

OAKLAND  
UNIVERSITY



GRADUATE  
STUDY  
CATALOG

1979-1981



OAK  
AND UNIVERSITY  
OAKLAND UNIVERSITY  
1979-1981

## CORRESPONDENCE DIRECTORY

Mailing Address: Oakland University  
Rochester, Michigan 48063

### ACADEMIC UNITS

Dean of the College of Arts and Sciences, 377-2140  
Dean of the School of Economics and Management, 377-3282  
Dean of the School of Human and Educational Services, 377-3050  
Dean of the School of Engineering, 377-2200  
Dean of the School of Nursing, 377-4070  
Director of the Center for Community and Human Development, 377-2425  
Director of the Center for General and Career Studies, 377-2198  
Director of the Center for Health Sciences, 377-3562

### ADMISSIONS INFORMATION AND CATALOGS

Dean of Graduate Study, 377-3166  
Graduate Admissions Officer, 377-3360

### BUSINESS MATTERS

Vice-President for Business Affairs, 377-2240

### CAREER-ORIENTED AND GRADUATE PLACEMENT

Director, Career Advising and Placement Office, 377-3250

### CONTINUING EDUCATION

Dean of Continuing Education, 377-3120

### EDUCATIONAL PROGRAM, TRANSCRIPTS, ACADEMIC REPORTS

Registrar, 377-3450

### LOANS AND ON-CAMPUS EMPLOYMENT

Financial Aid Officer, 377-3370

### SCHOLARSHIPS AND GRANTS

Dean of Graduate Study, 377-3166

### GRADUATE STUDENT AFFAIRS AND SERVICES

Dean of Graduate Study, 377-3166

### STUDENT HOUSING

Director of Residence Halls, 377-3570

### NOTICE

All data in this catalog applies to the 1979-81 academic years and reflects information as it was available on the publication date. Oakland University reserves the right to revise all announcements contained in this publication and at its discretion to make reasonable changes in requirements to improve or upgrade academic and nonacademic programs.

February 1979

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## ACADEMIC CALENDAR

A

### Spring 1979

|                      |             |             |
|----------------------|-------------|-------------|
| Registration         | M           | April 30    |
| Classes Begin        | 4:30 p.m. M | April 30    |
| Memorial Day Holiday | M           | May 28      |
| Spring Commencement  | Saturday    | June 2      |
| Classes End          | 5 p.m. T    | June 19     |
| Final Exams          | W, Th       | June 20, 21 |

### Summer 1979

|                         |             |               |
|-------------------------|-------------|---------------|
| Registration            | M           | June 25       |
| Classes Begin           | 4:30 p.m. M | June 25       |
| Independence Day Recess | W           | July 4        |
| Classes Resume          | 8 a.m. Th   | July 5        |
| Classes End             | 5 p.m. T    | August 14     |
| Final Exams             | W, Th       | August 15, 16 |

### Fall 1979

|                            |             |                   |
|----------------------------|-------------|-------------------|
| Registration               | M, T, W     | August 27, 28, 29 |
| Classes Begin              | 4:30 p.m. W | August 29         |
| Labor Day Holiday          | M           | September 3       |
| Fall Commencement          | Saturday    | September 15      |
| Thanksgiving Recess Begins | 5:30 p.m. W | November 21       |
| Classes Resume             | 8 a.m. M    | November 26       |
| Classes End                | 10 p.m. M   | December 10       |
| Exams Begin                | 9 a.m. W    | December 12       |
| Exams End                  | 10 p.m. T   | December 18       |

### Winter 1980

|                      |             |              |
|----------------------|-------------|--------------|
| Registration         | Th, F       | January 3, 4 |
| Classes Begin        | 8 a.m. M    | January 7    |
| Winter Recess Begins | 5:30 p.m. F | February 29  |
| Classes Resume       | 8 a.m. M    | March 10     |
| Classes End          | 5:30 p.m. F | April 18     |
| Exams Begin          | 9 a.m. M    | April 21     |
| Exams End            | 10 p.m. Th  | April 24     |

### Spring 1980

|                      |             |             |
|----------------------|-------------|-------------|
| Registration         | M           | April 28    |
| Classes Begin        | 4:30 p.m. M | April 28    |
| Memorial Day Holiday | M           | May 26      |
| Spring Commencement  | Saturday    | May 31      |
| Classes End          | 5 p.m. T    | June 17     |
| Final Exams          | W, Th       | June 18, 19 |

### Summer 1980

|                         |             |               |
|-------------------------|-------------|---------------|
| Registration            | M           | June 23       |
| Classes Begin           | 4:30 p.m. M | June 23       |
| Independence Day Recess | 10 p.m. W   | July 2        |
| Classes Resume          | 8 a.m. M    | July 7        |
| Classes End             | 5 p.m. W    | August 13     |
| Final Exams             | Th, F       | August 14, 15 |

### Fall 1980

|                            |             |                   |
|----------------------------|-------------|-------------------|
| Registration               | M, T, W     | August 25, 26, 27 |
| Classes Begin              | 4:30 p.m. W | August 27         |
| Labor Day Holiday          | M           | September 1       |
| Fall Commencement          | Sunday      | September 14      |
| Thanksgiving Recess Begins | 5:30 p.m. W | November 26       |
| Classes Resume             | 8 a.m. M    | December 1        |
| Classes End                | 10 p.m. M   | December 8        |
| Exams Begin                | 9 a.m. W    | December 10       |
| Exams End                  | 10 p.m. T   | December 16       |

## BOARD OF TRUSTEES

|                                             |                    |
|---------------------------------------------|--------------------|
| Ruth H. Adams                               | Alex C. Mair       |
| Richard H. Headlee, <i>Vice-Chairperson</i> | Ken Morris         |
| Marvin L. Katke                             | Arthur W. Saltzman |
| David B. Lewis, <i>Chairperson</i>          | Alan E. Schwartz   |

Donald D. O'Dowd, *Oakland University President and Ex-Officio Member, Board of Trustees*

John H. De Carlo, *Secretary to the Board of Trustees and Vice-President and General Counsel*

Robert W. Swanson, *Vice-President for Business Affairs and Treasurer of the Board of Trustees*

## ADMINISTRATION

|                      |                                                                |
|----------------------|----------------------------------------------------------------|
| Donald D. O'Dowd     | ..... President                                                |
| Kenneth H. Coffman   | ..... Vice-President for Campus and Student Affairs            |
| William W. Connellan | ..... Director of Public Relations and Information Services    |
| Robert A. Dearth     | ..... Director of Special Projects and Cultural Affairs        |
| John H. De Carlo     | ..... Vice-President and General Counsel                       |
| Lowell R. Eklund     | ..... Dean of Continuing Education                             |
| Frederick W. Obear   | ..... Vice-President for Academic Affairs and Provost          |
| Wilma Ray-Bledsoe    | ..... Assistant to the President and Director of Urban Affairs |
| Robert W. Swanson    | ..... Vice-President for Business Affairs                      |

## ACADEMIC ADMINISTRATION

|                    |                                                             |
|--------------------|-------------------------------------------------------------|
| Frederick W. Obear | ..... Vice-President for Academic Affairs and Provost       |
| G. Philip Johnson  | ..... Dean of Graduate Study                                |
| George E. Coon     | ..... Acting Dean, School of Human and Educational Services |
| Billie C. DeMont   | ..... Associate Provost                                     |
| Geraldene Felton   | ..... Dean, School of Nursing                               |
| George L. Gardiner | ..... Dean of the Library                                   |
| Mohammed S. Ghausi | ..... Dean, School of Engineering                           |
| Keith R. Kleckner  | ..... Associate Provost                                     |
| George T. Matthews | ..... Vice-Provost                                          |
| Moon J. Pak        | ..... Associate Provost for Health Sciences                 |
| Norton C. Seeber   | ..... Dean, School of Economics and Management              |
| Reuben Torch       | ..... Dean, College of Arts and Sciences                    |

