis, consumer behavior, product distribution, pricing, and promotion. The approach to these problems considers both the normative or theoretical, and the empirical or marketing research orientation.

#### MGT 610 Macro Environment of Management (4)

The first module engages in the construction, analysis, and interpretation of models of aggregate economic behavior, including policy implications of alternative models, with emphasis on current economic events. Computer games may be used to simulate real-world policy problems. The second module deals with the diverse economic, political, cultural, and legal environments confronting the multinational firm. National controls, conflict management, extraterritoriality, foreign-exchange exposure, ownership strategies, and planning are emphasized.

#### MGT 611 Master's Project (4)

Independent project undertaken to fulfill degree requirements. See "Master's Project," page 74, for details.



**MGT 620 Management Functions II (4)**

The first module is an introduction to finance, including instruments of debt and ownership, opportunity cost, the workings of security markets, financing enterprise, rate of return analysis, capital budgeting, and elements of portfolio analysis. The second module analyzes economic problems in production management in manufacturing and service industries. Includes mathematical programming, statistical analysis, and Monte Carlo methods applied to problems such as inventory management, quality control, plant and equipment investment, facility location, and operations scheduling. Qualitative problems of the production environment are also considered.

**MGT 621 Policy, Strategy, and Goals (4)**

Application of management tools of economics, statistics, organizational behavior, accounting, marketing, finance, and quantitative methods to the systematic analysis of organizational case studies.

**MGT 640 Visiting Managers Forum I (1)**

Informal discussions with leaders of industry, labor, government, and not-for-profit organizations. Students organize and carry out the forum, with faculty consultation. Includes class time spent in planning the forum and in making reports and analyses.

**MGT 641 Visiting Managers Forum II (1)**

Continuation of MGT 640.

**Electives in the M.S.M. Program**

Depending on student interests and availability of resources, electives may be offered from the following list. Students should consult the schedule of classes for a sample of recent elective offerings.

**MGT 605 Advanced Systems Analysis (2-4)**

Topics in the modeling, instrumentation, and control of complex systems. Particular emphasis on the specification, testing, and implementation of policies in environments in which direct controls must be foregone in favor of educational control policies. Among the specific areas in which applications may be found are marketing, education, weather modification, living resource management, and energy-nutrient use management.

**MGT 608 Marketing Management (2-4)**

An in-depth study of a selected topic relevant to the management of the marketing function. Topics that may be covered are marketing and society, advertising and mass media, institutional marketing, distribution channel management, operations marketing, and promotion policies.

**MGT 615 The Theory of Accounting (2-4)**

Deals with theory as the accountant defines it. Includes contributions to current accounting practice that have resulted from study in the field, in contrast to the study and imitation of past practice and precedent.

**MGT 616 Contemporary Accounting Issues (2-4)**

Study of accounting and its future as it relates to other disciplines: behavioral science, organization theory, economic theory, sociology, psychometrics, and anthropology. Also examined are changes in the accountant's role in response to current social and legal demands for nonfinancial reporting. Topics vary, and course may be repeated for credit, with permission of instructor.

**MGT 617 Financial Theory (2-4)**

Examines the operations of the securities markets, including yields and expected

returns in various segments of the capital market. Other topics are the relative merits of obtaining funds for company growth through stocks, bonds, and retained earnings, and problems of marketing new issues of stocks and bonds.

**MGT 618 Portfolio Analysis (2-4)**

A comprehensive treatment of important aspects of security analysis and portfolio theory. Includes the scope of investment management, organized securities markets, the influence of macropolicy instruments on the money and capital markets, analytical procedures for appraising securities, portfolio analysis, and the assessment of capital market efficiency.

**MGT 625 Advanced Macroeconomic Analysis and Policy (2-4)**

Construction and application of models of economic interrelatedness in formulating aggregate plans and policies. Includes measurement, social accounting, behavioral models of economic subsectors, matrix techniques, causal models, input-output analysis, and computer simulation projects.

**MGT 626 Managing and the Multinational Enterprise (2-4)**

Analysis of the scope, structure, and strategies of the multinational enterprise. Includes strategic planning, production and distribution logistics, selection of technology, shifting targets, transfer prices, political risk forecasting, and control of international strategy.

**MGT 627 Multinational Finance and Accounting (2-4)**

Covers capital markets, ownership strategies, project evaluation, account consolidation, and auditing across national and currency boundaries.

**MGT 635 Assessment of Organizational Behavior (2-4)**

Use of findings and methods of behavioral research strategies as inputs for managerial problem-solving. Comparison of case, experimental, correlational, and other approaches. Issues of reliability and validity of data and research bias. Review of methods for individual and organizational measurement, including industrial tests, morale surveys. Practical experience in the collection and evaluation of data will be included.

**MGT 636 Leadership and Group Performance (2-4)**

Comprehensive examination of different theories of leadership. Emphasis on relevant empirical evidence and application of the theories to case studies.

**MGT 637 Motivation and Work Behavior (2-4)**

Analysis of the individual and organizational factors affecting employee motivation, performance, and satisfaction in the work environment. Includes the role of leadership, job design, environmental variation, compensation policies, goal-setting techniques, and group influences. Aims at a viable synthesis between theoretical approaches and the applied concerns of the practicing manager.

**MGT 638 Labor-Management Relations (2-4)**

Analysis of management-employee relations in modern organizations, and public policy in labor-management areas.

**MGT 650 Operations Research I (2-4)**

Selected topics in deterministic modeling of managerial decision problems from advanced linear programming, networks, dynamic programming, game theory, integer programming, and nonlinear programming. Designed to refine scientific problem-solving skills of the student with emphasis on applications of the above techniques.

**MGT 651 Operations Research II (2-4)**

Selected topics in modeling of decisions under uncertainty from Bayesian analysis, simulation, chance-constrained programming, queueing theory, and Marko-

vian analysis. Designed to refine scientific problem-solving skills of the student with emphasis on applications of the above techniques.

### **MGT 652 Forecasting and Simulation (2-4)**

Survey of forecasting methods, and introduction to simulation. Naive methods surveyed include smoothing methods, classical time-series analysis, and Box-Jenkins autoregressive methods. Attention is also given to the evaluation of forecast accuracy, and managerial uses of forecast information. Introduction to simulation and dynamic modeling at the micro and macro levels, with computer applications and econometric case studies.

### **MGT 653 Multivariate Statistical Analysis (2-4)**

Multivariate statistical techniques useful in research. Topics include multiple regression, multivariate analysis of variance, factor analysis, discriminate function analysis, canonical correlation, and tests of multivariate hypotheses.

### **MGT 654 Research Methods (2-4)**

Topics related to methods of organizational research. Representative topics include development of hypotheses, sampling, research design, research types, measurement, methods of data collection, and the analysis and interpretation of data.

### **MGT 655 Econometrics (2-4)**

Formulation, estimation, and testing of models, using statistical methods. Students will undertake independent investigations with in-class discussion of findings. Topics include specification problems, analysis of residuals, common regression problems, dummy variable techniques, and simultaneous equations models.

### **MGT 660 Small Business Management (2-4)**

Principles and problems of launching a small business enterprise, including taxes, federal and state programs affecting small business, legal environment, and continuing policy problems required for survival. Includes case studies in management of small businesses, as well as individual entrepreneurial histories.

### **MGT 665 The Legal Environment of Business (2-4)**

The legal framework in which business decisions are made, and the types of economic conflict and political activity which has created this framework. Topics to be covered include: contracts, anti-trust legislation, conflict resolution, and regulatory agencies.

### **MGT 667 Health Care Organization (2-4)**

Application of the tools of economic analysis to the health care industry and government health care policy. Examines the effects of the special characteristics of health care and the current organization of the medical services industry on the pattern of health care produced, its distribution, and the allocation of resources within the industry. Proposed changes in the current system, such as National Health Insurance, will be examined and benefit/cost analysis applied to selected public policy problems such as the public funding of medical research.

### **MGT 690 Independent Study (2-4)**

Independent research sponsored by a faculty member.  
Prerequisite: Permission of instructor.

## SCHOOL OF EDUCATION

### **Dean:**

Laszlo J. Hetenyi

### **Chairperson, Department of Teacher Education:**

Robert G. Payne

### **Professors:**

Edward A. Bantel, Ed.D., Columbia University  
David C. Beardslee, Ph.D., University of Michigan  
Harold C. Cafone, Ed.D., University of Arizona  
Melvin Chernov, Ph.D., Stanford University  
George E. Coon, Ed.D., Wayne State University  
Ronald L. Cramer, Ph.D., University of Delaware  
George F. Feeman, Ph.D., Lehigh University  
Sidney W. Graber, Ed.D., Wayne State University  
Harry T. Hahn, Ed.D., Temple University  
Laszlo J. Hetenyi, Ed.D., Michigan State University  
Donald C. Hildum, Ph.D., Harvard University  
James W. Hughes, Ed.D., University of New Mexico  
G. Philip Johnson, Ph.D., University of Minnesota  
Hollie L. Lepley, Ph.D., Carroll College  
Jack R. Moeller, Ph.D., Princeton University  
Lewis N. Pino, Ph.D., University of Buffalo  
Roderic E. Righter, Ed.D., Wayne State University

### **Associate Professors:**

Raynold L. Allvin, D.M.A., Stanford University  
Richard F. Barron, Ph.D., Syracuse University  
Jane M. Bingham, Ph.D., Michigan State University  
Eugene H. Boldon, M.S., University of Michigan  
David C. Bricker, Ph.D., Johns Hopkins University  
Marc E. Briod, Ph.D., Northwestern University  
Robert J. Christina, Ph.D., Syracuse University  
F. James Clatworthy, Ph.D., University of Michigan  
William C. Fish, Ed.D., Columbia University  
W. Dorsey Hammond, Ph.D., University of Delaware  
Don R. Iodice, M.A.T., Yale University  
Glenn A. Jackson, Ph.D., University of Michigan  
Patrick J. Johnson, Ed.D., Wayne State University  
Boaz Kahana, Ph.D., University of Chicago  
Jacqueline I. Loughheed, Ed.D., Wayne State University  
David G. Lowy, Ph.D., University of Tennessee  
Donald G. Malm, Ph.D., Brown University  
William F. Moorhouse, Ed.D., University of Wyoming  
Robert G. Payne, Ph.D., University of Michigan  
Corey M. Van Fleet Jr., M.S., Wayne State University

### **Assistant Professors:**

Donald E. Anctil, Ed.D., Utah State University  
John W. Atlas, Ed.D., Wayne State University  
Carol S. Beers, Ed.D., University of Virginia  
James W. Beers, Ph.D., University of Virginia  
Gloria T. Blatt, Ph.D., Michigan State University  
D. Anita Bozardt, Ed.D., University of Georgia



Jean L. Easterly, Ed.D., University of Arizona  
 Carolyn Epperly, Ed.D., Indiana University  
 Joel S. Fink, Ph.D., Boston University  
 Carol Halsted, M.A., Wayne State University  
 William D. Hamlin, Ed.D., Wayne State University  
 Bruce R. Harker, Ph.D., University of Chicago  
 John R. Heckerl, Ph.D., University of Michigan  
 Beverley F. Jones, Ph.D., University of Michigan  
 William H. Jones, Ph.D., University of Michigan  
 Peter W. Keelin, Ph.D., Florida State University  
 Edward M. Liddle, Ph.D., Michigan State University  
 David P. Meyer, Ph.D., Arizona State University  
 Billy Joe Minor, Ph.D., Indiana University  
 JoAnne Minor, Ed.D., Indiana University  
 Diane E. Norman, Ed.D., Western Michigan University  
 Mary L. Otto, Ed.D., Indiana University  
 Jacqueline R. Scherer, Ph.D., Syracuse University  
 Virginia M. Schuldenberg, Ph.D., University of Missouri  
 David G. Smith, Ed.D., Indiana University  
 Doris M. Sponseller, Ph.D., Michigan State University  
 Alfred W. Stransky, Ph.D., Florida State University  
 Ronald M. Swartz, Ph.D., New York University  
 Sue C. Tenorio, Ed.D., George Washington University  
 Delores Wyckoff, Ph.D., Georgia State University

**Instructors:**

Jacob A. Mayala, M.A.T., Oakland University  
 Harold E. Weiner, M.A., Michigan State University

**Adjunct Professor:**

William I. Martin, Jr., Ph.D., Northwestern University

**Adjunct Associate Professors:**

M. Patricia Houtz, Ed.D., Pennsylvania State University  
 Donald M. Trumpour, M.S., Wayne State University (College of Medicine)  
 Robert C. Weinbaum, L.L.B., University of Michigan

**Adjunct Assistant Professors:**

David T. Glick, B.A., Capital University  
 William J. Jorns, Ed.Sp., Wayne State University  
 Geraldine M. Palmer, M.A.T., Oakland University

The School of Education offers programs leading to the Master of Arts in Teaching degree in four areas: early childhood education, elementary education, reading and language arts education, and special education. The Master of Arts degree is offered in guidance and counseling. In addition, the College of Arts and Sciences and the School of Education jointly sponsor candidates for the degrees of Master of Arts in Teaching in English and mathematics. Descriptions of these programs are on pages 39 and 53.

## THE MASTER OF ARTS IN TEACHING: EARLY CHILDHOOD EDUCATION

The graduate program in early childhood education, leading to the Master of Arts in Teaching, is designed to train persons to work with children ages zero through nine in school, home, and agency settings. It also provides training for leadership roles in the field, including preparation for educating parents and other adults, for directing and evaluating early childhood programs, and for coordinating community resources for young children and their families. It combines theoretical knowledge with observation and participation in clinical, community, and school practicum settings.

Persons who hold provisional or continuing elementary certificates may work toward the endorsement in Early Childhood Education as an addition to their certificates. A combined 48-hour option with Special Education is also available in which the student may receive the M.A.T. in Early Childhood degree together with both the Early Childhood and the Emotionally Impaired endorsements. Persons who hold no elementary certificate may work toward certification during their pursuit of the M.A.T. degree; however, credit hours in addition to those needed for the M.A.T. are required for this option.

Candidates for the degree program must provide a written statement of their philosophy of early childhood education, of their reasons for wishing to pursue the degree, and of their career goals, in addition to the academic and reference requirements of the Office of Graduate Study. No more than 12 hours of special graduate status study will be accepted toward the degree.

The academic program stresses the linguistic and psychological aspects of children's language development, the sociological and anthropological foundations of child development, and the medical and psychological bases of physiological and mental growth.

The total program is based on the premise that a strong academic program must be counterbalanced with an equally strong practicum emphasis. Practicum experiences are available in a variety of settings including hospitals, nursery schools, day care centers, kindergartens, and primary grade classrooms, predominantly in urban areas.

The program of study is divided into two sequences: the core curriculum and the specialization sequence.

The core curriculum consists of 24 credits required of all master's degree candidates. It is designed to provide basic foundational competencies in three broad areas.

**Core Curriculum****Early Childhood Foundations (16 credits — all required)**

- ED 540: Theories of Early Childhood Education
- ED 542a: Applied Developmental Principles — Early Childhood
- ED 543: Teacher as Child Advocate
- ED 650: Practicum in Early Childhood Education

**Educational Foundations (4 credits — one course)**

- ED 503: The Educational Philosophy of John Dewey
- ED 504: Literary Portrayals of Educational Encounters
- ED 509: School and the Disadvantaged Child
- ED 601: History in Education
- ED 602: Philosophy in Education
- ED 603: Cross-Cultural Studies in Education
- ED 604: Sociology in Education
- ED 605: Politics in Education

**Psychological Foundations (4 credits — one course)**

- \*PSY 510: Developmental Psychology
- PSY 513: Psychopathology of Childhood
- PSY 575: Theories of Development
- ED 542b: Applied Developmental Principles — Early Childhood
- ED 591: Ecology of the Classroom
- \*Required if student has not had an equivalent course.

The specialization sequence consists of 12 credits in an area of interest to the student. Specializations are currently offered in administration/consultation,

early childhood programming, reading/language arts, and special education. When one does not choose to specialize, the 12 credits required to complete the program may be selected from a broad and varied range of courses, with adviser approval.

## THE MASTER OF ARTS IN TEACHING: ELEMENTARY EDUCATION

The master's program in elementary education has been designed for professional elementary classroom teachers. The program allows for a broad general coverage of courses to strengthen the knowledge and skills needed by a classroom teacher. Within a specific framework, the student has an opportunity to enhance his/her professional expertise.

A total of 36 credits is required for the M.A.T.: Elementary Education degree. Of this total, 20 credits are required with 16 credits being electives. Within the 20 required credits the student will take a specified course from each of five categories outlined below. The final two required courses of four credits each are ED 510 and ED 699.

Because there is a great deal of flexibility for student choice within the elementary education program, careful advisement procedures are necessary. Students should apply for admission and contact their advisers at the outset of graduate study. Graduate credits earned before admission to the program may not be applicable unless approved at the time of admission to the program.

### Program Outline

ED 510, Introductory Seminar in Elementary Education, is designed to develop basic understandings and skills which facilitate learning in the remainder of the M.A.T. program. This course must be taken as one of the first two courses in the program.

ED 699, Terminal Project, is normally taken near the end of the program. Knowledge and skills gained during the course of study are offered to solve a problem of individual concern. Students must follow the rules for this course as outlined in the course description on page 103.

**CATEGORY A: CURRICULUM DEVELOPMENT AND ORGANIZATION** — ED 512, Curriculum Development in the Public School, is required. Students may elect up to two additional courses in this area from the following: ED 509, ED 513, ED 583, ED 584, ED 611, ED 612.

**CATEGORY B: EVALUATION AND ACCOUNTABILITY** — ED 593, Evaluation and Accountability in Teaching, is required. Students may elect up to two additional courses in this area from the following: ED 509, ED 511, ED 554, ED 592.

**CATEGORY C: ADMINISTRATION AND SUPERVISION** — ED 585, The Law and the Teacher, is required. Students may elect up to two additional courses in this area from the following: ED 511, ED 513, ED 554, ED 580, ED 583, ED 584, ED 588, ED 611.

**CATEGORY D: ELECTIVE COURSES IN ELEMENTARY EDUCATION** — One course must be taken from this category. Up to three courses may be taken from the following: SCS 505, SCS 506, ED 581, ED 587, ED 589, ED 597.

**CATEGORY E: ELECTIVE SUPPORT COURSES** — Up to two courses may be elected from the following: ED 500, ED 501, ED 503, ED 504, ED 515, ED 521, ED 522, ED 523, ED 531, ED 532, ED 533, ED 534, ED 535, ED 537, ED 540, ED 561, ED 562, ED 563, ED 570, ED 571, ED 572, ED 574, ED 575, ED 586, ED 591, ED 601, ED 602, ED 603, ED 604, ED 605, ED 631, MTE 511, MTE 512, MTE 625, PSY 510, PSY 512, PSY 513.

## Core Courses (20 credits — all required)

|         |                                                          |
|---------|----------------------------------------------------------|
| ED 510: | Introductory Seminar in Elementary Education             |
| ED 512: | Curriculum Development in the Public School (Category A) |
| ED 593: | Evaluation and Accountability in Teaching (Category B)   |
| ED 585: | The Law and the Teacher (Category C)                     |
| ED 699: | Terminal Project                                         |

## THE MASTER OF ARTS: GUIDANCE AND COUNSELING

The guidance and counseling program is dedicated to the education and training of effective persons to work in helping roles with children, youth, parents, and other adults in schools and community settings. Students may emphasize work with clientele of different age groups and in certain settings; however, the same areas of skill competency must be met by all candidates. These are: (a) basic guidance and human services, (b) group procedures, (c) assessment and evaluation, (d) techniques of counseling, (e) guidance information and career development, (f) consultation, and (g) practical application of counseling and guidance in a supervised field setting.

Recommendations are an important part of the application procedure, and the two references required for application to the guidance and counseling program must be from professional persons who can attest to the applicant's academic capability and effective interpersonal performance with youth and adults. Therefore, persons selected to write recommendations should be chosen carefully so that the admissions committee receives pertinent information.

## Special Requirements for Admission and Graduation

All applicants must submit a written statement which (a) explains reasons for wanting to enter the guidance and counseling program, (b) includes goals for employment, and (c) describes experiences and accomplishment in work with children, youth, and adults in a helping relationship.

A valid teaching certificate is required of applicants who seek recommendation for a school counselor endorsement on graduation.

Candidates for the M.A. degree in guidance and counseling must have a minimum of 24 credits in undergraduate or graduate course work in behavioral disciplines such as psychology, sociology, economics, ethics, or anthropology prior to completion of the degree work. This requirement is evaluated by the student's adviser. A maximum of 12 credits earned at Oakland University while a student is in Special Graduate status will be accepted toward the degree.

Satisfactory full-time teaching or counseling experience equivalent to one school year or more is required prior to completion of the degree. Students may acquire an "equivalency" of teaching or counseling experience through a combination of supervised field work, volunteer work, and additional credit in the practicum in counseling and guidance or related course over and above the 36 credit minimum as specified by the adviser and approved by the program chairperson.

## Elementary and Middle School Emphasis

The following courses are required for the emphasis in elementary and middle school counseling:

|         |                                      |
|---------|--------------------------------------|
| ED 561: | Guidance and Counseling for Children |
| ED 562: | Assessment of Children               |
| ED 563: | Group Procedures in Guidance         |
| ED 661: | Techniques of Counseling             |
| ED 664: | Consultation in Pupil Personnel Work |



- ED 665: Guidance Information and Career Development  
ED 666: Practicum in Guidance and Counseling

Practicum placement after completion of all required courses in a school setting is required for school counseling endorsement. The student also may select electives in education (early childhood, elementary, reading and language arts, or special education), philosophy, psychology, or sociology.

### Youth and Adult Emphasis

Students who wish to emphasize counseling with youth and adults are required to take:

- ED 563: Group Procedures in Guidance  
ED 564: Delivery of Human Services  
ED 661: Techniques of Counseling  
ED 662: Assessment of Youth and Adults  
ED 664: Consultation in Pupil Personnel Work  
ED 665: Guidance Information and Career Development  
ED 666: Practicum in Guidance and Counseling

The practicum must be taken in a setting appropriate to the student's interest. Placement in a school setting is required for school counseling endorsement. In addition, electives may be selected in psychology, sociology, economics, or education.

The practicum must be taken after completion of all required course work. Only electives can be taken concurrently with practicum. ED 666 can be taken for four to eight credits. Eight credits can be completed within one semester only during the fall and winter semesters. For a four-credit practicum, students must spend at least 120 hours at the practicum site. To complete an eight-hour practicum in one semester, 240 hours must be spent at the site.

### THE MASTER OF ARTS IN TEACHING: READING/LANGUAGE ARTS EDUCATION

The master's program in reading/language arts education is one of the broadest and most diversified of its kind in the nation. Most students enrolled in the program are teachers who intend to remain with their classroom responsibilities. Their reasons for enrolling in the program vary, but a major one lies in the fact that relatively few other fields of study are so directly practical and relevant to their daily teaching concerns.

Although the program is classroom-centered, students may choose to prepare themselves for other positions of responsibility. A number of graduates are now reading specialists, consultants, college teachers of reading, special project directors, supervisors, and principals.

The base sequence consists of 24 credits required of all master's degree candidates. The sequence meets standards set for reading specialists by the International Reading Association and assists in attaining basic competencies in three areas.

#### Base Sequence

#### Reading/Language Arts (16 credits — all required)

- ED 500: Foundations of Reading Instruction  
ED 632: Diagnosis of Reading Disabilities  
ED 633: Correction of Reading Disabilities  
ED 699: Terminal Project

#### Psychology (4 credits — one course)

- ED 523: Educational Procedures for Children with Learning Disabilities

- ED 591: Ecology of Classroom  
PSY 510: Developmental Psychology  
PSY 512: Test and Measurements  
ALS 534: Language Acquisition of Children  
ED 505: Reading as a Language Process

### Education Foundations (4 credits — one course)

- ED 503: The Educational Philosophy of John Dewey  
ED 504: Literary Portrayals of Educational Encounters  
ED 601: History in Education  
ED 602: Philosophy in Education  
ED 603: Cross-Cultural Studies in Education  
ED 604: Sociology in Education  
ED 605: Politics in Education

The specialization sequence is composed of 12 credits in an area of personal interest. Specializations are currently offered in elementary reading, secondary reading, literature for children, special education (in which students may earn certification in learning disabilities), early childhood education, and language arts. If the student does not choose to specialize, the 12 credits required to complete the program may be selected by the student with adviser approval.

### THE MASTER OF ARTS IN TEACHING: SPECIAL EDUCATION

The master's program in special education provides an opportunity for students to design a balanced program consistent with their educational backgrounds and career goals. These individualized programs assist in developing the skills required to meet professional demands within the special classroom, resource room, or institutional setting. They also help regular classroom teachers meet the needs of children who have moderate learning and/or behavior problems. Initial application for admission to the Master of Arts in Teaching in Special Education and application for admission as a Post Master's student in special education must be made to the graduate office. Candidates for the Master of Arts in Teaching in Special Education and candidates for Post Master's endorsement in Special Education must have a valid Michigan teacher's certificate and one year's teaching experience prior to admission to the program. Students should not take more than 16 credits before seeking admission to the M.A.T. Special Education program. This restriction applies also to Post Master's students desiring endorsement in special education. In addition, a candidate for admission to the program and Post Master's candidates must complete at least one interview with a member of the special education faculty, and submit a written statement describing his/her personal and professional goals as they relate to special education. The interview and statement are part of the admission procedures, and must be fulfilled before a candidate's admission application is approved.

As a part of the 36-credit program leading to the Master of Arts in Teaching in Special Education, certification is recommended in the area of teaching emotionally impaired children or in the area of teaching learning disabled children.

The following course sequences are necessary to fulfill master's degree requirements and certification in emotionally impaired or learning disabilities.

#### Core Courses (16 credits — all required)

- ED 501: Introduction to the Education of Exceptional Children  
ED 502: Skills and Competencies for Teachers of Exceptional Children

- ED 523: Educational Procedures for Children with Learning Disabilities  
ED 621: Management and Curriculum for Emotionally Impaired Children

### Emotionally Impaired Emphasis (20 credits)

- ED 536: Teaching Reading to the Special Child  
ED 620: Social Deviancy in Special and Regular Education  
PSY 513: Psychopathology of Childhood  
ED 622: Practicum in Special Education — emotionally impaired children  
ED 623: Project in Special Education

### Learning Disabled Emphasis (20 credits)

- ED 522: Behavior Modification Techniques for Classroom Management  
ED 524: Perception in the School Setting  
\*ED 632: Diagnosis of Reading Disabilities  
ED 633: Correction of Reading Disabilities  
ED 626: Practicum in Special Education — learning disabled children

\*ED 500, Foundations of Reading Instruction, may be a prerequisite for ED 632.

Whenever deemed necessary, students may be required to take additional courses to make up for deficiencies in background, training, and experience. In addition to the regular M.A.T. Special Education program, students may elect the following program options:

1. Post Master's endorsement in E.I. or L.D.
2. M.A.T. Reading with L.D. endorsement.
3. M.A.T. Special Education with E.I. and Early Childhood endorsement.
4. M.A.T. Early Childhood Education with E.I. and Early Childhood endorsement.
5. M.A.T. Special Education with no endorsement.