## GRADUATE COUNCIL 1978-79

|                                                |                      |
|------------------------------------------------|----------------------|
| College of Arts and Sciences .....             | Reuben Torch         |
| Area Studies .....                             | Gayle H. Partmann    |
| Biology .....                                  | Frank M. Butterworth |
| Chemistry .....                                | R. Craig Taylor      |
| English .....                                  | Helen Schwartz       |
| History .....                                  | S. Bernard Thomas    |
| Linguistics .....                              | Peter J. Binkert     |
| Mathematics .....                              | J. Curtis Chipman    |
| Music .....                                    | Lyle E. Nordstrom    |
| Physics .....                                  | Norman Tepley        |
| Psychology .....                               | David W. Shantz      |
| Public Administration .....                    | Brian W. Coyer       |
| School of Human and Educational Services ..... | George E. Coon       |
| Early Childhood Education .....                | Kenneth E. Smith     |
| Elementary Education .....                     | Diane E. Norman      |
| Guidance and Counseling .....                  | William Jones        |
| Reading Education .....                        | Harold Cafone        |
| Special Education .....                        | Harold E. Weiner     |
| School of Engineering .....                    | Mohammed Ghausi      |
| Computer and Information Science .....         | Dhiraj K. Pradhan    |
| Mechanical Engineering .....                   | Donald R. Falkenburg |
| Electrical and Computer Engineering .....      | Keith R. Kleckner    |
| Systems Engineering .....                      | Ronald R. Mourant    |
| School of Economics and Management .....       | Norton C. Seeber     |
| Management .....                               | Eleftherios Botsas   |
| Center for Health Sciences                     |                      |
| Medical Physics .....                          | Michael Chopp        |
| Kresge Library .....                           | Mildred H. Merz      |
| Office of Graduate Study .....                 | G. Philip Johnson    |

# GENERAL INFORMATION

## OAKLAND UNIVERSITY

Oakland University is a medium-size public institution with a diverse set of academic offerings at the undergraduate and graduate levels. Anchored by a strong liberal arts program, the university is organized into a College of Arts and Sciences, and Schools of Economics and Management, Education, Engineering, Nursing, and Performing Arts, a Center for Community and Human Development, a Center for General and Career Studies, and a Center for Health Sciences.

All academic programs of the university are accredited by the North Central Association of Colleges and Schools.

The university faculty, whose number now exceeds 400, has a distinguished record of research and scholarship. One of the focal points of the research is the Institute of Biological Sciences, a nationally recognized center for research of the eye. The university has also established national reputations in several undergraduate and graduate degree programs.

Complementing its academic program, Oakland has a major public service program with emphasis on the professional performing arts. Meadow Brook Theatre, a professional theatre, is located on the campus. Meadow Brook Music Festival is the summer home of the Detroit Symphony Orchestra. Meadow Brook Hall, home of the university's benefactors, now serves as a major conference and cultural center.

The university was founded in 1957 when the late Matilda R. and Alfred G. Wilson donated their 1,500-acre estate and \$2 million to Michigan State University to begin a new college in Oakland County. Named Michigan State University-Oakland, the new campus enrolled its first students in 1959. In 1963, the name was changed to Oakland University, and in 1970 the State Legislature recognized the maturity and stature of Oakland and granted the university its independence. The Governor appointed Oakland's first Board of Trustees in fall 1970.

Located between the cities of Pontiac and Rochester, Oakland is easily accessible to millions of residents of the metropolitan Detroit area because of its proximity to major freeways. The natural beauty of the campus, much of it still wooded and undeveloped, is enhanced by a comprehensive set of recreation facilities and a modern physical plant that houses the university's academic and public service programs. The university has seven residence halls with a capacity for 1,500 students.

## GRADUATE PROGRAMS

The College of Arts and Sciences offers programs leading to the degrees of Master of Arts in area studies, English, history, linguistics, mathematics, and psychology; Master of Science in biology, chemistry, and physics; Master of Music; and Master of Public Administration. The Center for Health Sciences and the College of Arts and Sciences jointly offer a Master of Science degree in medical physics. The School of Education offers programs leading to the Doctor of Philosophy degree in reading, to the Master of Arts in guidance and counseling, and to the Master of Arts in Teaching degree in early childhood education, elementary education, reading, and 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 and the Master of Science degree in computer and information science, electrical and computer engineering, mechanical engineering, and systems and industrial engineering. The School of Economics and Management offers the degree of Master of Business Administration. Additional master's and doctoral programs are in prospect.



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In each program 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.

### Equality of Opportunity

Oakland University is committed to a policy of equality of opportunity for students, faculty, and staff. In addition, the university recognizes the requirements of state and federal laws regarding equal opportunity and nondiscrimination. To carry out these commitments, the Board of Trustees of Oakland University has adopted the following policy:

*It shall be the policy of the Board of Trustees to provide equal opportunity to all students and employees and all other members of the Oakland University community regardless of race, color, religion, sex, age, national origin, or ancestry. No discrimination shall be allowed in housing, employment, the academic program, or any other activity supported or subject to approval by the university. No organization may exist on the Oakland University campus if it operates to discriminate against potential members on the basis of race, color, religion, sex, age, national origin, or ancestry.*

Some of the federal nondiscrimination laws which the university recognizes are:

Titles VI and VII of the Civil Rights Act of 1964, as amended, prohibiting discrimination in services and employment on the basis of race, color, religion, national origin, and sex.

Title IX of the Higher Education Amendments of 1972 and the regulations of the Department of Health, Education, and Welfare prohibiting discrimination based upon sex. Inquiries concerning the application of Title IX to the university may be addressed to the assistant to the president and director of urban affairs.

Section 504 of the Federal Rehabilitation Act of 1973 prohibiting discrimination on the basis of handicap in any program or activity receiving federal financial assistance.

### Family Educational Rights and Privacy Act, 1974

The Family Educational Rights and Privacy Act, 1974, pertains to confidential student educational records. This legislation allows students the right to view upon request their own confidential educational records and restricts the use of these records by others. Copies of the Family Educational Rights and Privacy Act, 1974, may be obtained from the assistant to the dean for student life, 144 Oakland Center (377-3352), or from the U.S. Department of Health, Education, and Welfare.

Notification of Oakland University compliance with this legislation may be found in the Oakland University Policy Statement on the Family Educational Rights and Privacy Act (available at the office of the dean for student life), the *Oakland Sail*, the *OU News*, and the undergraduate and graduate Oakland University catalogs. The assistant to the dean for student life is the university compliance officer for the Family Educational Rights and Privacy Act. Any questions, grievances, complaints, or other related problems may be addressed to the compliance officer and/or filed with the U.S. Department of Health, Education, and Welfare.

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### Accreditation and Affiliations

All Oakland University graduate programs are accredited by the North Central Association of Colleges and Schools.

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

### 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. 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

## 8/ GENERAL INFORMATION

concentrate on biological problems. A broadly interdisciplinary program of research 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.

### Library Facilities

Most university library materials and services are housed in Kresge Library. Preliminary plans for expansion within several years have been approved. The expanded facility will have the capacity for some 360,000 volumes, 520,000 units of microfilm, and 2,200 study stations.

The Performing Arts Library provides books, journals, acting editions of plays, musical scores, and recordings supporting area studies, communication arts, dance, English, film concentration, music, and theatre programs. The facility is located in Varner Hall.

The Audio Visual Services Center, in Varner Hall, provides media services for the university's instructional programs. These services include selecting and presenting instructional films as well as designing and producing instructional programs ranging from slide presentations to audio-video tape presentations requiring the television studio.

### Library Collections

The University Library holds 623,938 pieces of library material, plus unprocessed materials, manuscripts, memorabilia, and museum pieces. Included are 318,659 microforms, 6,952 records and phonotapes, 37,507 periodical volumes, approximately 33,100 government documents, and 227,720 cataloged circulating and reference books.

A \$100,000 fund was established by Oakland University students in memory of Matilda R. Wilson to develop the reference collection. Approximately 25,000 volumes form the collection, which includes atlases, bibliographies, dictionaries, encyclopedias, indexes, and yearbooks.

The library receives some 1,600 paid serial subscriptions. Periodicals and other serials are generally uncataloged and shelved alphabetically by title on the third floor of the library. Periodicals are divided into general and science groupings. The science periodicals include publications in biology, chemistry, computer science, engineering, mathematics, nursing, and physics.

Since 1964 the library has been a U.S. Government depository and receives about 80 percent of the depository items published each year. The library is also a depository for Michigan documents. These collections are indexed, respectively, by the *Monthly Catalog of U.S. Government Publications* and *Michigan Documents*.

Several of the library's special collections are listed below:

*William Springer Collection of Lincolniana and Civil War Materials*, secondary source materials.

*Hicks Women in Literature Collection*, 900 volumes written by or about women in the 17th through 20th centuries.

*James Folklore Collection*, 550 folklore monographs, some very scarce.