## TEACHER CERTIFICATION PROGRAM FOR GRADUATE STUDENTS

### Michigan Provisional Certificate

Programs leading to the degree of Master of Arts in Teaching are based on the assumption that students already hold (or are eligible for) the Michigan Provisional Certificate in their area of specialization. Students who hold no provisional certificate or who wish to change specialization must expect a longer period of study than is implied by the programs described. In many cases, however, combining certification with a master's degree program will require a shorter preparation sequence than that involved in obtaining certification and the master's degree separately.

Limited resources allow only master's degree candidates to be accepted for cer-

tification. In these cases, student teaching will be delayed until all degree requirements have been completed.

### Michigan Continuing Certificate

According to the State of Michigan's revised teaching certification code, persons who earned their provisional certificates after July 1, 1970 must complete 18 credits of course work beyond the bachelor's degree within the context of a planned program.

Candidates for the continuing certificate may select either a master's degree program or an 18-credit planned program. The student who chooses either of these should follow the normal admission procedure through the Office of Graduate Study. For additional advice, the student should contact the teacher certification adviser in the department offering the master's degree or 18-credit planned program.

Oakland University sponsorship for the 18-credit continuing certificate will be awarded to a student who presents evidence that he/she has:

1. Completed 18 credits in an approved master's program, planned with the student's adviser.
- or
2. Completed an 18-credit planned program as a continuing certificate student.
  - a. Such planned programs have been specified by the following areas in the Department of Teacher Education: Early Childhood Education, Elementary Education, Foundations, Guidance and Counseling, Reading/Language Arts, and Special Education.
  - b. Such programs are now being developed by various departments in the College of Arts and Sciences. For information about these programs the student should contact each department's teacher certification adviser.
- or
3. Completed a course of study at another institution after securing written approval of the Dean of the School of Education and the chairperson of the area in which he/she is pursuing a planned program of study (this option is provided for students who begin, but are not able to complete, their programs at Oakland University).

The programs outlined below are for students who wish to meet certification requirements without enrolling in a master's program. Students enrolling for continuing certification only are advised that they may apply only a limited number of credits earned at another institution toward Oakland University sponsorship for the continuing certificate. Department advisers may accept or reject any proposed transfer credit. Acceptability and limitations are based on individual program design. Also, the 18-credit planned program in which they enroll must be more tightly structured than if one were earning credits as a master's student. Finally, because of possible shifts in master's program requirements, there is no guarantee that courses taken as a continuing certificate student will apply if one later wishes to transfer to a degree program. For these reasons, students are urged to consider earning the continuing certificate as part of a master's degree program. For those who reject this alternative, the following options are available.

### Planned Program in Early Childhood Education

Early Childhood Foundations—

- ED 540: Theories of Early Childhood Education  
ED 542a: Applied Developmental Principles — Early Childhood or PSY 510  
ED 543: Teacher as Child Advocate and Adult Educator  
ED 544: Play as a Learning Medium



One elective (from the following)

- ED 532: Teaching Reading in the Primary Grades
- ED 542b: Applied Developmental Principles — Early Childhood
- ED 545: Administration and Direction of Early Childhood Programs
- ED 546: Workshop in Early Childhood Curriculum
- ED 574: Literature for Young Children
- ED 590: Special Problems: Early Childhood

### Planned Program in Elementary Education

The planned program in elementary education parallels the M.A.T. program in this area. ED 510 is required. Students must take one course from each of the following: Category A, B, and C, plus one additional course from Category D or E. Students must register their planned programs with an adviser.

### The Teacher as Person: A Planned Program in Educational Studies (Foundations)

An 18-credit program of graduate education leading to teacher certification featuring:

1. A humanistically-oriented program, focusing on the structure of the school and the profession of teaching and their relationship to the growth of the teacher as a person.
2. A distinctive style of coordinated teaching and planning by the faculty in all program courses.
3. A personalized advising system, using the development of an individualized portfolio in which faculty help students integrate their academic program with their personal and professional experience.
4. The possibility of matriculating in a master's degree program in other areas within the Department of Teacher Education upon completion of the program.

As an alternative to other graduate programs that emphasize the nature of students and the techniques of teaching, this program emphasizes self-understanding through an interdisciplinary program of studies. As a complex human being, the teacher will be guided by a rich variety of perspectives in the disciplines of philosophy, psychology, sociology, political economy, anthropology, history, literature, and the arts. As a professional educator, the student will explore ways in which the structures of the school and of the teaching profession affect personal satisfaction and growth.

Congruent with the intellectual focus of the program, the teaching and advising style of the faculty will maximize the student's opportunity to integrate academic work with personal experience. The heart of the advising program will be the development of a continuing portfolio, including sample academic work, a journal of experienced relations between study and professional possibilities, and other related material. Faculty will work as a unit in planning courses, team teaching, and continuous advising.

Upon completion of the 18-credit program, students who desire to continue for one of the master's degrees in the School of Education will be assisted in the transition by the faculty.

### Requirements for the Planned Program

Three courses (12 credits from the following list)

- ED 503: Major Theorists in Education
- ED 504: Literary Portrayals of Educational Encounters
- ED 601: History in Education
- ED 602: Philosophy in Education

- ED 603: Cross-Cultural Studies in Education
- ED 604: Sociology in Education
- ED 605: Politics in Education

Electives: Six or more elective credits may be chosen in consultation with an adviser from the foundations area.

### Planned Program in Guidance and Counseling

Courses for the planned program in guidance and counseling are to be selected from four categories.

#### Category 1 (4 credits)

- ED 560: Special Problems in Guidance and Personnel Work
- ED 563: Group Procedures in Guidance

#### Category 2 (4 credits)

- ED 561: Guidance and Counseling for Children
- ED 564: Delivery of Human Services
- ED 665: Guidance Information and Career Development

#### Category 3 (4 credits)

- ED 562: Assessment of Children
- ED 662: Assessment of Youth and Adults
- PSY 512: Test and Measurements

#### Category 4 (6-8 credits)

Electives in education, psychology, or sociology

### Planned Program in Reading/Language Arts

1. ED 500: Foundations of Reading Instruction (4 credits)
2. One course (4 credits) in the Philosophical (ED 503, 504, 601, 602, 603, 604, 605) or Psychological (ED 505, 523, 591, ALS 534, PSY 510, 512) Foundations of Education
3. Three courses (10-12 credits) in Reading/Language Arts Education and/or related areas.

### Planned Program in Special Education

- ED 501: Introduction to Education of Exceptional Children
- ED 502: Skills and Competencies for Teachers of Exceptional Children
- ED 523: Educational Procedures for Children with Learning Disabilities
- ED 621: Management and Curriculum for Emotionally Impaired Children

One course (4 credits) in teaching emotionally impaired (ED 536, 620, PSY 513) or learning disabled children (ED 522 or 524).

### Course Offerings

#### ED 500 Foundations of Reading Instruction (4)

A basic course in the teaching of reading as a psycholinguistic process. Approaches to reading are based on varying assumptions about the learner and about the learning-to-read process. Strategies in word recognition and comprehension are examined and applied. Students also will be introduced to significant reading research. The course is a combination of lectures, demonstrations, discussions, and application of techniques in teaching reading via role-playing techniques. Required of students in the M.A.T. reading program.

**ED 501 Introduction to the Education of Exceptional Children (4)**

A basic introduction to special education, its history and development, organization and structure, practices and procedures, particularly as they relate to contemporary issues. Emphasis will be on similarities rather than differences among the traditional categories of special education.

Prerequisite: Graduate standing.

**ED 502 Skills and Competencies for Teachers of Exceptional Children (4)**

This course examines the Michigan Special Education Code and its implications for the education of the handicapped. Students will gain knowledge of special education procedures — classroom observations, the writing of referrals, and completing informal evaluations of students' skills, educational alternatives, and program assessment.

Prerequisite: Graduate standing.

**ED 503 Major Theorists in Education (4)**

An intensive study of the works of one or two major figures whose ideas have been seminal in the development of educational theories. The specific theorists will vary each semester and will be selected for historical importance and continuing relevance. Theorists include John Dewey, Erik Erikson, B. F. Skinner, J. Piaget, William James, Jerome Bruner, and A. H. Maslow. May be repeated for credit.

**ED 504 Literary Portrayals of Educational Encounters (4)**

A study of educational themes through novels, plays, personal accounts, and other literary modes. During different semesters, one or more of the following topics will be emphasized: (a) Education as Conflict Resolution: Adult-youth conflicts provide examples of educational encounters. Problems include authority and freedom, value differences, and language barriers. (b) Education as Autobiography: Examples of autobiography help students to express their own educational accounts, and to become aware of themselves as historical persons. Problems include alienation, repression, and future-orientation.

**ED 505 Reading as a Language Process (4)**

The course will focus on language acquisition, language and thought, dialects, and the interrelatedness of the language process with implications for the teaching of reading.

**ED 509 The School and the Disadvantaged Child (4)**

A study of the difficulties and opportunities arising in the schooling of disadvantaged children. The course will examine such topics as clashes between values in school and home environments, communication across subcultural barriers, and problems of motivation.

Prerequisite: Permission of instructor.

**ED 510 Introductory Seminar in Elementary Education (4)**

Students will consider the most significant contemporary problems facing the field of elementary education, specifically their individual capabilities to deal effectively with such issues in their roles in education. Students will become familiar with the major informational retrieval systems, local, state, and national organizations, and the journals available for furthering their professional education. Assistance will be given students to improve their ability to organize and report on educational issues. Students will also be assisted in developing a plan of work in their M.A.T. program which will optimize their opportunities for taking courses consistent with their individual needs. Required of all students in the M.A.T. Elementary Education program. Must be taken within the first eight hours of course work.

**ED 511 Interaction Analysis (4)**

The course seeks to improve effectiveness of instruction through a study of pupil-teacher interaction. Techniques of observation, methods of gathering data, and analyzing behavior in the affective and cognitive fields are emphasized. Techniques include video tapings, projects including observational schedules, and preparation and analysis of specific teaching situations.

Prerequisite: Admission to a graduate program or permission of instructor.

**ED 512 Curriculum Development in the Public School (4)**

Designed for elementary and secondary school educators interested in the basic elements of curriculum. Considers such fundamental concerns as the child, the changing demands of society, the educational fields, and the nature of the subject matter as critical ingredients in curriculum development. Ways of planning and organizing new curriculum are also a major part of the course, with possible strategies and teacher responsibilities for bringing about change.

**ED 513 The Organization of the Elementary School (4)**

Designed for people interested in the organizational nature of the elementary school. The course will examine past changes in the elementary school organization and their causes, the changing nature of the present day elementary school, and possible future changes as suggested by trends in elementary school curriculum. Focus will be on the teacher as a guiding agent of educational change.

**ED 514 Classroom Diagnosis and Correction (4)**

Introduction to diagnosis of individual and group reading problems. This course is particularly useful for improving diagnostic teaching skills. Requires active participation in practicum experiences; hence, enrollees must have access to a group of children.

**ED 515 The Modern British Primary School (4)**

The modern British primary school has roots in Britain's 1944 education law which provided an ambitious goal for individualizing instructional programs and changed the major concern of schools from what should be taught to how children learn. Examines the theories, research, and experiences of this movement and the effect of emerging instructional practices on young people. Focuses on their efforts to integrate all the elements of the curriculum in order to study the effects on reading instruction. The resources may include school visitation, visiting British teachers and scholars, and/or films, slides, and audio tapes in addition to library materials.

**ED 516 The Latino in the United States (4)**

Course examines stereotypes and common misconceptions about Latinos by analyzing cultural and geographical background. Contributions of the Latino to the development of the U.S. and sociopolitical issues will be covered. Course will emphasize alternate strategies of teaching cultural awareness to young children.

Prerequisite: Admission to graduate study.

**ED 521 Special Education in the Regular Classroom (4)**

This course assists regular classroom teachers who need additional training to teach children with mild and moderate learning and behavioral problems. Implications of Public Act 198, delivery of educational services to handicapped children, diagnostic and prescriptive teaching techniques, and writing of performance objectives will be emphasized.

Prerequisite: Admission to graduate study.

**ED 522 Behavior Modification Techniques for Classroom Management (4)**

This course introduces teachers to the principles and application of behavior modification techniques. It includes specific methods for changing children's behavior in the classroom with emphasis on the child displaying learning or con-



duct problems.

Prerequisite: Admission to graduate study.

### **ED 523 Educational Procedures for Children with Learning Disabilities (4)**

An examination of various theories of learning disabilities and major intervention methods. Students will gain an understanding of visual, auditory, and motor processes related to learning. Informal methods of assessing the learning processes, writing instructional objectives, and prescriptions will be included.

Prerequisite: ED 501 or ED 502 or permission of instructor.

### **ED 524 Perception in the School Setting (4)**

This course deals with the process of perception, its relationship to learning, and its assessment. Students will learn to conduct evaluations of the visual, auditory, and sensory motor areas through various standardized tests.

Prerequisite: Admission to M.A.T. Special Education program or Post Master's endorsement in Special Education, and completion of core program in special education or permission of instructor.

### **ED 527 Problems in Educating Mentally Handicapped Children (4)**

This course reviews research, describes causes, and explores school programs for mentally handicapped children. Methods of teaching mentally handicapped children and use of classroom materials are also covered.

Prerequisite: Admission to graduate study.