*Anglo-Irish Collection*, rare monographs, journal runs, literary works in the original typescripts, signed poems and reviews, and original letters to and from literary figures.

*Bodie Sunday Farnum Collection*, papers from Farnum's terms in Congress and as Michigan auditor general and other public and political offices.

*Alternative (Underground) Press Collection*, one of the largest anywhere, focuses on the Midwest.

*University Archives Collection*, materials of historical or legal significance to Oakland University.

## GENERAL INFORMATION/9

*Faculty Publications Collection*, monographs produced by Oakland University faculty.

### Library Services

Periodicals, which are alphabetically arranged on shelves, are not cataloged. Most other types of library materials are classified under the Library of Congress system and indexed through the public card catalog.

The reserved book collection is a collection of materials that faculty members have reserved for use by specific classes.

Reference librarians help students find materials or use the library. Bibliographic instruction and data-base services supplement these traditional reference services. As part of some regular credit courses, teaching and library faculty collaborate on lectures and demonstrations for using the library. The library's on-line literature search service aids in retrieval of citations of published articles in the fields of education, engineering, medicine, psychology, and natural and social sciences.

Through interlibrary lending, members of the university community may obtain materials that are unavailable in the university library. Interloan systems share books, periodicals and newspaper articles, theses and dissertations, films and documents in microform, music scores, and research reports.

### 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.

## 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. All transcripts, recommendations, and other documents received by the university become the property of the university and will not be released. Copies will be made only for university use.

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 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 average 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 dismissal. 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- or 20-credit 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. 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 is admitted 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 before 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**

### **Inactive Status**

A student who has been admitted to a program but has not registered for an Oakland University course for one to five years is considered inactive. In order to return to degree-seeking status, the student must apply for readmission, and the application will be rereviewed by the appropriate admissions committee.

All application material and correspondence in the graduate folder is retained for five years, after which the material is destroyed. A student who wishes to take classes subsequently must follow the admission procedures described on page 9.

### **Transcripts**

The Office of the Registrar maintains academic records and sends a standing report to an enrolled student's address of record at the end of each academic period. Transcripts of academic records may be obtained by completing a transcript request form at the Office of the Registrar, 161 North Foundation Hall, or by writing Transcript Request, Office of the Registrar, Oakland University, Rochester, MI 48063. Requests should include the name under which the student attended, the Oakland student number, the date of last attendance and date of degree (if applicable), the level of last course work, and the address to which the transcript is to be sent. A check or money order for \$1 for each transcript ordered must accompany the request.

### **Petition of Exception**

Students may request waivers or modifications of specific academic requirements by filing a Petition of Exception form with their advisers or advising committees. The advisers or committees, with the approval of the dean of the particular college or school, will make recommendation to the graduate dean, who will review the petition and notify students of any action taken.

### **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.

### **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 course selection advice 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. Up to 12 semester hours (10 in the Department of Chemistry) are 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 school for a degree. Approved 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 bachelor's degree requirements. 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 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 instructor's signature; 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.

### Academic Probation

Students who are making unsatisfactory progress in their programs, as determined by their advisers and program chairperson, may be placed in probationary status with conditions imposed for retention in the program.

### Dismissal from the University

Dismissal is effected by the dean of graduate study based on a recommendation from the faculty of a program. It is an action taken only after thorough evaluation of the student's progress toward a degree by both the faculty and the dean.

### Appeal Procedures for Dismissals and Denial of Admission

A student seeking reconsideration of a dismissal or denial of admission should begin at the program level and proceed to the dean of graduate study, if necessary. If at any time the student is dissatisfied with the results of reconsideration, he/she may appeal in writing to the Graduate Council Executive Committee.

Based on the student's statement and information from the dean, the committee will vote either to dismiss the appeal or to proceed with it. In the latter case, the committee will appoint an ad hoc appeal committee consisting of three faculty members, at least one of whom is a Graduate Council member. The appeal committee is charged to judge whether the proceedings leading to the decision have been fair and whether the basis for decision is sound, and to report the decision to the Graduate Council Executive Committee. The committee will vote either to uphold the denial/dismissal or to admit/reinstate the student. The graduate office will abide by the decision.

### Credit System

The unit of credit is the semester hour. Courses carry 4 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 Department of Psychology, two courses below 3.0 automatically render a student subject to evaluation and possible dismissal, as does one grade below 2.5 in the Department of 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/she 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."

The grade of "R" is a temporary grade assigned by the registrar either in the absence of a grade from the instructor or in the awarding of an inappropriate mark.

The final grade of "Z" is assigned upon registration for a course as an auditor. The student's declaration of intent to audit is required at the time of registration, and it is understood that no credit for the course is intended at the time of registration or any time thereafter.

### 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.

### APPLICATION FOR DEGREE

Students who intend to graduate at the end of a semester (or session) must fill out an application for degree and pay a nonrefundable \$10 processing fee either when registering for the last semester or by the dates listed below. A candidate who does not graduate in that semester must reapply.

| Expected Graduation Date | Last Date for Applying for Degree |
|--------------------------|-----------------------------------|
| April 1979               | February 9, 1979                  |
| June 1979                | May 14, 1979                      |
| August 1979              | July 10, 1979                     |
| December 1979            | October 12, 1979                  |
| April 1980               | February 8, 1980                  |
| June 1980                | May 12, 1980                      |
| August 1980              | July 8, 1980                      |
| December 1980            | October 3, 1980                   |
| April 1981               | February 6, 1981                  |
| June 1981                | May 18, 1981                      |
| August 1981              | July 14, 1981                     |
| December 1981            | October 9, 1981                   |

Commencement ceremonies are held twice a year, in September and June. June and August graduates participate in the September ceremony, and December and April graduates participate in the June ceremony. Each semester's schedule of classes contains additional information.

## 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 exceed 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 \$35 per credit. Nonresidents are assessed \$63.50 per credit. The fee for off-campus classes is \$40.50 per credit. One credit 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.

### Enrollment Fee

All students are charged a \$10 enrollment fee each semester or session in which they are registered.

### 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 \$27 (\$5 health service allocation, \$16 Oakland Center fee, and \$6 transportation use allocation). Those who register for less than 10 credits are assessed one-half these fees.

### 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 1978-79 rate for room and board was \$1,625 for the academic year. Special options such as room only and single rooms are available to graduate students. If a student signs a housing contract before or during 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 are 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 under the proper in-state or out-of-state classification. For the purpose of these regulations, an in-state resident is 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 U.S. shall not, by reason of that status alone, be disqualified from classification as a resident, provided, however, that aliens who are present in the U.S. 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 after 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 evi-

dence 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 U.S. citizen, 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 U.S. citizens 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 \$5,400 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:** Carlo Coppola

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

### Professors:

Sheldon L. Appleton, *Political Science*, Ph.D., University of Minnesota  
 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  
 James W. Hughes, *Education*, Ed.D., University of New Mexico  
 Helen Kovach-Tarakanov, *Russian*, Ph.D., Elizabeth University (Hungary)  
 Richard A. Mazzara, *French and Portuguese*, Ph.D., University of Kansas  
 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 W. Dow, *Anthropology*, Ph.D., Brandeis University  
 James D. Graham, *History*, Ph.D., Northwestern University  
 Karl D. Gregory, *Economics and Management*, Ph.D., University of Michigan  
 William D. Jaymes, *French*, Ph.D., University of Kansas  
 Mary Karasch, *History*, Ph.D., University of Wisconsin  
 Janet A. Krompart, *Library*, M.L.S., University of California (Berkeley)  
 John Marney, *Chinese*, Ph.D., University of Wisconsin  
 Kathryn McArdle-Pigott, *Spanish*, Ph.D., Universidad Central de Madrid  
 Lawrence C. Orton, *History*, Ph.D., Indiana University  
 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  
 Robert J.J. Wargo, *Philosophy*, Ph.D., University of Michigan

### Assistant Professors:

Brian W. Coyer, *Political Science*, Ph.D., Michigan State University  
 Alice C. Gorlin, *Economics*, Ph.D., University of Michigan  
 Bruce R. Harker, *Education*, Ph.D., University of Chicago  
 Vincent B. Khapoya, *Political Science*, Ph.D., University of Denver  
 Gayle H. Partmann, *Linguistics*, Ph.D., Stanford University  
 C. Franklyn Sayre, *Art History*, Ph.D., Yale University  
 Richard B. Stamps, *Anthropology*, Ph.D., Michigan State University  
 Charlotte V. Stokes, *Art History*, Ph.D., University of Washington

### Special Instructor:

Marvin D. Holladay, *Music*, M.A., Wesleyan 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, which must show 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 corrected. Credentials should be submitted to the Office of Graduate Study at least six weeks before the beginning of the semester in which the student wishes to enter the program. Students will be admitted for any of the four semesters 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 committee. 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, revolutions, peasants and urbanization, comparative literature, development, and modernization.