### **ED 530 Workshop in Reading (4 or 8)**

Intended to involve participants in the study, preparation, and use of materials and resources to develop reading and language arts skills in the classroom. Focuses on personal involvement leading to fuller understanding of the potential of various curriculum elements for giving young learners insights and opportunities for improving their reading and related language abilities. Stresses strategies for using inductive, elaborative, open-ended instruction in poetry, prose, and factual material and the encouragement of individual and small group work. Includes the role of cooking, drawing and painting, book making, sewing, photography, and similar expressive activities. Examines approaches to developing basic reading and writing skills through usage with methods of organizing the classroom to ensure student participation. Students may register for this course once or twice up to a total of eight credits.

### **ED 531 Current Trends in the Teaching of Reading (4)**

An intensive examination of current instructional practices, problems, and research in the teaching of reading. Trends in reading instruction are evaluated in light of cumulative findings in the development of reading skills.

### **ED 532 Teaching Reading in the Primary Grades (4)**

This course examines principles, practices, and research related to early reading instruction. It includes an analysis of the relationship of the various language arts to reading skills and places emphasis on the developmental skills of pupils, starting with kindergarten.

### **ED 533 Teaching Reading in the Upper Grades (4)**

This course examines principles, practices, and research related to the teaching of reading beginning in grade four. Emphasis will be placed on the developmental reading skills in a reading program adjusted to the individual needs of pupils, with focus on reading in the content areas.

### **ED 534 Language Arts Instruction in the Elementary School (4)**

A scholarly examination of research findings, materials, and procedures for the

development of spelling, composition, speaking, and listening skills in children. Discussion will center on curriculum areas which directly influence language development. The course will demonstrate how the coordinated-language arts approach and the use of literature can balance the growth of communication skills.

### **ED 535 Forum on Reading and the Language Arts (4)**

Distinguished educators present their views, insights, research, and knowledge on issues in the teaching of reading and language arts. Students interact with concepts presented and study critically the writings of these educators and/or their contemporaries. The forum allows students to discuss the theories with educators who may have had a major role in formulating them. Subtopics will identify the content of each forum course. May be elected a second time with a different subtopic (totaling eight credits).

### **ED 536 Teaching Reading to the Special Child (4)**

General discussion of the reading process as it relates to slow learners, emotionally disturbed, handicapped, and gifted children. A study of remedial instructional materials is included.

Prerequisite: ED 501 or ED 502 or permission of instructor.

### **ED 537 Teaching-Learning Strategies for Reading and Related Language Arts Instruction (4)**

This course focuses on a student-centered language arts curriculum designed to make current linguistic insights and practices available to teachers at an operational level. Those teaching-learning strategies which are concerned with divergent, elaborative, critical, and creative thinking necessary in all aspects of the language arts are stressed. For teachers who seek options for providing young learners with opportunity to develop expressive as well as receptive language skills.

### **ED 538 Reading Development in Junior and Senior High Schools (4)**

Emphasis is placed on solving problems in the development, improvement, and evaluation of an all-school instructional program in reading, with focus on reading instruction using content materials.

### **ED 540 Theories of Early Childhood Education (4)**

Views of the child's education will be discussed from perspectives of Montessori, Piaget, Bereiter-Englemen, British Infant Schools, behavior modification, and developmental or "traditional" schools. Students will analyze these approaches and synthesize from them their own viewpoints. Primarily for teachers of young children, the course analyzes diverse contemporary theories of early childhood education and broader issues such as "special intervention vs. optimal maintenance," "intrinsic and extrinsic motivation," "readiness," "structure," "education for future vs. education for immediate needs," "infant education," "day care models," etc.

### **ED 542 Applied Developmental Principles — Early Childhood (4)**

Designed to enable students to understand development of infants and young children and observe the "range of normality" in a variety of experiential settings. Includes basic health and safety requirements, nutritional needs for optimum growth, and signs of illness. In-depth exploration of the relation of learning processes to principles of development of infants, toddlers, pre-schoolers, and kindergarten children as seen from pediatric, developmental, and educational perspectives. This course may be elected twice. The first-level course (ED 542a) is an overview of all age levels and topics. The second level (ED 542b) focuses on a particular age level or developmental topic.

Prerequisite: Permission of instructor.



**ED 543 Teacher as Child Advocate and Adult Educator — Early Childhood (4)**

Study of the family system in relation to reciprocal adult/child interaction in the home learning environment and the roles of school and community forces which affect the home and school. Exploration of the roles of parental and community forces in meeting needs of young children and of issues concerning child advocacy by teachers. Overview of parental practices which affect learning. Includes methods for working with parents, para-professionals, volunteers in the classroom and home, and with diverse community team members and referral resources for children with special needs.

Prerequisite: ED 540, ED 542, or permission of instructor.

**ED 544 Play as a Learning Medium (4)**

Role of play in development of logical and creative thought processes and in socio-emotional development, past and present theories of play and games, and methods for utilization of play in the early childhood curriculum.

**ED 545 Administration and Direction of Early Childhood Programs (4)**

Covers administrative aspects such as budgeting, legislation, rules and regulations, and employee concerns. Includes procedures for developing programs, writing proposals, and identifying funding sources. Examination of types of program operation agencies involved in early childhood programs, trends in child care in the community, and practical problems related to direction of centers.

Prerequisite: ED 540, ED 542, or permission of instructor.

**ED 546 Workshop in Early Childhood Curriculum (4 or 8)**

Special areas of curriculum — mathematics, science, language, music, art, and sensory-motor — will be emphasized, and methods for development of work-shops and learning centers in these areas will be stressed. Includes special uses of audiovisual and programmed materials in the learning center. May have different emphasis when offered in different semesters, but in all semesters a major focus will be on workshop presentations.

**ED 554 Interaction Laboratory for Teacher Development (4)**

Designed to acquaint students with the importance of human relations skills in teaching; to provide students with exposure to interpersonal problems among pupils, parents, and fellow teachers within a school setting, and to help students acquire a clear understanding of the flexible line separating personal and professional behavior. The student takes part in role-playing, simulated games, and action-oriented problem-solving.

Prerequisite: ED 245.

**ED 555 Practicum for Teachers of the Urban-Rural Disadvantaged (4)**

A specialized performance-based, field-centered practicum to prepare teachers for urban-rural disadvantaged children, as well as to fulfill supervised internship requirements for Michigan elementary certification. The practicum intern progresses through four developmental stages, gaining higher levels of competencies in the teaching strategist function, teaching research function, behavioral management function, school-community function, and membership role function.

Prerequisite: Open to graduate students enrolled in special projects.

**ED 560 Special Problems in Guidance and Personnel Work (2, 4, 6, or 8)**

Deals with specialized problems in various phases of guidance and counseling, student personnel work, or employment counseling. Specific topics will be based on the clientele and staff needs. Can be taken more than once, but for no more than a total of eight credits. It may be elected for independent study.

**ED 561 Guidance and Counseling for Children (4)**

A study of guidance services and an overview of principles, practices, and philosophy and techniques of guidance and counseling for use in the classroom or other setting by teachers, counselors, and other pupil personnel workers. The course provides knowledge of approaches to help children develop in areas of self-understanding, self-concept, and intra- and inter-personal skills, social skills, academic skills, and self-direction. Includes an introduction to counseling theories. An elective course for teachers who wish to expand their knowledge of guidance activities for classroom use and as a basic guidance and counseling course.

**ED 562 Assessment of Children (4)**

Individual and group analysis techniques used in the assessment of children for curricular planning and instruction, including the nature and range of human characteristics; appraisal methods for analysis of physical, mental, and social development; techniques for understanding children's special needs; values; self-concepts; attitudes; learning styles, and environmental influences. Includes measurement, evaluation, synthesis of case data, case conference methods, and the development of educational objectives for individual pupils. Provides a study of school assessment programs, and interpretation of statistics commonly used in test standardization and reports of research, and research methodology.

**ED 563 Group Procedures in Guidance (4)**

A study of group processes and the role of the counselor in using group procedures in educational or agency settings with children, parents, teachers, and other adults. Provides opportunities in actual or simulated situations for practice with small groups. Experience as a member of a personal growth group, designed to increase self-awareness of others, may be included.

**ED 564 Delivery of Human Services (4)**

Covers analysis, development, research, study, and selection of service delivery strategies according to clientele needs and characteristics as they interact with program goals. Attends to service delivery administration, supervision, and funding, as well as to personnel recruitment selection and training. Includes survival skills for the agency and the service deliverer.

**ED 567 Workshop in Guidance and Personnel Services (2, 4, 6, or 8)**

An opportunity for teachers, counselors, administrators, and other personnel to evaluate and develop various aspects of guidance and student personnel programs. The course is offered on request from school systems or agency personnel to provide in-service education for counselors and other personnel service workers.

**ED 570 Advanced Topics in Literature for Children (4)**

Recent literature for children is critically analyzed as part of the literary mainstream. In-depth study of major authors and illustrators, genres, historical periods, and controversial issues is encouraged. Emphasis on broadening the student's knowledge and appreciation of children's literature and on discovering effective ways to help children understand and enjoy a variety of literary forms.

**ED 571 Children's Books in the Elementary School Curriculum (4)**

Designed for prospective teachers who want to know how to incorporate a variety of types of children's reading materials, excluding textbooks, into the elementary curriculum. Locating, selecting, evaluating, and organizing children's reading materials are also covered.

**ED 572 Storytelling and Creative Dramatics (4)**

Students interested in learning ways to encourage children to use their imagina-



tive and dramatic skills to interpret literature and to create plays, pantomimes, and other creative dramatic experiences will find the course helpful. Opportunities are provided in learning how to select, learn, and tell stories for children of various ages through lectures, discussions, and practice. Students will plan, carry out, and evaluate a story-telling program and creative dramatics sessions with children.

#### **ED 574 Literature for the Young Child (4)**

Preparation for the selection and use of appropriate books, rhymes, stories, records, and filmstrips with pre-school and early elementary school children. Students must be working with pre-school children at the time the course is being taken.

Prerequisite: ED 332 or ED 570.

#### **ED 575 Creative Writing and the Reading Process (4)**

A careful analysis of creative writing and its relationship to the reading process. Discussion and demonstration topics include theories of writing, how to motivate children to write, how to strengthen writing competency, therapeutic values of writing, and effective evaluation of children's writing.

#### **ED 580 Theories and Techniques of Leadership for Teachers (4)**

Designed to investigate roles of the teacher as a classroom leader, and as a leader within small groups. Topics include leadership as it pertains to the organization, the situation, the task, the leader, and the group; leadership responsibilities; leader behavior; effective, successful, and attempted acts of leading, and group motivation.

#### **ED 581 Teaching About Black Africa in the Public Schools (4)**

Includes (1) content of both contemporary and historical topics of Black Africa applicable to new social studies programs in elementary and secondary curricula, (2) material evaluation, selection, and use of Black African topics appropriate for elementary and secondary use, and (3) organization and development of a unit on Black Africa for elementary and secondary schools.

Prerequisite: Admission to graduate program or permission of instructor.

#### **ED 582 Play Production for Secondary School Teachers (4)**

This course aids secondary school instructors in staging effective dramatic productions. All phases of dramatic production — technical, philosophical, and economic — are examined. The course will provide each instructor with a manual detailing skills required for implementing each primary area of play production. Teachers will broaden their potential teaching options in dramatics.

#### **ED 583 The Middle School (2 or 4)**

Deals with all aspects of the emerging middle school including organizational patterns, curriculum, psychological factors, philosophical bases, and methodologies. An in-depth analysis of the relationship of this organizational pattern to contemporary educational, social, and student needs will be made. Staff members will be utilized from the fields of psychology, philosophy, and education.

Prerequisite: ED 512.

#### **ED 584 The Open Classroom (2 or 4)**

An in-depth examination of the open classroom as a philosophic and practical reordering of the traditional elementary classroom. Teachers will study and evaluate the open classroom within the contexts of psychological, ecological, social, and curricular foundations.

#### **ED 585 The Law and the Teacher (4)**

An introduction to school law for the practicing classroom teacher. The course deals primarily with laws relating to public schools and teachers in Michigan and the U.S., as such laws guide and monitor education. Landmark cases such as

*Brown vs. Topeka* and *West Virginia vs. Barnette* will be studied, applied, and interpreted by a lawyer and a faculty member. The course offers teachers a unique opportunity to study a crucial area in public education in a non-traditional team-teaching setting.

Prerequisite: Permission of instructor.

#### **ED 586 Education of the Spanish-Speaking of the United States (4)**

An opportunity for teachers and other educators to become familiar with the aspects of Latino education. Lectures, readings, and discussions will cover background about the Spanish-speaking in the U.S.; the problems that confront Latinos in the educational system, and approaches to educating the Spanish-speaking.

#### **ED 587 Social Studies in the Elementary School (SS 570) (4)**

An intensive study of current trends, challenges, characteristics, and content of effective social studies programs, with emphasis on the relationships among discipline areas comprising the social studies. The course will stress application of these studies in urban area elementary schools.

Prerequisite: ED 245 and acceptance into a graduate or certification program.

#### **ED 588 Supervisory Skills for Cooperating Teachers (4)**

The course will strengthen and/or develop the supervisory skills of teachers who will be working with student teachers, as well as students in pre-student teaching field experiences. Special emphasis will be placed on observation and feedback techniques.

#### **ED 589 Unified Science and Mathematics (2 or 4)**

This course will explore methods and materials for implementing a realistic problem-solving approach in the elementary school classroom. Emphasis will be placed upon problems which have natural science, social science, and mathematical components.

#### **ED 590 Special Problems in Education (2, 4, 6, or 8)**

A course dealing with specialized problems in various phases of education. Depending on the clientele and staff needs, the specific topics may differ each semester. The course may be taken more than once, but for no more than a total of eight credits. May be elected for independent study.