### Requirements for the Degree

Nine courses (36 credits) 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 credits) 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 preparation of a detailed research thesis.

### Overseas Studies and Tours

Area Studies sponsors overseas studies programs and/or tours in China, Japan, 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, 430 Wilson Hall.

## PLANNED PROGRAM FOR CONTINUING CERTIFICATION

The Area Studies Program, in cooperation with the School of Education, offers a planned program for Continuing Certification, which is as follows: AS 590 (6 credits); one course chosen from ED 581, 586, 587, and 603 (4 credits); and any two courses listed in the area studies course offerings in this catalog. Students wishing to pursue this program must consult with the Area Studies graduate adviser before taking courses.

### Course Offerings

Most of the courses listed below are offered by Oakland University academic departments 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 permission of their program committee and of the course instructors before registering. Forms for recording instructor's permission are available in the Area Studies Office.

### ART HISTORY COURSES

**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.  
Prerequisite: AH 104.

**AH 301 Japanese Art (4)**  
The development of architecture, sculpture, and painting in Japan from the fifth to the 19th century A.D.  
Prerequisite: AH 104.

**AH 305 African Art (4)**  
The arts of the indigenous peoples of West, Central, and East Africa.  
Prerequisite: AH 102.

**AH 307 Pre-Columbian Art (4)**  
The arts of the Indians of Mexico, Central America, and South America before the Spanish Conquest.  
Prerequisite: AH 102.

**AH 320 Islamic Art (4)**  
The development of architecture and painting in Islam from the 7th to the 18th century with reference to the countries of the Fertile Crescent, North Africa, Arab and Moorish Spain, Egypt, Persia, Turkey, and Muslim India.



## 22/ AREA STUDIES (ARTS & SCIENCES)

### **AH 322 Early Medieval, Byzantine, and Romanesque Art (4)**

The development of architecture, sculpture, and painting in Christian Europe from A.D. 330 through the apex of monasticism, ca. A.D. 1150.

Prerequisite: AH 100.

### **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 8 credits or (with permission of instructor and department chairperson) may be taken in one semester for a total of 8 credits.

Prerequisite: 12 credits of art history.

## **ANTHROPOLOGY COURSES**

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

A survey of contemporary society and culture on the Indian subcontinent, with focus on India, Pakistan, and Bangladesh; emphasis on social structure, folk religion, and the problems of sociocultural change.

Prerequisite: AN 102 or AS 240.

### **AN 362 Peoples and Cultures of China (4)**

An anthropological study of China, stressing the variety of cultural and ecological adaptations characteristic of that complex society.

Prerequisite: AS 210.

### **AN 370 Archaeology of Mesoamerica (4)**

The pre-Hispanic culture of Mexico and Guatemala, the Aztecs and Mayas, and their neighboring and derivative cultures. Detailed discussion of the major archaeological sites.

Prerequisite: AN 101 and 102.

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

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

Prerequisite: AN 102.

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

A survey 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.

Prerequisite: AN 102.

## **CHINESE COURSES**

### **CHE 310 Literary Chinese (4)**

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

Prerequisite: CHE 215.

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

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

Prerequisite: CHE 215.

### **CHE 330 Readings in Chinese Political Essays (4)**

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

Prerequisite: CHE 215.

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

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

Prerequisite: CHE 215.

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

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

Prerequisite: CHE 310 or 312.

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

Studies of texts in advanced literary Chinese.

Prerequisite: CHE 310.

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

Studies of selected stories from different classical Chinese sources.

Prerequisite: CHE 310.

## AREA STUDIES (ARTS & SCIENCES)/23

### **CHE 440 Chinese Poetry (4)**

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

Prerequisite: CHE 310.

### **CHE 490 Directed Readings and Research in Chinese (2, 4, or 8)**

For students with a high degree of competence in the language. May be conducted either in literary or modern Chinese. May be repeated for a total of 8 credits.

Prerequisite: Permission of instructor.

## **ECONOMICS COURSES**

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

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

Prerequisite: ECN 201.

### **ECN 326 Economic Development (4)**

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

Prerequisite: ECN 201.

### **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.

Prerequisite: ECN 201.

### **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.

Prerequisite: ECN 301.

### **ECN 418 Selected Topics in Economic Policy (4)**

Selected topics in the application of economic theory to the analysis of economic policy. Economic policy areas may include resource allocation, macroeconomic stability, economic growth, energy, and the environment. Topics change from time to time.

## **EDUCATION COURSES**

(Descriptions of the following education courses are listed in the education section in this catalog.)

### **ED 581 Teaching about Black Africa in the Public Schools (4)**

### **ED 586 Bilingual Education: Theories and Practices (4)**

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

## **HISTORY COURSES**

(Descriptions of the following history courses are listed in the history M.A. section 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 History of Mexico (4)**

### **HST 570 China: Beginnings through Han, to 220 A.D. (4)**

### **HST 571 China: From the Three Kingdoms through Ming, 220-1644 (4)**

### **HST 573 China: The Final (Ch'ing) Imperial Phase, 1644-1912 (4)**

### **HST 574 China: The Nationalist Republican Period, 1912-1949 (4)**



|         |                                                                   |
|---------|-------------------------------------------------------------------|
| HST 575 | Topics in Chinese Intellectual History (4)                        |
| HST 576 | History of Chinese Communism: 1921 to the Present (4)             |
| HST 581 | History of Early India (4)                                        |
| HST 583 | British Imperialism and Hindu Nationalism in India, 1740-1947 (4) |
| HST 586 | Contemporary African 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)                             |
| 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)                                |

## PHILOSOPHY COURSES

## 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.

Prerequisite: PHL 250 or AS 210.

## PHL 352 Indian Philosophy (4)

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

Prerequisite: PHL 250 or AS 240.

## PHL 353 Japanese Philosophy (4)

Examination of Japan's major philosophical and religious systems including Shinto, Pure Land and Zen Buddhism, and Confucianism in the premodern era. The latter half of the course will study the impact of European philosophical thought on the tradition and the emergence of a creative synthesis in the philosophy of Nishida Kitaro.

Prerequisite: PHL 250 or AS 220.

## POLITICAL SCIENCE COURSES

## PS 330 Comparative Political Theory (4)

Examination of the various approaches and theories used in comparative political research, including theories of development and modernization.

Prerequisite: PS 131 and 222.

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

Examination of the politics of the Middle East and North Africa. Cultural and historical factors that influence contemporary politics of the area will be emphasized. Topics include religion, social structures, economic problems, the impact of the West, and the Arab-Israeli conflict.

Prerequisite: PS 131.

## PS 333 African Politics (4)

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

Prerequisite: PS 131.

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

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

Prerequisite: PS 131.

## 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 that characterizes the area. Offered fall semester.

Prerequisite: PS 131.

## PS 337 The Soviet Political System (4)

A 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 undertaken. Offered winter semester.

Prerequisite: PS 131.

## 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; and the political processes of the People's Republic of China, emphasizing the role of elites in policy formation, ideology, mass support, and the exercise of central power. Offered fall semester.

Prerequisite: PS 131.

## RUSSIAN COURSES

## 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 with ALS 320. Offered in alternate years.

Prerequisite: RUS 215.

## RUS 370 Introduction to Russian Literature (4)

A sampling of critical approaches to the study of some masterpieces of Russian literature. Conducted in Russian. Offered fall semester.

Prerequisite: RUS 215.

## RUS 380 Survey of Russian Literature (4)

A survey of the highlights of Russian literature. Intended to supplement the work of RUS 370. Conducted in Russian. Offered winter semester.

Prerequisite: RUS 370.

## RUS 400 Special Topics in Language (4)

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

Prerequisite: RUS 318, or 370 and 380.

## RUS 408 Advanced Oral Practice in Russian (2)

Practice in speaking at an advanced level, which may include style and delivery appropriate to formal and informal speaking situations. Course work may include oral presentations, self-recording, and critique.

Prerequisite: RUS 316.

## RUS 416 The 19th Century: First Half (4)

A study of works in all genres by leading Russian authors of the period, including Pushkin, Lermontov, and Gogol. Conducted in Russian.

Prerequisite: RUS 370 and 380.

## RUS 417 The 19th Century: Second Half (4)

A study of works in all genres by leading Russian authors of the period, including Tolstoi, Dostoevsky, and Chekhov. Conducted in Russian.

Prerequisite: RUS 370 and 380.

## RUS 418 The 20th Century (4)

A study of works in all genres by Russian authors of the period, including Bunin, Lamiatin, and Solzhenitsin. Conducted in Russian.

## RUS 455 Translation into Russian (4)

Translation from English into Russian of a wide variety of materials ranging from commercial and technical to literary. Individual students may emphasize area of interest. Offered fall semester.

Prerequisite: RUS 314, 318, and 355.

## 26/ AREA STUDIES (ARTS & SCIENCES)

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

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

Prerequisite: Permission of department.

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

Directed individual research and reading for advanced Russian majors. May be repeated for a total of 8 credits.

Prerequisite: Permission of department.

## **SOCIOLOGY COURSE**

### **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, emphasizing comparative materials.

Prerequisite: SOC 100.

## **SPANISH COURSE**

### **SPN 421 Spanish-American Literature (4)**

Masterworks of 20th-century Spanish-American literature, including Fuentes, Asturias, Neruda. Conducted in Spanish.

Prerequisite: SPN 370 and 380.

## **AREA STUDIES COURSES**

### **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.

Prerequisite: Permission of department.

### **AS 537 Mexico, Cuba, and Puerto Rico: A Cultural Perspective (4)**

Departing from a general study of Latin America, this course will concentrate on historical, geographical, and cultural aspects of Mexico, Cuba, and Puerto Rico.

Prerequisite: Permission of department.

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

Advanced intensive study of selected topics dealing with East Asia.

Prerequisite: Permission of department.

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

Advanced intensive study of selected topics dealing with South Asia.

Prerequisite: Permission of department.

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

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

Prerequisite: Permission of department.

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

Advanced intensive study of selected topics dealing with Africa.

Prerequisite: Permission of department.

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

Advanced intensive study of selected topics dealing with Latin America.

Prerequisite: Permission of department.

### **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.

Prerequisite: Permission of department.

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

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

Prerequisite: Permission of department.

## BIOLOGICAL SCIENCES (ARTS & SCIENCES)/27

# DEPARTMENT OF BIOLOGICAL SCIENCES

**Chairperson:** Nalin J. Unakar

### **Professors:**

Frank M. Butterworth, Ph.D., Northwestern University  
William C. Forbes, Ed.D., Columbia University; Ph.D., University of Connecticut

John R. Reddan, Ph.D., University of Vermont  
Venkat N. Reddy, Ph.D., Fordham University  
Nalin J. Unakar, Ph.D., Brown University  
Walter L. Wilson, Ph.D., University of Pennsylvania

### **Associate Professors:**

John D. Cowlshaw, Ph.D., Pennsylvania State University  
Esther M. Goudsmit, Ph.D., University of Michigan  
Egbert W. Henry, Ph.D., The City University of New York  
Paul A. Ketchum, Ph.D., University of Massachusetts  
Moon J. Pak, M.D., Yonsei University; Ph.D., University of Minnesota  
Michael V. Riley, Ph.D., Liverpool University  
Arun K. Roy, Ph.D., Wayne State University  
Barry S. Winkler, Ph.D., State University of New York at Buffalo

### **Assistant Professors:**

Robert D. Hunter, Ph.D., Syracuse University  
Charles B. Lindemann, Ph.D., State University of New York at Albany  
Virinder K. Moudgil, Ph.D., Banaras Hindu University  
Asish C. Nag, Ph.D., University of Alberta  
Daphna R. Oliver, Ph.D., University of California, Los Angeles  
James K. Reynhout, Ph.D., Brown University  
Ann K. Sakai, Ph.D., University of Michigan

### **Adjunct Professor:**

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

### **Adjunct Associate Professors:**

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 Assistant Professor:**

Amrut K. Deshpande, Ph.D., University of Poona

## 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 satisfies 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 at least 20 credits in biology, 8 credits in mathematics, 8 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 4 credits in each of the four areas (developmental biology-morphology, biochemistry-biophysics, cell physiology, and genetics). At least 8 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. Students are expected to attend the seminar during each semester. 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 recommended to the student by the departmental graduate committee may carry graduate level credit.

#### UPPER LEVEL AND GRADUATE COURSES

##### BIO 407 Cellular Biochemistry (4)

Advanced discussion on cellular control mechanisms emphasizing recent developments in the biochemistry of proteins and nucleic acids.

Prerequisite: BIO 325, CHM 304, and PHY 102.

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

To accompany BIO 407. An introduction to modern research techniques in biochemistry. Laboratory work will include different chromatographic techniques (paper, column, thin layers, etc.), electrophoresis and immunoelectrophoresis, ultracentrifugation and cell fractionation, isolation and density gradient analysis of the proteins and nucleic acids, etc.

##### BIO 411 Experimental Embryology (4)

Lectures and student seminars on current topics in gametogenesis, fertilization, and development. Emphasis is on critical evaluation of current and classical publications. Offered winter semester.

Prerequisite: BIO 323 and permission of instructor.

##### BIO 412 Laboratory In Experimental Embryology (1 or 2)

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

Corequisite: BIO 411.

##### BIO 415 Differentiation (4)

Advanced topics in developmental biology and consideration of the theories relating to the control of differentiation and development.

Prerequisite: BIO 323 and 324.

##### BIO 421 Medical Microbiology (4)

The biology of the microorganisms involved in the major infectious diseases. Topics include the etiology, epidemiology, physiology, pathogenesis, diagnosis, and control of these microorganisms.

Prerequisite: BIO 319.

##### BIO 422 Medical Microbiology Laboratory (2)

To accompany BIO 421.

##### BIO 423 Immunology (3)

An introduction to immunology with emphasis on practical applications. Topics include (but are not limited to) immunobiology, immunochemistry, serology, hypersensitivity (allergy), autoimmune disease, transplantation, and tumor immunology.

Prerequisite: BIO 321.

##### BIO 425 Biophysics (4)

The relationship of biology to the other sciences. Organisms as hierarchical, open systems; thermodynamic, optical, and electrical properties of biosystems. Offered winter semester.

Prerequisite: BIO 325 or equivalent, calculus, and general physics.

##### BIO 426 Biophysics Laboratory (1)

To accompany BIO 425.

##### BIO 427 Human Genetics (4)

Key aspects of classical and molecular genetics of humans will be considered. Topics are inborn errors of metabolism, cytogenetics, somatic cell genetics, biochemical genetics, immunogenetics, and the genetics of cancer.

Prerequisite: BIO 341 and permission of instructor.

##### 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 include: specific staining reactions, enzyme digestion, metabolic inhibition, and autoradiography.

Prerequisite: BIO 305 and 306. Corequisite: BIO 430.

##### BIO 430 Cytochemistry Laboratory (2)

Individual research projects employing cytochemical techniques to study and compare the chemical compositions of several types of cells.

Corequisite: BIO 429.

##### BIO 431 Cellular Motility (4)

A survey of the role and mechanism of cell movement in living systems, with an introduction to applicable principles of physics and chemistry. Special consideration will be given to developmental movements (cell migration), cell division (mitosis), and the movement of microorganisms.

Prerequisite: BIO 200, BIO 321, PHY 101, and CHM 144.

##### BIO 433 Advanced Microbiology (4)

A study of the classification, morphology, and physiology of microorganisms. Directly related to BIO 434, which is a corequisite.

Prerequisite: BIO 319 and CHM 303.

### 30/ BIOLOGICAL SCIENCES (ARTS & SCIENCES)

#### **BIO 434 Advanced Microbiology Laboratory (2)**

Selective enrichment, isolation, and characterization of microorganisms from natural sources. Corequisite: BIO 433.

#### **BIO 435 Developmental Genetics (4)**

An integrated discussion of the concepts of modern aspects of genetics derived from molecular and microbial systems, and their application to problems of development in multicellular organisms. Offered fall semester.

Prerequisite: BIO 323, 325, 326, 341, and 342.

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

To accompany BIO 435.

#### **BIO 437 Virology (4)**

Molecular biology of viruses, predominantly bacterial.