#### **ED 591 Ecology of the Classroom (4)**

The course deals with the ecological context for learning in classroom, school, and community. The primary task will be to describe, to analyze, and to make inferences about the structure of the ecological environment. These findings will then be related to pupil learning.

#### **ED 592 Research Techniques in Education (4)**

A study of research techniques in the behavioral sciences and education, methods of gathering evidence, elementary statistical concepts in education, research design, etc. Students preparing to start their terminal project will find the course especially helpful.

Prerequisite: Acceptance in a master's program in education or permission of instructor.

#### **ED 593 Evaluation and Accountability in Teaching (4)**

Accountability and evaluation are key words in education which have meanings that depend on the context of their use. This course allows educators to become familiar with assessment techniques, educational measurement in teaching and learning, valuing in the context of evaluation and accountability, and means of reviewing the importance of accountability and its validity.

**ED 597 Oakland University/Greenfield Village Practicum in the Social Studies (4)**

A specialized field-centered practicum to assist teachers in developing and using primary resources for their ongoing social studies programs. The course utilizes the facilities of Henry Ford Museum and The Greenfield Village, the Oakland University facilities, and those of other community resources. It is a year-long program that allows participants to become actively involved in cause-and-effect relationships of inventions, home styles, living standards, arts and crafts, and technology as they relate to social studies instruction. Due to the innovative structure, the course is limited to 45 students. A laboratory fee of \$25 is assessed to cover materials and supplies.

Prerequisite: ED 587 (SS 570) or permission of instructor.

**ED 601 History in Education (4)**

A study of the historical development of educational institutions in Western society. During different semesters, one or more of the following themes will be emphasized: (a) Teaching as a profession: Teachers as they are viewed by society and themselves. Issues include the history of unionism, accountability, and professional problems peculiar to teaching. (b) Changing conceptions of the student-teacher relationship: The interpersonal relationship between students and teachers. Includes the historical development of the teacher as an authority figure and curriculum specialist. (c) The future as history: The historical and future development of the role of education in society. Emphasis will be given to the way the teacher's role has changed, and is changing, in light of social expectations. (d) The learning process from a historical perspective: The different learning styles and techniques that have been developed over the ages. Emphasis will be given to motivation, the organization of knowledge, and the different views of human development.

**ED 602 Philosophy in Education (4)**

A study of various philosophical issues in education and their relevance to the personal and professional life of the teacher. During different semesters, one or more of the following themes will be emphasized: (a) Knowledge and values: How different theories of knowledge and value orientation affect the development of educational policies. (b) Analysis of concepts: How critical educational concepts can be philosophically analyzed so that their logical meaning is clarified and used more accurately in classroom teaching or professional policy-making. (c) Moral Education: How different theories of moral development can be used to develop a program of moral education in public and private schools. (d) Human Nature and Teaching: How different theories of human nature determine teaching methods and influence teacher-student relations and the self-understanding of the teacher.

**ED 603 Cross-Cultural Studies in Education (4)**

Explorations into the problems created by ethnocentricity within education and the effects of cultural currents on educational development. During different semesters, one or more of the following themes will be emphasized: (a) Comparative studies of school-community relations: Investigations into cultural variations in the classroom, school, and community. (b) School policy and cultural pluralism: An investigation of local school policy formulation and ways of relating policy to the people it affects. (c) International education policies: An investigation of national educational policies as they relate to economic and social development, literacy, and the concept of one world.

**ED 604 Sociology in Education (4)**

An investigation into schools as social systems, the environmental effect of schools on students and teachers, and the impact of schooling upon American society. During different semesters, one or more of the following themes will be emphasized: (a) The sociological implications of work: How the work of a teacher

is partly predetermined by the organization of his/her school, and how the organization of work in society correlates with the organization of work in schools. (b) Social norms and schooling: How conventional social norms of productivity and individual responsibility affect schools. (c) Cultural pluralism and education in America: How cultural pluralism affects, and is affected by, education in the U.S. (d) Educational alternatives and social change: How alternative and non-formal schools might contribute to social change.

**ED 605 Politics in Education (4)**

Study of political issues in education and the theory and practice of political concepts in the schools. During different semesters, one or more of the following themes will be emphasized: (a) Legal, human, and civil rights in education: How different understandings and practices of the rights of teachers, students, children, administrators, parents, and the community affect the total teaching process. (b) Equal educational opportunity: How equal educational opportunity is conceptualized by different groups in society. Issues include school financing, compensatory education, busing, and community control. (c) National educational policy: The route national educational policy travels from formulation through implementation. Issues include federal spending priorities; recession, inflation, and education; manpower development, and a 'limited-growth' economy. (d) Justice and education: How ideas about fairness in society play a major role in education. Issues include unexamined assumptions about justice, and the teacher as an agent of social justice and injustice.

**ED 611 Problems in Elementary Education (4 or 8)**

A study of issues in the organization, curriculum administration, and methodology of elementary schools. Students' needs and preparation determine the specific topics included in a given semester. Students may register for this course once or twice, up to a total of eight credits.

Prerequisite: Admission to course in a graduate program in elementary education or in reading instruction.

**ED 612 Curriculum Studies (4)**

A study of practices in and research on curriculum in modern elementary schools. The course investigates the sum total of experiences provided for young people in school settings and will challenge established practices on the basis of recent curricular developments.

Prerequisite: Admission to course in a graduate program in elementary education or in reading instruction.

**ED 620 Social Deviancy in Special and Regular Education (4)**

This course critically analyzes social deviance from individual, institutional, and societal perspectives. Sociocultural factors which directly influence the perceptions of deviant behavior are examined. Sensitization and assistance will be provided to classroom teachers in programming for the needs and interests of atypical children, including minorities.

Prerequisite: Admission to M.A.T. Special Education program or Post Master's endorsement in special education and completion of core program in special education or permission of instructor.

**ED 621 Management and Curriculum for Emotionally Impaired Children (4)**

This course is designed to provide the student with the experience and enhancement of skills necessary to observe and assess the emotionally impaired child. It provides the opportunity to explore in depth the models of etiologies current in the field to explain emotional impairment, and their implications for intervention techniques based on an understanding of the model. The use of video tapes and demonstrations as well as an emphasis on direct observation of emotionally



impaired children are included.

Prerequisite: ED 501 or ED 502 or permission of instructor.

**ED 622 Practicum in Special Education — Emotionally Impaired Children (2, 4, 6, or 8)**

A specialized field experience in a special education setting for emotionally impaired children. Observation, tutoring, diagnostic and prescriptive teaching, and use of materials and equipment are part of the experience. The student will be provided with individual, small group, and total group responsibility.

Prerequisite: Completion of all course requirements for M.A.T. and/or endorsement in special education and permission of instructor. Must be taken concurrently with ED 623.

**ED 623 Project in Special Education (2)**

An action research project completed in conjunction with the Practicum in Special Education. Field testing intervention techniques, designing new education models, or evaluating special education instruments are examples of projects. Seminars may be required. Must be taken concurrently with ED 622.

**ED 624 Directed Teaching in Special Education (6)**

A supervised full-time teaching experience in classrooms corresponding to the student's concentration in special education. Those qualifying for exemption from the supervised teaching requirement in the certification code may not take this course.

Prerequisite: Admission to master's program in special education and approval by director of special education program.

**ED 625 Transactional Analysis in the Classroom (4)**

This course provides teachers with skills and experiences in the analysis of their own and their students' classroom behaviors using a Transactional Analysis (TA) perspective. Teachers will apply theoretical learnings to achieve greater awareness and understanding of themselves, so that they can positively affect their classroom behavior. Teachers will also present TA to students in their classroom to enhance the students' understanding of their classroom behavior.

**ED 626 Practicum in Special Education — Learning Disabled Children (2, 4, 6, or 8)**

A specialized field experience in a special education setting for learning disabled children. Observation, tutoring, diagnostic and prescriptive teaching, and use of materials and equipment are part of the experience. The student will be provided with individual, small group, and total group responsibility. Seminars may be required.

Prerequisite: Completion of all course requirements for M.A.T. and/or endorsement in special education and permission of instructor.

**ED 627 Physical and Social Competencies of Handicapped Children (4)**

The course identifies the physical and social competencies necessary for mentally handicapped children to become productive citizens. Work skills and vocational opportunities are also explored.

Prerequisite: Admission to graduate program in special education or permission of instructor.

**ED 628 Advanced Practicum in Special Education (4)**

This experience is geared to the education, background, and training of the student, designed to provide in-depth field experience other than at a classroom level.

Prerequisite: Recommendation by at least two special education faculty, three,

years' teaching experience, one of which must be in special education, and completion of all course work.

**ED 629 Bilingual/Bicultural Education Practicum (4)**

A specialized field experience in a bilingual/bicultural classroom setting for bilingual children. Observation, tutoring, diagnostic-prescriptive teaching, and use of bilingual materials are part of the experience.

Prerequisite: Completion of all other requirements for credential in bilingual education and/or permission of instructor.

**ED 630 Seminar in Reading (4)**

The validity, reliability, results, and conclusions of research and other literature in selected areas of reading and language arts will be carefully analyzed in traditional seminar fashion. Enrollment will be limited.

Prerequisite: Two courses in reading instruction and permission of instructor.

**ED 631 Problems in Reading Instruction (4 or 8)**

A study of diagnostic, methodological, organizational, and administrative issues in reading programs. Student needs and preparation determine the specific topics included in a given semester. Students may register for this course once or twice up to a total of eight credits.

Prerequisite: Admission to course in a Master of Arts in Teaching program and at least one previous course in reading instruction.

**ED 632 Diagnosis of Reading Disabilities (4)**

A laboratory course concerned with analysis and study of factors which contribute to or precipitate reading disabilities in elementary and/or secondary school pupils. Includes selection and administration of both informal and standardized tests and also deals with the preparation and evaluation of case reports.

Prerequisite: Admission to course in a Master of Arts in Teaching program, ED 500, and permission of instructor.

**ED 633 Correction of Reading Disabilities (4)**

A laboratory course that focuses on methods, materials, and practices pertaining to the instruction of disabled readers. The course provides opportunities to plan, organize, and conduct remedial instruction for children under the supervision of the instructor.

Prerequisite: Admission to course in a Master of Arts in Teaching program, ED 632, and permission of instructor.

**ED 634 Advanced Study of Classroom Strategies in an Integrated Language Arts Curriculum (4)**

The theory, research, and practice concerned with instructional strategies in all areas of the curriculum which promote the development of reading-language abilities. Particular attention is given to a process curriculum and current linguistic concepts which make adequate provisions for a range of language-inducing and language-production options. Participants will prepare materials which will cause young learners to engage in experimenting, examining, organizing, systematizing, analyzing, and evaluating the reading-language abilities they employ. Attention is also given to a study of changes in the language behavior of young people for the purpose of evaluating linguistic maturation.

**ED 635 Organization of Reading Programs (4)**

This course is designed for master's candidates in reading who plan to become reading specialists or reading consultants. Topics include (1) conducting a needs assessment of the language arts curriculum, (2) program planning in reading, (3) guidelines for staff development (ongoing and long-range in-service), (4) analyzing reading materials, (5) defining the reading consultant's role, and (6) strategies for working with classroom teachers in their classrooms. Course requires field work in a school, preferably where the graduate student is presently em-

played.

Prerequisite: ED 632, ED 633, or permission of instructor.

### **ED 650 Practicum in Early Childhood Education (4)**

A culmination experience for the early childhood program. Students will write a proposal, select appropriate materials and methods, and implement and evaluate the action phase. This is primarily an "on-site" course. It will be individually related to the student's area of specialization or particular interest. Proposals may be related to program development, materials development, or action research.

Prerequisite: Completion of all other requirements of the degree program.

### **ED 661 Techniques of Counseling (4)**

Intended as a core course in the counseling curriculum with intense focus on both theory and skill acquisition. Pre-practicum counseling experiences include audio and video taping of counseling interviews with review by course instructors. This course allows basic counseling skills to be acquired through theoretical study and simulated counseling experience.

Prerequisite: ED 563, ED 561 or 564; ED 562 or 662, and admission to the guidance and counseling program.

### **ED 662 Assessment of Youth and Adults (4)**

Covers individual and group techniques used in the assessment of adolescents and adults for educational planning, career planning, and placement. Includes subjective and objective methods of analysis of human development; case study procedures leading to realistic client goals and a planned program for client progress; referral practices; placement and re-assessment, and program evaluation. Provides an opportunity to carry out an action research project in which assessment techniques are applied.

Prerequisite: Admission to program in guidance and counseling and two courses in guidance and counseling.

### **ED 663 Advanced Group Counseling (4)**

Principles, practices, and techniques of group dynamics as applied to delivery of counseling services in educational and other complex organizational settings. Problems of group leadership, composition, selection, intervention strategies, termination, evaluation, and follow-up will be approached through seminar and field work experiences. Students will develop a written description of their own group counseling approaches and will validate the description with concurrent application in a group counseling setting. The study and application of relevant research literature are stressed. Can be taken as an elective or may be substituted for ED 563, with adviser's approval.

Prerequisite: ED 563 or equivalent and permission of instructor.

### **ED 664 Consultation in Pupil Personnel Work (4)**

Procedures and techniques useful to counselors and other pupil personnel workers to help children and other clients indirectly by consulting with teachers, parents, or employers. Emphasizes supportive services for regular classroom teachers directed at enhancing learning and adjustment of students, maximum utilization of various pupil personnel specialists, and securing support by significant adults in the lives of all students. Covers professional relationships and the coordination of guidance services and a pupil personnel team. Includes active involvement in a field setting of the school and adjacent community referral agencies.

Prerequisite: Admission to program in guidance and counseling and ED 661.