Prerequisite: BIO 325, 341, or 433.

#### **BIO 438 Virology Laboratory (1)**

To accompany BIO 437.

#### **BIO 441 Microbial Genetics (4)**

A discussion of the genetics of microbial systems, including molds, bacteria, protozoa, and viruses.

Prerequisite: BIO 341 and 433.

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

To accompany BIO 441.

#### **BIO 443 Aquatic Biology (2)**

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. Offered fall semester.

Prerequisite: BIO 301, 311, or 315.

#### **BIO 445 Ultrastructure (4)**

A consideration of the fine structure of cells and cell products as revealed by electron microscopy and other procedures. Offered winter semester.

Prerequisite: BIO 305 and permission of instructor.

#### **BIO 446 Ultrastructure Laboratory (2)**

To accompany BIO 445.

#### **BIO 450 Visual Physiology (2)**

A course primarily on the structure and function of the vertebrate visual system. Topics include optical properties of the eye: absorption of light energy by photo-pigments, transduction processes in photoreceptor cells, transmission and encoding of visual information through the retina, lateral geniculate body, visual cortex and associative structures, dark and light adaptation, and color vision.

Prerequisite: BIO 321 and permission of instructor.

#### **BIO 463 Cell Biology (4)**

Prerequisite: BIO 305 and permission of instructor.

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

To accompany 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 fall semester in alternate years.

Prerequisite: BIO 321 and permission of instructor.

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

To accompany BIO 471. An introduction to research techniques in electrophysiology. Work includes use of oscilloscope, amplifiers, and stimulator; extracellular potential recording technique; and microelectrode technique.

#### **BIO 473 Advanced Physiology—Muscle (4)**

Review and analysis of the modern concepts of muscular activity and molecular mechanism of contraction. Discussions will include the ultrastructural correlation of muscle function and

### BIOLOGICAL SCIENCES (ARTS & SCIENCES)/31

mechanics, biochemical approaches to elucidate energetics of muscle contraction, and theories of molecular basis of muscular contraction. Offered fall semester in alternate years. Prerequisite: BIO 321 and permission of instructor.

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

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

**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. Obeir, 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  
R. Craig Taylor, Ph.D., Princeton University

**Assistant Professors:**

Denis M. Callewaert, Ph.D., Wayne State University  
Mary H. Delton, Ph.D., University of California (Los Angeles)  
Christine S. Sloane, Ph.D., Massachusetts Institute of Technology

**Visiting Assistant Professor:**

B. Stanley Pons, Ph.D., University of Southampton

### 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. Courses taken without adviser's approval may be excluded from those to be applied toward the degree.

#### 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 8 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 2.85 (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 requirements: 32 credits in courses carrying graduate credit, of which 26 credits must be in chemistry. Of these 26 credits, 16 to 18 must be from four of the following areas: biochemistry, inorganic chemistry, organic chemistry, physical chemistry, and analytical chemistry. At least 8 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 attaining a level of proficiency and maturity, no minimum amount of time can be specified for the degree program. Students working on a continuing research project should be registered for at least one credit of CHM 690.

### 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, 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, continuous wave and Fourier Transform, nuclear magnetic resonance spectrometers, radio-chemical 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, laser raman spectrophotometer, 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

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

#### CHM 428 Electronic Measurements and Instrumentation Laboratory (2)

Basic components of electronic measuring devices and their uses in analog devices and digital circuits. Applications of electronics to chemical instrumentation are considered.

Prerequisite: CHM 227.

#### CHM 442 Physical Chemistry II (4)

Microscopic studies of chemical systems with basic principles of quantum and statistical mechanics, and properties related to molecular structure.

Prerequisite: CHM 441.

#### CHM 453-454 Biochemistry (3 each)

A comprehensive introduction to molecular biology and biochemistry, including the structure and function of nucleic acids, proteins, enzymes, carbohydrates and lipids, enzyme kinetics, metabolism, and metabolic controls.

Prerequisite: CHM 304 or 335.

**CHM 457 Biochemistry Laboratory (1)**

Techniques of extraction, separation, identification, and activity measurement of biomolecules.  
Prerequisite or corequisite: CHM 453.

**CHM 458 Biochemistry Projects (2)**

Advanced project-oriented instruction in biochemical laboratory.

**CHM 462 Inorganic Chemistry (4)**

Overview of the chemistry of the elements, with emphasis on ionic and covalent bonding, acid-base chemistry, nonaqueous solvent systems, descriptive chemistry of the main group, transition metal, and lanthanide elements. Introduction to ligand field theory, organometallic, and bioinorganic chemistry.

Prerequisite: CHM 442.

**CHM 477 Macromolecular Laboratory (2)**

Introduction to the synthesis and physical characterization of synthetic polymers.

Prerequisite: CHM 227, and 307 or 338.

**CHM 480 Selected Topics (1, 2, 3, or 4)**

Advanced study in selected areas; normally involves preparation of a term paper or presentation of a seminar. May be repeated for credit.

Prerequisite: Permission of instructor.

**CHM 486 Physical-Analytical Projects (1 or 2)**

Advanced experimentation in physical or analytical chemistry, with at least four hours per week per credit.

Prerequisite: Permission of instructor.

**CHM 487 Synthesis Projects (1 or 2)**

Advanced synthesis work emphasizing modern techniques, with at least four hours per week per credit.

Prerequisite: Permission of instructor.

**CHM 521 Advanced Analytical Chemistry (3)**

Detailed treatment of theory and applications of modern analytical methods.

Prerequisite: CHM 225 and 441.

**CHM 522 Topics in Analytical Chemistry (3)**

Selected subjects chosen from current analytical chemical areas, such as separation methods, instrumentation, and electrochemistry.

Prerequisite: CHM 225 and 441.

**CHM 534 Advanced Organic Chemistry (3)**

Detailed discussion of aspects of modern synthetic methods, stereochemistry, and reaction mechanisms.

Prerequisite: CHM 335.

**CHM 535 Topics in Organic Chemistry (3)**

Selected subjects drawn from modern research fields.

Prerequisite: CHM 335.

**CHM 540 Symmetry in Chemistry (3)**

Detailed treatment of point group symmetry. Chemical applications of group theory with special emphasis on MO and VB theory, ligand field theory, and vibrational and electronic spectroscopy.

Prerequisite: CHM 442.

**CHM 541 Advanced Physical Chemistry (3)**

Application of quantum mechanics and statistical mechanics to chemical kinetics, molecular structure, and molecular spectroscopy.

Prerequisite: CHM 442.

**CHM 542 Topics in Physical Chemistry (3)**

Selected topics drawn from current areas of interest, such as quantum mechanics, statistical mechanics, thermodynamics, kinetics, and group theory.

Prerequisite: CHM 442.

**CHM 553 Advanced Biochemistry (3)**

Detailed treatment of aspects of biochemistry.

Prerequisite: CHM 454.

**CHM 554 Topics in Biochemistry (3)**

Selected subjects drawn from the current fields of interest.

Prerequisite: CHM 454.

**CHM 563 Advanced Inorganic Chemistry (3)**

Detailed treatment of the chemistry of the elements.

Prerequisite: CHM 462.

**CHM 564 Topics in Inorganic Chemistry (3)**

Selected topics chosen from current areas of interest, such as transition metal chemistry, boron chemistry, ligand field theory, and organometallic chemistry.

Prerequisite: CHM 462.

**CHM 570 Industrial Chemistry (3)**

A survey of the major sources and uses of chemicals, industrial chemical processes, and the chemistry of the fundamental raw materials for organic chemicals. Among the important features of the chemical industry to be examined are economics, organization, communication, patents, and government regulation.

Prerequisite: CHM 335.

**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 Professor:**

Mark E. Workman, Ph.D., University of Pennsylvania

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 a Bachelor of Arts degree 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 credits of graduate work at Oakland University including at least 8 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. A maximum of 8 credits earned at Oakland University while a student is in special graduate status will be accepted toward the degree.

When students of specially recommended ability, but with insufficient background—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. Accordingly, their degree programs 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 written approval of a graduate English adviser.

### THE MASTER OF ARTS IN ENGLISH

The program leading to the degree of Master of Arts in English is 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 a 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 English teachers in advanced high school classes and to those preparing for teaching in junior and community colleges.

### Requirements for the Degree

Nine courses are required (36 credits), five of which must be ENG 533, a course in literary history (ENG 543, 544, or 545), a course in literary kinds (ENG 563, 564, 565, or 566), and two courses at the 600 level. The four 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 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 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 alternates: ED 601, ED 602, ED 603, ED 604, or ED 605, described on pages 114 and 115, and one course from the following group of two: PSY 510 or PSY 512, described on page 74. 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 from regular departmental 300- and 400-level offerings. Such courses are useful preparation for seminars in areas of language and literature for which a student is 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 a year. (ENG 500, 510, and 597 are specialized courses, not core courses.)

### 3. Seminars and the Master's Project (500 level)

The graduate seminar allows 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. No student may register for a 600-level course until successfully completing two 500-level courses. 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 session. 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 4 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 chairperson 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 Practical Criticism (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. Emphasis 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, nonfictional prose, and folklore.

**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 114.

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

See page 114.

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

See page 114.

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

See page 114.

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

See page 115.

**PSY 510 Developmental Psychology (4)**

See page 74.

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

See page 74.

**DEPARTMENT OF HISTORY**

**Chairperson:** John Barnard

**Professors:**

Charles W. Akers, Ph.D., Boston University  
John Barnard, Ph.D., University of Chicago  
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:**

De Witt 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  
Mary C. Karasch, Ph.D., University of Wisconsin  
Joseph A. Klaitis, Ph.D., University of Minnesota  
Roy A. Kotynek, Ph.D., Northwestern University  
Paul M. Michaud, Ph.D., University of Chicago  
Lawrence D. Orton, Ph.D., Indiana University  
Carl R. Osthaus, Ph.D., University of Chicago  
Colin A. Palmer, Ph.D., University of Wisconsin  
Anne H. Tripp, Ph.D., University of Michigan  
Richard P. Tucker, Ph.D., Harvard 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; at its discretion, the department 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 semesters of the academic year.

**Transfer Credits**

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

1. They must be graduate credits.
2. They must be from history courses or allied fields. The department's graduate

committee examines each request individually for compliance with this condition.

3. The credits must have been earned no more than six years before completion of the student's M.A. program at Oakland.

## REQUIREMENTS FOR THE DEGREE

Candidates for the degree of Master of Arts in history must complete 38 graduate-level credits in history (in special cases the Department of History graduate committee may permit a candidate to substitute up to 12 graduate credits in related fields for history credits). All candidates must complete at least two colloquia (HST 601-606), two research seminars (HST 691-696), and the comprehensive examination (HST 600).

At the time of admission, each candidate will choose a major field from the following three areas: United States; Europe (including Great Britain and Russia); Africa, East and South Asia, and Latin America. The candidate must take at least 20 credits in the major field.

Candidates who elect to offer a thesis in partial fulfillment of the degree requirements will fulfill all the requirements listed above; they will take both research seminars in the major field as thesis-writing courses, and their comprehensive oral examination will concentrate on the thesis and historical problems related to it. Candidates must have sponsorship of a faculty adviser before beginning thesis work.

Candidates who do not elect to offer a thesis will fulfill all the requirements listed above; they must take at least one colloquium and one seminar in the major field, and their comprehensive examination will be devoted to the history of the major field, as described below under HST 600.

There is no general foreign language requirement for the M.A. in history, but to study certain fields the candidate may need a reading knowledge of a foreign language. Candidates must consult their advisers for the language requirements of specific courses and programs.

## Course Offerings

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

The economic, social, and political history of the American work force with emphasis on the history of organized labor.

### HST 503 American Constitutional History (4)

Origins and development of American constitutional doctrine and interpretation from the colonial period to the present, emphasizing constitutional controversy and change.

### 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 American religious history, including religious elements in immigration, separation of church and state, denominationalism and sectarianism, religion and nationalism, religious leadership, and religion as a social force.

### 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 U.S. during the progressive era and the decade of the 1920s.

### 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 The American Mind to 1860 (4)

The history of American thought from the colonial period to the Civil War, emphasizing New England Puritanism, the transition from colonies to provinces, the era of the American Revolution, and the origins of modern America.

### HST 517 The American Mind since 1860 (4)

Major intellectual trends in the U.S. from the Civil War to the present, including ideological conflict during the Civil War and Reconstruction, the impact of evolutionary thought, and responses to industrialization and urbanization.

### HST 518 Topics in American Social History (4)

Selected topics in the history of popular beliefs, social structure and organization, and the process of social change, including movements of reform.

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

The South from colonial times to the 1960s, 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 523 Topics in Afro-American History (4)

The economic, social, and political activities, status, organizations, and institutions of Afro-American people, emphasizing the 20th century.

### 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 emphasis on the Italian experience.

### HST 527 The Northern Renaissance (4)

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

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

A comparative analysis of European societies: the varieties of humanism, the Reformation, the structure of the Renaissance state, political rebellion and social revolution, dynastic and ideological warfare, the effects of overseas expansion upon Europe.

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

A comparative analysis of European societies: the articulation of absolutism and constitutionalism, the emergence of the European states system, the origins and impact of modern science, the culture of the baroque, and the development of commercial capitalism.

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

Political, cultural, and intellectual life of England from 1837 to the outbreak of World War I.

### HST 535 20th-Century Britain (4)

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



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##### **HST 541 Europe since 1914 (4)**

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

##### **HST 543 Germany since 1848 (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.

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

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

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

A comparative analysis of European societies: the old regime in Europe, beginnings of industrial development, the Enlightenment as a political and social movement, reform under monarchy and the emergence of democratic ideologies, and the French Revolution.

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

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

##### **HST 550 The European Mind to 1700 (4)**

Major developments in European thought from the God-oriented world views of the Middle Ages to the development of scientific concepts in the 17th century. Emphasis is on reading original materials.

##### **HST 551 The European Mind since 1700 (4)**

European intellectual movements since the 18th-century Enlightenment, emphasizing the impact of evolutionary, utilitarian, and existentialist theories and the criticism of traditional rationalist assumptions. Emphasis is 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

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present state of race relations in these areas.

##### **HST 567 History of Mexico (4)**

The scope and achievements of pre-Columbian civilizations, the Spanish Conquest, the emergence of a multiracial society, the achievement of political independence and nation-building in the 20th century.

##### **HST 570 China: Beginnings through Han, to 220 A.D. (4)**

The history of China from most ancient times to the downfall of the Han Dynasty in 220 A.D.

##### **HST 571 China: From the Three Kingdoms through Ming, 220-1644 (4)**

The history of China to the eve of the Manchu conquest in 1644.

##### **HST 573 China: The Final (Ch'ing) Imperial Phase, 1644-1912 (4)**

China under Manchu rule, from the conquest to the collapse of the Confucian imperial order in the early 20th century.

##### **HST 574 China: The Nationalist Republican Period, 1912-1949 (4)**

Revolutionary nationalism and political, social, and cultural change under the Chinese Republic from the warlord era to the establishment of the Communist-led People's Republic in 1949, and post-1949 developments in Nationalist-ruled Taiwan.

##### **HST 575 Topics in Chinese Intellectual History (4)**

A historical investigation of selected periods and problems in the intellectual history of China. Content will vary each semester.

##### **HST 576 History of Chinese Communism: 1921 to the Present (4)**

The revolutionary history of the Chinese Communist movement from its beginning in 1921 to its accession to power in 1949, and the major lines of development under the Chinese People's Republic since 1949.

##### **HST 581 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.

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

India's successful struggle for independence from British imperialism, and its continuing struggle for social and economic justice.

##### **HST 586 Contemporary African History (4)**

Colonial and postcolonial economic development, political ideologies, and social problems of contemporary Africa. Topics include resistance and revolutionary movements, styles of leadership, and building of nations.

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

Directed individual readings 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)**

Examination taken in the last semester of the student's program; student must secure permission of the faculty adviser before registering. Candidates who submit a thesis will be examined orally for up to one hour on the thesis and historical problems related to it. The thesis comprehensive examination may not be retaken. Candidates who do not submit a thesis will be examined on the major field; the examination will be adapted to the student's individual program, and the examining committee may assign special readings to be completed for the comprehensive examination. Candidates taking the field comprehensive examination will be allowed one week to write take-home essays responding to the committee's questions; if the essays are acceptable, the candidate will be tested in a one-hour oral examination. Satisfactory performance on both written and oral sections is required for graduation. A student who fails may retake the field comprehensive examination in any succeeding semester. Prerequisite: Permission of faculty adviser.