### **ED 665 Guidance Information and Career Development (4)**

Emphasizes the process of providing guidance information and of helping children or adults develop self-understanding of their interests, abilities, and opportunities for education and work, as a basis for decision-making. A field experi-

ence applying these concepts is required. Covers vocational development theory, psychological and sociological aspects of career choice, and systematic approaches to provide educational, occupational, and personal-social information. Computer-assisted information systems, storage of pupil information, and educational data processing as an aid to pupil personnel services are studied.

Prerequisite: Admission to program in guidance and counseling or permission of instructor.

### **ED 666 Practicum in Guidance and Counseling (4 or 8)**

A culminating course in the guidance and counseling sequence in which the student studies and applies counseling theory and practice and develops his own counseling skill in individual and group counseling procedures. Students are supervised in work settings such as schools, the counseling laboratory, and community agencies. The age of counselees will be appropriate to the individual needs of each practicum student. Analysis of audio and/or video tapes of simulations and actual counseling sessions will be conducted individually with a supervisor and small practicum groups.

Prerequisite: Completion of all required course work.

### **ED 699 Terminal Project (4)**

The planning and execution of significant research or project in accordance with the advice of the student's guidance committee.

Prerequisite: Admission to a graduate program in elementary education or reading instruction and written approval of the student's guidance committee. Students should request such approval from their advisers early in the fall semester for registration in the winter semester, and early in the winter semester for registration in the spring, summer or fall semesters. Students must present the completed project no less than two weeks before the end of classes in the term of graduation.

The following two courses can be taken as electives in Category D of the Elementary Education program:

### **SCS 505 Basic Concepts and New Developments in Science (4)**

Basic concepts in science and science methodology. An intensive study of one science area (e.g. biology, chemistry, physics, etc.) and a study of the new curricula in science for the elementary school.

Prerequisite: Admission to course in a graduate program in elementary education or permission of instructor.

### **SCS 506 Environmental Education Strategies for Elementary School Teachers (4)**

Designed for elementary school teachers interested in environmental education. The content will be interdisciplinary including the typical environmental concerns and focusing on air, water, soil, energy, living things, ecological systems, and conservation. Application to the classroom situation will be stressed. A local nature center will be used to provide appropriate field experiences. The teacher's role of assisting pupils during the collection of data relative to environmental relationships and the identification of consequences and alternatives will be emphasized.

Prerequisite: Admission to graduate study in education.

### **Special Courses**

Students enrolled in the degree programs described in this catalog may need one or more of the following courses. For specifics on their suitability within a given program, see the description of that program.

### **ALS 534 Language Development in Children (4)**

Language acquisition in normal and abnormal children: stages of the acquisition process; the role of the environment; the relationship between language and the



development of other skills; language acquisition in children with sensory and psychological disorders; relationship between language, reading, and writing. Prerequisite: One course in ALS or LIN, or permission of instructor.

**MTE 511 Mathematics for the Elementary School Teacher (4)**

See page 57.

**MTE 512 Mathematics for the Elementary School Teacher II (4)**

See page 57.

**MTE 625 Probability and Statistics (4)**

See page 58.

**PSY 510 Developmental Psychology (4)**

See page 65.

**PSY 512 Test and Measurements (4)**

See page 65.

**PSY 513 Psychopathology of Childhood (4)**

See page 65.

**THE MASTER OF ARTS IN TEACHING IN ENGLISH**

See page 39.

**THE MASTER OF ARTS IN TEACHING IN MATHEMATICS—  
SECONDARY EDUCATION OPTION**

See page 53.

**THE MASTER OF ARTS IN TEACHING IN MATHEMATICS—  
ELEMENTARY EDUCATION OPTION**

See page 56.

# SCHOOL OF ENGINEERING

**Dean:**

Paul R. Paslay

**Professors:**

Benjamin F. Cheydleur, B.A., University of Wisconsin  
August J. Durelli, Ph.D., Sorbonne, John F. Dodge Chair of Engineering  
David H. Evans, Ph.D., Brown University  
William G. Hammerle, Ph.D., Princeton University  
Richard E. Haskell, Ph.D., Rensselaer Polytechnic Institute  
John Carroll Hill, Ph.D., Purdue University  
Joseph D. Hovanesian, Ph.D., Michigan State University  
Keith R. Kleckner, Ph.D., Cornell University  
Paul R. Paslay, Sc.D., Massachusetts Institute of Technology  
Howard R. Witt, Ph.D., Cornell University

**Associate Professors:**

David E. Boddy, Ph.D., Purdue University  
Robert H. Edgerton, Ph.D., Cornell University  
Donald R. Falkenburg, Ph.D., Case Western Reserve  
Glenn A. Jackson, Ph.D., University of Michigan  
Gilbert L. Wedekind, Ph.D., University of Illinois  
Tung H. Weng, Ph.D., University of Missouri  
Michael J. Wozny, Ph.D., University of Arizona

**Assistant Professors:**

Yau Yan Hung, Ph.D., University of Illinois  
Cho Ying Liang, Ph.D., University of Michigan

**Adjunct Professors:**

John G. Gievers, Ph.D., Technical University Darmstadt  
Kenneth A. Meade, Sc.D., (Honorary) Eastern Michigan University

The School of Engineering offers work leading to the Master of Science and Doctor of Philosophy degrees in engineering, as well as the Professional Development degree for practicing engineers.

The school is housed in Dodge Hall of Engineering, a modern facility with extensive laboratories for research and design studies. Established laboratories cover coherent optics, experimental stress analysis, heat transfer, system simulation, communications and control, mechanical and electrical properties of materials, and thin-film microelectronics. Special facilities exist for research in two-phase flow phenomena, optical data-processing, holography, p-n junction devices, and system simulations. Students have access to the school's IBM 1130 digital computer and the university's Burroughs B5500 time-sharing system, as well as the several analog computers operated by the school. In addition, there is a large hybrid machine suited to simulations of complex systems. All of these facilities are complemented by fully-equipped and staffed electronics and machine shops.

## THE MASTER OF SCIENCE IN ENGINEERING

Students may earn the Master of Science in engineering with concentrations in systems engineering, energy transport, and electromagnetic and optical engineering. The electromagnetic and optical engineering concentration places special emphasis on properties of materials, such as electronic properties of semiconductors and optical testing of strength of metals. Minor concentrations may



be arranged in physics and mathematics. Students whose special interests cross the boundaries of these areas may arrange interdisciplinary courses of study. Programs ordinarily do not require a thesis; emphasis is rather placed on a design project carried out by the individual or by a small group. The object of the Master of Science program is to provide participants with broad training in an area of engineering rather than a narrow apprenticeship in a specific research area. Specialized research is more appropriately delayed for doctoral thesis preparation.

Courses are arranged in late afternoon and early evening for the convenience of students employed in industry. Such part-time students should be aware, however, of the very real demands placed on them by graduate studies and should keep outside work commitments within reasonable bounds.

### Admission to Course

The program leading to the degree of Master of Science in engineering is designed to accommodate students with a wide variety of undergraduate backgrounds. A bachelor's degree in physics, mathematics, or any recognized engineering field is excellent preparation; a degree in any other field of science is also acceptable, but a student presenting such a degree should plan to spend additional time in residence to gain proficiency in the fundamentals of engineering.

Admission to master's study in engineering is selective; applicants should have upper-quartile rank. In addition to the bachelor's degree, an applicant should present academic transcripts and recommendations from two members of the undergraduate department who are familiar with his/her accomplishments and promise. These recommendations form a most important part of the admission credentials.

### Requirements for the Degree

A student's progress toward the M.S. degree is guided by his/her Master's Committee, composed of three School of Engineering faculty members, two selected by the student and one appointed by the Dean of Engineering. Each student must form a Master's Committee during the first semester. Failure to do so may result in additional semesters to complete degree requirements.

The master's degree in engineering is never conferred for completing a random selection of courses; a planned program is essential. The basic degree requirement is successful completion of at least 32 credits of graduate courses in engineering and related areas of the sciences, mathematics, or management, the whole to form an integrated program of study proposed by the student and approved in advance by the Master's Committee.

Students should propose programs which best suit their special interests, subject only to the following general requirements:

1. Each candidate for the degree of Master of Science shall be required to demonstrate proficiency in independent design or research by successfully completing a master's thesis or project. Ordinarily this requirement is satisfied by completion of four to 12 credits in EGR 509. In special cases, a student may be exempted from EGR 509, but the design-research requirement must be satisfied. In such cases the burden of proof of satisfaction of this requirement shall rest with the student, in the manner outlined in paragraph 3.
2. Each student taking EGR 509 must submit to the project director three copies of an engineering report describing all facets of the investigation. One copy shall remain with the project director; the other copies will be placed in central files maintained by the Dean of the School of Engineering and the Office of Graduate Study for perusal by any interested party. Detailed information on the format of the report is available in the Office of the School of Engineering. In addition, a project director will usually require a student to deliver a short oral presentation before interested faculty and students.

3. In some instances, a candidate may feel that proficiency in independent research or design at the master's level has been demonstrated by a project completed previously as a practicing engineer. Such a student should submit to the Master's Committee a detailed report of the project, with reprints of any related publications. If the project was a joint effort, the report should clearly indicate the extent of the candidate's role in the undertaking. If the Master's Committee judges the effort to be at a level commensurate with standards set for work leading to the degree of Master of Science in engineering at Oakland University, it may then certify the candidate as having satisfied the design-research requirement. As an aid in its deliberations, the committee may wish to request additional substantiation of the student's case. (Graduate credit for project work is awarded only for participation in a satisfactorily completed undertaking directed by a faculty member of Oakland University.)
4. Of the 32 credits required for the degree, at least 20 must be earned in courses offered by the School of Engineering. Graduate credits are awarded only for courses numbered 500 and above.
5. A student may request transfer credits, not to exceed 12 semester hours, for work done at another institution. A petition, endorsed by the Master's Committee, should be submitted to the Engineering Graduate Committee, and transcripts and catalog descriptions of the courses for which credit is requested should accompany the petition. In all cases, it shall be the responsibility of the candidate to demonstrate that the work done is relevant and complementary to his/her Oakland program.
6. Full-time students may register for as many as 13 credits per semester, and students holding assistantships in the School of Engineering may register for as many as nine credits per semester. Students with high academic standing may be permitted to register for an additional course by special petition. (See paragraph 7.)
7. In extraordinary cases, a student may petition to be relieved of a degree requirement. A petition form should be obtained from the Office of the Dean of the School of Engineering; it should then be presented to the Master's Committee for endorsement and submitted to the Engineering Graduate Committee for action.

### THE DOCTOR OF PHILOSOPHY IN ENGINEERING

Students may earn the Doctor of Philosophy degree in systems engineering. The goal of the doctoral program is to train engineering practitioners who have a broad competence that crosses the boundaries of traditional engineering disciplines and who are capable of dealing with complex, large-scale problems. The field of systems engineering has evolved into a blending of disciplines that is well-suited for dealing with such concerns as energy production, resource management, transportation systems planning, and highway safety, and it is in this field that Oakland's School of Engineering is concentrating its efforts at the Ph.D. level. The Ph.D. program in systems engineering is specifically intended for students who plan careers in industrial or governmental research and development laboratories or problem-oriented agencies. Students can begin doctoral study on a part-time basis, availing themselves of late afternoon or evening courses while maintaining full-time employment in local industry. However, later phases of study and research will require full-time devotion to the program, and the student should plan to spend at least three semesters engaged in full-time study.

### Admission to Course

The Ph.D. program is designed to accommodate students with academic backgrounds in engineering, mathematics, or the physical sciences. Superior per-



formance in a master's program in any of these areas is excellent preparation. Students with outstanding undergraduate records may apply directly for admission to the doctoral program, but normally a master's degree from an accredited institution is a requirement for admission. Admission is highly selective; an applicant should present transcripts of all previous academic work and recommendations from three faculty members of his/her most recent study program who can evaluate his/her scholarly achievement and promise. Foreign applicants must submit scores from the Graduate Record Examination Aptitude and Advanced Engineering Tests.

## Requirements for the Degree

Students seeking the Ph.D. degree pursue a unified program of course study and thesis research. The entire program, including the specific array of courses taken by a particular student, is directed by a five-member advisory committee. This committee consists of three faculty members chosen by the student, one of whom must represent a department outside the School of Engineering and two additional members appointed by the Dean of Engineering. One member of the committee is named chairperson. The entire committee must have the approval of the Dean of Engineering and the Dean of Graduate Study, and must be formed during the student's first semester of enrollment.

The following general requirements apply to all candidates for the doctorate:

1. **Residence.** Each candidate must devote at least three semesters to full-time pursuit of the doctoral study program. However, these semesters need not necessarily be consecutive or spent in residence on the campus although this is usually the case. If the student's employer and faculty advisory committee are able to agree that thesis research will constitute the complete job assignment for a semester, then, with the concurrence of the Dean of Engineering, that semester may be counted as full-time study.
2. **Credit.** A minimum of 56 credits must be earned for course work beyond the bachelor's degree, the normal full-time load being 12 credits per semester. Students who have earned course credits in a master's degree program at Oakland or another university may petition to have these credits applied toward the 56. The advisory committee will evaluate prior work and allow Ph.D. credits for those courses which are relevant to the proposed Ph.D. course of study. In all instances, a candidate must complete at least 20 credits of course work at Oakland University.
3. **Qualifying Examination.** After being admitted to the Ph.D. program and before earning more than 12 credits toward the Ph.D. degree, the student must pass a qualifying examination administered by the advisory committee. The qualifying examination covers basic engineering concepts. The purpose of this oral and written examination is to assess the student's facility with the analytical reasoning essential to later Ph.D. research. The examination is scheduled in advance, and any member of the university faculty may attend and participate in the examination. The advisory committee may ask a student to repeat the qualifying examination in a subsequent semester if his/her performance is deemed inadequate. No additional repeat examinations are permitted.
4. **Thesis.** Each candidate will submit a thesis to the advisory committee. The thesis must be the candidate's own work and must constitute a contribution to knowledge in the field of endeavor. A rough draft of the thesis must be submitted to the advisory committee for review, modification, and approval before the final copies of the thesis are prepared and approved. Final copies must conform to standard university style.
5. **Thesis Proposal Review.** As soon as a candidate has agreed with the advisory committee chairperson on a specific research topic, a written thesis proposal

should be prepared. This document should contain a formulation of the problem, the background work leading to the formulation and a plan of attack for the subsequent research. The candidate must then make an oral presentation of the proposal to the advisory committee and other interested faculty, at which time the committee may question the candidate's preparedness to carry out the research. Approval by the advisory committee of the thesis proposal permits the candidate to register for thesis research.

6. **Final Examination.** Each Ph.D. degree candidate must satisfactorily defend the thesis in a final oral examination administered by the advisory committee. The examination is taken upon certification by the advisory committee that the thesis is ready for final review. Any member of the university faculty may attend and participate in the examination. The committee is encouraged to invite additional outside referees to participate. At the committee's option, one re-examination may be permitted a candidate who fails to pass the final examination.

## Professional Development in Engineering

No one is more keenly aware than is the practicing engineer of the technological knowledge explosion the profession is experiencing. (The current half-life of technology is about six years.) New developments occur daily, and it is essential that time be devoted on a continuing basis to bring oneself up to date on advances in technology. Yet, the pressures of a job often leave very little time for serious study. Attending short courses and one-day institutes can provide overviews of new developments, but a more formal and extended program is required if the engineer is to gain a real working knowledge of the new technology — knowledge which can be applied on the job. Professional development in engineering is the continuing education process by which the practicing engineer remains at the forefront of the field. To help in this process, Oakland's School of Engineering offers a degree program in technical updating — the Professional Development degree program.

The Professional Development program is designed for the practicing engineer who wishes to become familiar with modern practical engineering analysis and design but does not want to undertake the rigor of a master's program. The program is an integrated sequence of six 12-week courses, each offered during evening hours. A student can complete the sequence in three to six semesters, depending on available time. Successful completion of the program is recognized by the awarding of a Professional Development in Engineering degree. This degree, not a certificate, for the first time brings recognition to engineers who have undertaken professional renewal and updating.

## Admission

Admission to the Professional Development program is open to anyone holding a bachelor's degree in engineering from an accredited institution that was earned not more recently than five years ago. No additional requirements are imposed.

## Requirements for the Degree

The only degree requirement is successful completion of at least 24 credits in specially-designed Professional Development courses. (See page 114.) Professional Development courses are divided into groups — updating (Group I) and upgrading (Group II). Students normally take three courses in each group. Group I courses are designed to provide the student with broadly-applicable analytical and evaluative skills. Group II courses are offered in various technical fields and employ the skills that have been developed toward solving practical design problems.

## Course Offerings

### EGR 500 Graduate Seminar (1)

Lectures and discussions conducted by members of the faculty, graduate students, and speakers from industry and other universities. Emphasis on current research interests of the school.

### EGR 505 Special Topics in Engineering (4)

Advanced study in special areas. May be taken more than once. Offered variously as a formal course. May be arranged by special agreement between students and a particular faculty member.

### EGR 509 Engineering Design Project (4 to 12)

Requires independent design effort by the student. The student should develop theoretical studies first and subsequently design appropriate hardware. Laboratory and computer studies will be included. Emphasis on completing the project properly within time limits and on preparation of final report.

Prerequisite: Permission of instructor.

### EGR 510 Introduction to Continuum Mechanics (4)

Foundations in vector and tensor fields, kinematics of deformation, measures of strain and analysis of stress, equations of motion, compatibility conditions, constitutive equations, thermodynamics of deformation. Study of infinitesimal elasticity, ideal fluids, ideal elasto-plasticity, and linear viscoelasticity.

### EGR 520 Signal and System Representation (4)

Analytical foundations of the characterization and behavior of dynamic systems. The concepts of causality and state, formulation of the describing equations, linearization and local stability. Solution of the state equations, eigenfunctions in state space, the state-transition matrix. System response modes and Laplace transform theory, convolution integrals, and time-frequency duality. Fourier analysis, continuous and discrete transforms, fast Fourier transform, generalized orthogonal signal expansions.

### EGR 522 Systems and Control I (4)

Continued study of the state-space representation of linear dynamic systems. Controllability, observability, and stability; minimal realizations; decoupling; pole-zero placement. Basic programming concepts; parameter optimization for systems with constraints; linear programming.

Prerequisite: EGR 520.

### EGR 523 Systems and Control II (4)

Functional optimization applied to dynamic systems. Calculus of variations and optimal control theory, systems with constraints and the minimal-time problem. Dynamic programming, optimal feedback control, regulators, and the Riccati equation. Computational methods. Gauss-Markov random processes; optimal filtering, prediction, and smoothing; optimal feedback control for linear systems with additive noise; Kalman filtering, the separation principle.

Prerequisite: EGR 522.

### EGR 525 Theory of Networks (4)

Study of the properties of network models of linear dynamic systems. Network graphs and topological constraints, formulation of generalized equilibrium equations, time-frequency duality, energy and stability constraints and their relationships to network passivity or activity. Input-output representations and their relationships to state-transition matrices, positive-real network functions and matrices, frequency mappings. Unilateral couplings. Introduction to distributed-parameter networks.

Prerequisite: EGR 520.

### EGR 526 High Frequency Electronics (4)

Topics relating to the generation, transmission, amplification, and detection of radio signals at HF, VHF, and UHF. Large and small-signal resonant-load amplifiers, high-frequency effects in transistors, oscillators, impedance matching, transmission lines, cavity resonators, and filters. With laboratory.

Prerequisite: EGR 520.

### EGR 530 Engineering Probability and Statistics (4)

Fundamental probability and statistics with application to a variety of engineering situations. Probability; axioms, conditional events, independence, random variables, distributions, expectations, generating functions. Statistics: sampling, estimation, hypothesis testing, special distributions. Applications, such as to quality control, vehicular and telephone traffic, tolerancing, system reliability, and evaluation of experimental data.

### EGR 532 Error Analysis (4)

Study of systems with imperfect elements, with emphasis on the statistical tolerancing problem. Analytical determination of joint distribution functions of several random variables with applications to tolerancing for mass production, quality control, reliability, and sensitivity analysis. Will include both established methods and results of current research.

Prerequisite: EGR 530 or equivalent.

### EGR 533 Noise Analysis and Signal Detection (4)

Study of systems subjected to noisy inputs and the detection of weak signals embedded in noise. Characterization of noise as a random process, ensemble and time averages, stationarity, ergodicity. Correlation functions and spectral densities. Elements of detection theory and the design of signals to facilitate detection. Comparisons of various analog and digital modulation schemes. Introduction to coding and estimation theory.

Prerequisite: EGR 520 and 530.

### EGR 534 Modeling/Management of Ecological Systems (4)

Lumped population growth models with and without saturation, age-dependent growth models. Interaction between two species, predation and competition, the many-species problem. A statistical mechanics for interacting populations, regulation and controlled growth in population systems, optimal harvesting. Measurements and system identification techniques.

Prerequisite: EGR 520.

### EGR 535 Large-Scale Dynamic Systems (4)

Analysis using a systems methodology including input/output state modeling, multilevel structure, model identification and management (control) policy. Examples selected from the following: flows in water-resource systems including surface run-off and stream flow, ground water flows, flows in catchments and flow networks, thermal balances, chemical structure and flows in large bodies of water, flows in traffic networks, large-scale ecological systems.

Prerequisite: EGR 520.

### EGR 536 Transportation Systems (4)

Topics related to the interactions of vehicles operating in a mass-transportation mode. Descriptions of traffic flow and congestion, automated rights-of-way. Simulation of vehicles and controlled roadways. Economic considerations for automated transportation systems.

Prerequisite: EGR 520 and 530.

### EGR 540 Electromagnetic Signals and Waves (4)

Electromagnetic theory with applications such as radiation, wave propagation diffraction, resonant cavities, and guided waves.

Prerequisite: EGR 520.



**EGR 548 Thermal Energy Transport (4)**

Basic concepts, properties, and descriptions of the three fundamental modes of heat transfer (conduction, convection, and thermal radiation); theoretical, numerical, and analog methods of analysis of steady, transient, single, and multi-dimensional problems; with laboratory.

**EGR 549 Fluid Transport (4)**

Study of the fundamentals of fluid mechanics and their applications; potential flow of inviscid fluids, laminar and turbulent boundary layer theory compressible flow; similarity, modeling, and dimensional analysis.

**EGR 550 Coherent Optics (4)**

Current developments in coherent optics and holography; two-dimensional Fourier analysis, diffraction theory, Fourier transforming and imaging properties of lenses, holographic interferometry, optical data processing. With laboratory. Prerequisite: EGR 520.

**EGR 551 Convective Transport Phenomena (4)**

Development of the fundamental equations expressing conservation of mass, momentum, and charge; ideal and viscous fluids with mass transfer. Approximation techniques for solution of the conservation equations. Convective transfer of momentum, mass, and charge. Introduction to turbulent transport processes. Prerequisite: Permission of instructor.

**EGR 552 Thermal Transport Phenomena (4)**

Development of the fundamental continuum equation expressing conservation of energy. Radiation and conduction heat transfer; extended surfaces; multi-dimensional conduction problems and one-dimensional unsteady conduction problems. Convective heat transfer; thermal boundary layer theory; forced and natural convection, and two-phase flow phenomena. Prerequisite: Permission of instructor.

**EGR 553 Fluid and Thermal Systems (4)**

Study of systems involving fluid and thermal phenomena. Emphasis upon systematically applying fundamental integral, differential and lumped modeling techniques as a means of formulating theoretical descriptions of such systems for the purposes of analysis, design, and optimization. Examples from energy conversion, transport processes, pollution control, and measurement problems. Prerequisite: Permission of instructor.

**EGR 561 Advanced Mechanics of Materials (4)**

Advanced topics in mechanics, such as beams on elastic foundations, curved and composite beams, theory of plates, membrane theory of shells, torsion of non-circular cross-sections, thick-wall cylinder, contact stresses, stress concentrations, energy methods, and introduction to stability.

**EGR 562 Mechanical Properties of Materials (4)**

True stress-strain properties of real materials with emphasis on defect structures. Plastic deformation and fracture of metals and non-metals — dislocations, mechanical twinning, and slip phenomena. Theories of yield strength and fracture and fatigue behavior. Work hardening theories for metals and strengthening mechanisms in solids.

**EGR 563 Applied Elasticity (4)**

Fundamentals of solid mechanics; stress-strain and equilibrium and compatibility equations, generalized Hooke's law, boundary conditions. Plane strain and generalized plane stress, plane elasticity. Airy stress function, torsion and bending, St. Venant principle, and introduction to thermoelasticity.

**EGR 564 Vibration Analysis (4)**

Analysis of lumped mechanical systems by application of D'Alembert's principle,

Lagrange's equations, Hamilton's principle and integral transforms. Matrix formulation of general n-degree-of-freedom systems with and without damping. Methods of approximation for continuous systems. With laboratory.

**EGR 565 Stress Analysis (4)**

Experimental determination of stress and strain in loaded members. Uses of brittle coatings, strain gauges, two-dimensional photoelasticity, and photoelastic coatings. Emphasis on optimal designs. With laboratory.

**EGR 572 Surface Field-Effect Devices (4)**

Study of the electronic structure of semiconductor surfaces; space charge region, space charge density, and surface potential. Concepts of surface states and surface charges; the MOS diode. Conductivity modulation and the theory of the MOS transistor, thin-film phenomena and devices — transistors and electroluminescent devices. Introduction to silicon integrated device technology; oxidation, diffusion, and epitaxy.

Prerequisite: EGR 573.

**EGR 573 Solid-State Electronic Devices (4)**

Crystal structure of important electronic materials and fundamentals of quantum mechanics as applied to electronic devices. Band theory of solids, particle statistics, transport phenomena and conductivity, equilibrium carrier distributions in both intrinsic and extrinsic semiconductors. Transport of excess carriers upon non-equilibrium condition, P-N junctions and junction devices. Included are light emitting diodes, IMPATT diodes, bi-polar and junction field-effect transistors. Introduction to MOS devices and their applications in large scale integration.

Prerequisite: EGR 530.

**EGR 580 Applied Numerical Methods (4)**

Study of practical numerical methods in engineering with emphasis on techniques appropriate to digital computation. Roots of equations, interpolation, numerical integration and differentiation, linear equations and the eigenvalue problem, ordinary and partial differential equations. Student development of programs is stressed.

Prerequisite: Working knowledge of FORTRAN or other scientific language.

**EGR 583 Pattern Recognition (4)**

Application of digital computer techniques to a variety of problems in pattern recognition; Bayes decision theory, maximum-likelihood estimation, multivariate normal features, linear discriminant functions, nonparametric techniques, feature selection, clustering, and unsupervised learning. Applications include the processing of remote sensing, bio-medical and pictorial data.

Prerequisite: EGR 530 and working knowledge of FORTRAN or ALGOL.

**EGR 585 Switching Theory (4)**

Algebraic symbolization for nets of binary switched circuits. Computation of non-redundant expansions by formal matrix methods with translation into laboratory devices using building-block computer elements. Introduction to sequential switching decomposition for control and programming of systems.

Prerequisite: Permission of instructor.

**EGR 586 Computer Architecture (4)**

Models of information processors; computer logic and organization. Specification of instructions, addressing and format, time-sharing controls, hardware for facilitating operating systems, micro-control, and input/output and network interfacing.

Prerequisite: EGR 585 or permission of instructor.

**EGR 609 Doctoral Thesis Research (4 to 12)**

Directed research toward the thesis.

**Related Courses****MTH 531 Mathematical Methods in Engineering I (4)**

Vector spaces and matrices, eigenvalue problems, applications to systems of differential equations, numerical methods in linear algebra. Infinite series, Taylor's series, power series methods in differential equations.

**MTH 532 Mathematical Methods in Engineering II (4)**

Functions of several variables, vector field theory, partial differential equations, boundary value problems, Fourier series, and Fourier integrals.

**CIS 582 Introduction to Computer Programming and Problem Solving (4)**

Introduction to computer programming and problem-solving using the languages BASIC and FORTRAN. Emphasis on applications in elementary statistics. Intended for students in education. Not open to engineering and computer science majors.

Prerequisite: two years of high school mathematics are strongly recommended.

**Professional Development Courses****EGR 901 Engineering Systems Analysis (4)**

(Group I) Overview of modern modeling and analysis techniques for physical systems.

**EGR 902 Digital Methods (4)**

(Group I) The formulation of problems for machine analysis. Constraints posed by machine organization and programming languages.

**EGR 903 Analog and Hybrid Methods (4)**

(Group I) System simulations involving analog and mixed analog-digital computers.

Group II courses are arranged according to the special interests of professional development students. Courses already developed include:

**EGR 905A Managing Professional Personnel (4)**

The philosophy, methods, and tools of directing a group of technical professionals.

**EGR 905B Advanced Mechanics of Materials (4)**

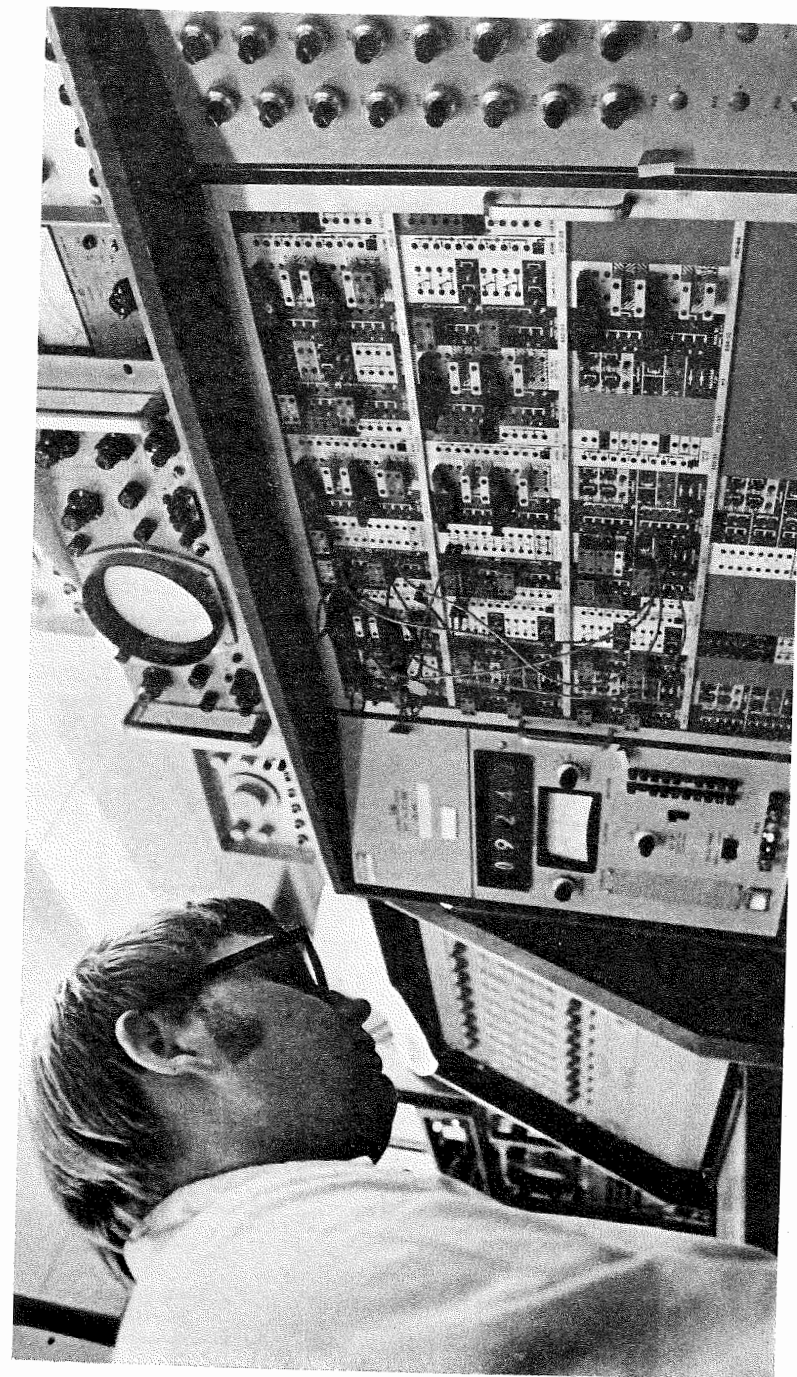
Comparative methods of failure analysis. Designing for a fail-safe operation.

**EGR 905C Experimental Stress Analysis (4)**

Use of modern x-ray, magnetic, and laser techniques of non-destructive materials testing.

**EGR 953 Fluid and Thermal Systems (4)**

Systems approach to the modeling and design of fluid and thermal energy transport systems.







## Campus Buildings

### Academic, Administrative, and Public Service

**North Foundation Hall** (1959), gift of Mr. and Mrs. Alfred G. Wilson, administrative offices

**South Foundation Hall** (1959), gift of Mr. and Mrs. Alfred G. Wilson, classrooms and administrative offices

**Oakland Center** (1959), self-liquidating funds, student center and food service

**Kresge Library** (1961), gift of the Kresge Foundation

**John Hannah Hall of Science** (1961), funds appropriated by the State of Michigan, classrooms, faculty and administrative offices

**Sports and Recreation Building** (1963), self-liquidating funds

**Charles F. Kettering Magnetics Laboratory** (1963), gift of the Kettering Foundation

**Howard C. Baldwin Memorial Pavilion** (1964), gifts from several foundations and other private sources, roofed pavilion, site of the Meadow Brook Festival

**Lula C. Wilson Memorial Concert Shell** (1964), gift of Lula C. Wilson Trust, acoustical shell at the Baldwin Pavilion

**Trumbull Terrace** (1965), gift of Mr. and Mrs. George T. Trumbull, food and service facilities for Baldwin Pavilion

**Matilda R. Wilson Hall** (1966), funds appropriated by the State of Michigan, classrooms, Meadow Brook Theatre, and faculty and administrative offices

**Dodge Hall of Engineering** (1968), funds appropriated by the State of Michigan and federal grants, classrooms, faculty and administrative offices

**Graham Health Center** (1968), self-liquidating funds, university health services

**Paula and Woody Varner Hall** (1970), funds appropriated by the State of Michigan and a federal grant, classrooms, recital hall, faculty and academic administrative offices

**Central Heating Plant** (1971), funds appropriated by the State of Michigan

## Campus Buildings Continued

**Oakland University Observatory** (1974), gift of Oakland University Foundation

**Public Safety and Services Building** (1975), funds appropriated by the State of Michigan

### Wilson Estate Buildings

**Meadow Brook Hall**, conference and cultural center

**Dodge Farm House**, Continuum Center

**Sunset Terrace**, president's residence

There are a number of barns and other buildings from the Wilson estate that are also used to house various university activities.

### Residence Halls

**Fitzgerald House** (1962), gift of Mr. and Mrs. Harold A. Fitzgerald and self-liquidating funds

**Anibal House** (1962), gift of Mr. and Mrs. Benjamin H. Anibal, and self-liquidating funds

**Pryale House** (1963), gift of Mr. and Mrs. Harry M. Pryale and self-liquidating funds

**Hill House** (1964), gift of Mr. O.E. Hunt

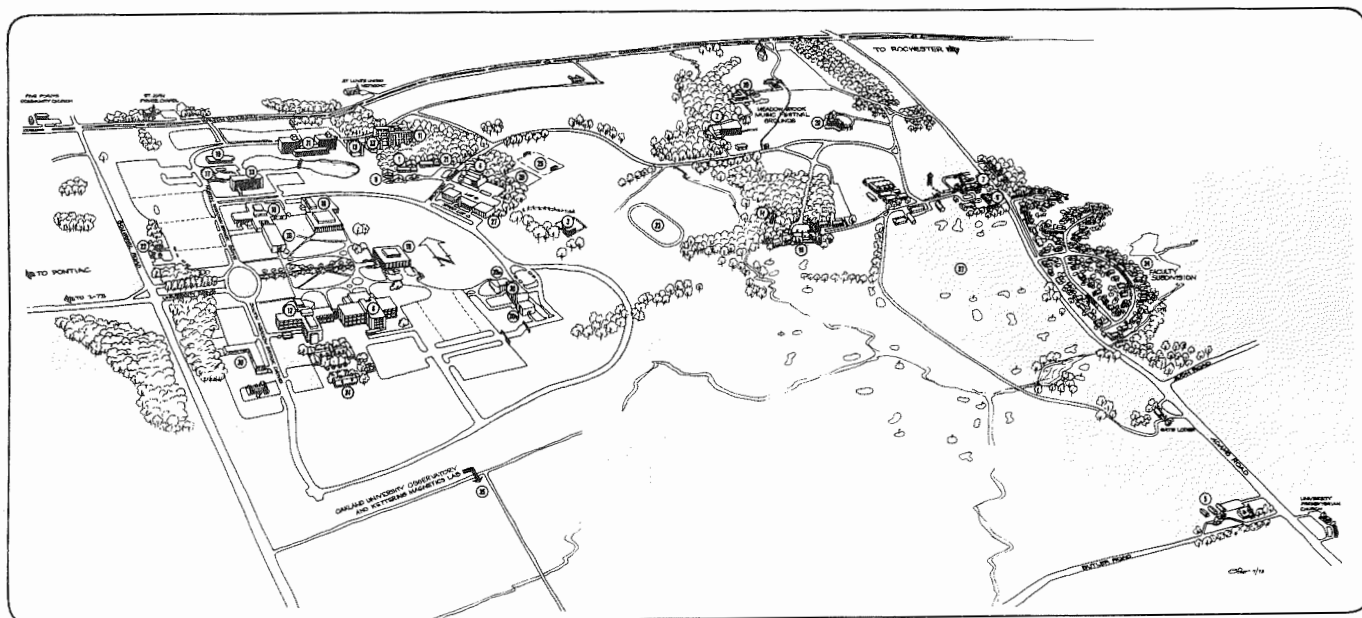
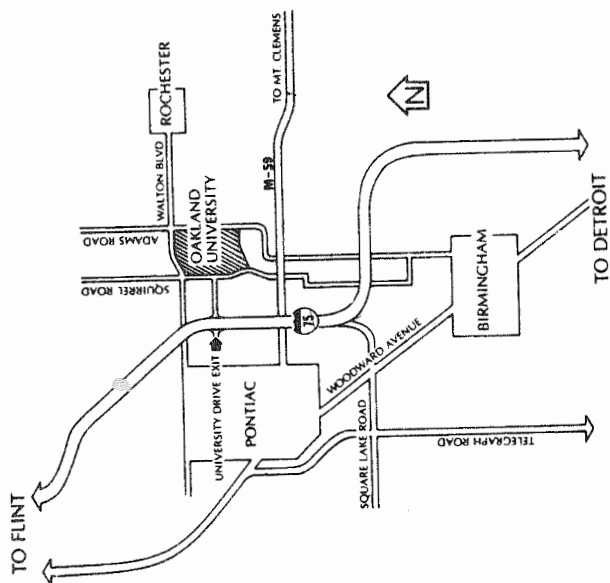
**Van Wagoner House** (1965), self-liquidating funds

**Vandenberg Hall** (1966), self-liquidating funds, also houses faculty and administrative offices

**Hamlin Hall** (1968), self-liquidating funds







- |                              |                                 |                                    |                                                              |
|------------------------------|---------------------------------|------------------------------------|--------------------------------------------------------------|
| 1. Anibal House              | 11. Hamlin Hall                 | 20a. Varner Recital Hall           | 29. Tennis Courts                                            |
| 2. Baldwin Memorial Pavilion | 12. Hannah Hall of Science      | 20b. Studio Theatre (ADA)          | 30. Trumbull Terrace                                         |
| 3. Baseball Diamond          | 13. Hill House                  | 21. Pryale House                   | 31. Vandenberg Hall                                          |
| 4. Central Heating Plant     | 14. Knoke Cottage               | 22. Gate House                     | 32. Van Wagoner House                                        |
| 5. Child Care Center         | 15. Kresge Library              | 23. Soccer Field and Running Track | 33. Wilson Hall                                              |
| 6. Club House                | 16. Meadow Brook Hall           | 24. S.E.T. Barn Theatre            | 34. Faculty Subdivision                                      |
| 7. Continuum Center          | 17. Meadow Brook Theatre        | 25. Play Field                     | 35. Oakland University Observatory & Kettering Magnetics Lab |
| 8. Dodge Hall of Engineering | 18. North Foundation Hall       | 26. South Foundation Hall          | 36. Public Safety and Service Bldg.                          |
| 9. Fitzgerald House          | 19. Oakland Center              | 27. Sports and Recreation          | 37. Golf Course                                              |
| 10. Graham Health Center     | 20. Paula and Woody Varner Hall | 28. Sunset Terrace                 |                                                              |

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