#### **Graduate Colloquia**

Intensive reading 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 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 LINGUISTICS

**Chairperson:** William Schwab

### Professors:

Donald C. Hildum (*Communication Arts and Linguistics*), Ph.D., Harvard University  
William Schwab (*Linguistics and English*), Ph.D., University of Wisconsin

### Associate Professors:

John W. Barthel (*German and Linguistics*), Ph.D., University of Illinois  
Peter J. Binkert (*Linguistics and Classics*), Ph.D., University of Michigan  
Carlo Coppola (*Hindi-Urdu and Linguistics*), Ph.D., University of Chicago  
Daniel H. Fullmer (*Linguistics and English*), Ph.D., University of Michigan  
Don R. Iodice (*French and Linguistics*), M.A.T., Yale University

### Assistant Professor:

Gayle H. Partmann (*Linguistics and Sociology and Anthropology*), Ph.D., Stanford University

### THE MASTER OF ARTS IN LINGUISTICS

The Master of Arts degree in linguistics provides post-baccalaureate instruction to students interested in improving their knowledge and understanding of current linguistic theory and its application to language learning, particularly the teaching of English to both native and non-native speakers and the acquisition of language in children. The degree is intended to accommodate students who have done previous work in linguistics as well as those who have had little exposure to the subject.

### ADMISSION TO COURSE

The department will consider applicants who hold a baccalaureate degree from an accredited institution and whose credentials, including transcripts and letters of recommendation, give evidence of academic distinction. Although an undergraduate major in linguistics is not a requirements for admission, students must demonstrate a knowledge of the basic principles of linguistics, as would be encountered in a course such as ALS 176.

A grade point average of 3.00 (on a 4.00 scale) in undergraduate work is ordinarily the minimum standard for admission. At its discretion, the department may admit students of superior promise but deficient preparation provided that such students make good their deficiencies before commencing graduate work.

Students may be admitted during any of the four semesters of the university calendar. Applicants to the program must have all their credentials in the Office of Graduate Study no later than six weeks before the beginning of their initial semester of registration. After that time, and until the beginning of classes, they may apply for admission as special graduate students. However, not more than 12 credits earned as a special graduate can be applied toward the degree; therefore, the application should be completed as soon as possible.

Upon completion of 12 credits, including LIN 501, students will be evaluated for admission to candidacy and will choose an area of specialization. Students intending to specialize in curricula A, C, and E (below) must demonstrate knowledge of a foreign language normally equivalent to completion of the 214-215 sequence at Oakland (second-year proficiency) before admission to candidacy.

### DEGREE REQUIREMENTS

The Master of Arts degree in linguistics will be awarded to the student who earns 36 credits in nine courses as specified below. An additional two credits are



required for students specializing in teaching English to speakers of other languages.

Upon admission to candidacy, the student will choose an area of specialization from among the following five: linguistic theory, teaching language arts, teaching English to speakers of other languages, language development in children, and teaching other languages to native speakers of English. At least 20 credits (five courses) of the student's work must be in his/her area of specialization. The specialization in teaching language arts is designed primarily for secondary school teachers; the specialization in language development in children is designed primarily for elementary school teachers.

All students must complete LIN 501 (Linguistic Structures) and LIN 580 (Proseminar in Linguistics). All students must also complete LIN 680 (Graduate Seminar in Linguistics) or LIN 690 (The Master's Thesis). The requirements for LIN 690 will be a thesis of considerable detail in which the student must present the results of his/her independent research.

The department will offer LIN 501 each fall and LIN 580 each winter, in the late afternoon or evening. LIN 680 will be offered as necessary. Since there is no minimum enrollment in LIN 690, students may arrange for the course on a tutorial basis.

Up to 12 transfer credits may be acceptable toward the graduate degree, pending approval by the department and the dean of graduate studies.

### General Requirements

1. nine courses (36 credits; student specializing in teaching English to speakers of other languages must also take ALS 429, Practicum, for an additional 2 credits)
2. no more than 8 credits in cognates
3. no more than 8 credits (10 credits in specialization C) in 400-level LIN or ALS courses

### Core Program (12 credits)

1. LIN 501 Linguistic Structures
2. LIN 580 Proseminar in Linguistics
3. LIN 680 Graduate Seminar in Linguistics  
or LIN 690 The Master's Thesis

### Specializations (typical curricula)

1. **Linguistic Theory (24 credits)**
  - a. LIN 404 Syntactic Theory
  - b. LIN 403 Phonological Theory or LIN 407 Semantic Theory
  - c. LIN 601 The History of Linguistic Theory
  - d. LIN 610 Contrastive Studies in Language
  - e. LIN 502 Historical Linguistics
  - f. Elective at the 500-level or above
2. **Teaching Language Arts (24 credits)**
  - a. LIN 404 Syntactic Theory
  - b. LIN 601 The History of Linguistic Theory  
or ENG 647 Studies in the Structure of English
  - c. LIN 500 Practical Linguistics for English and Language Teachers
  - d. ALS 535 Psycholinguistics  
or ALS 576 Sociolinguistics
  - e. ED 500 Foundations of Reading Instruction  
or ENG 510 Literature and Composition
  - f. Elective
3. **Teaching English to Speakers of Other Languages (26 credits)**
  - a. ALS 428 The Teaching of English as a Second Language

and concurrently

- ALS 429 Practicum
  - b. ALS 528 Bilingualism
  - c. LIN 401 Phonetics
  - d. LIN 500 Practical Linguistics for English and Language Teachers
  - e. LIN 610 Contrastive Studies in Language
  - f. Elective at the 500-level or above
4. **Language Development in Children (24 credits)**
    - a. ALS 420 Linguistics and Reading
    - b. ALS 534 Language Development in Children
    - c. ALS 535 Psycholinguistics  
or ALS 560 Neurolinguistics
    - d. ED 500 Foundations of Reading Instruction
    - e. PSY 510 Development Psychology
    - f. Elective
  5. **Teaching Other Languages to Native Speakers of English (24 credits)**
    - a. LIN 500 Practical Linguistics for English and Language Teachers
    - b. LIN 502 Historical Linguistics
    - c. ALS 520 Applied Linguistics
    - d. LIN 600 Special Topics in Linguistics  
or LIN 610 Contrastive Studies in Language
    - e. One 400-level LIN course
    - f. Elective

### Course Offerings

#### Applied Language Studies

##### ALS 420 Linguistics and Reading (4)

A study of the English writing system, with close examination of spelling and morphology, ambiguity, dialect interference, and derivational vocabulary.  
Prerequisite: LIN 301 or equivalent.

##### ALS 428 The Teaching of English as a Second Language (4)

A study of modern techniques of teaching pronunciation, grammar, and vocabulary. The preparation and use of language tests and laboratory techniques.  
Prerequisite: LIN 301 or equivalent.

##### ALS 429 Practicum (2 or 4)

Supervised experience in some area of applied linguistics, such as working with non-native speakers of English, tutoring, or other appropriate field work or internship.  
Prerequisite: Permission of department.

##### ALS 520 Applied Linguistics (4)

A series of sections in French, German, Russian, and Spanish are offered. Identical with FRH, GRM, RUS, and SPN 320.  
Prerequisite: Completion of foreign language at 215-level or equivalent.

##### ALS 528 Bilingualism (4)

Survey of cultural and psycholinguistic aspects of bilingualism. Topics include bilingualism and intelligence, bilingual-bicultural education, maintenance of individual and communal bilingualism. The course will examine world-wide examples, but will be of special relevance to minority language groups in the U.S.

##### 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, and the relationship between language, reading, and writing.

##### ALS 535 Psycholinguistics (4)

A study of the psychology of language, the accommodation between the cognitive and physical structure of human beings and the structure of language, the nature of the language learning

process, and the consequences of language use.

Prerequisite: One course in ALS or LIN and one course in PSY.

**ALS 540      Biolinguistics (4)**

The biology of language: animal communication and evolution of man's capacity for language, development of language in normal and abnormal children, anatomy of vocal and auditory apparatus, disorders of speech and hearing, and genetic aspects of language.

**ALS 560      Neurolinguistics (4)**

The neurology of language: essentials of neuroanatomy; neurological mechanisms underlying language; aphasia and kindred disorders of speech; the relationship of language to memory, intelligence, and cognition; language and mental retardation and psychological disorders.

**ALS 575      Language in Culture (4)**

Language viewed as cultural behavior, its system, acquisition, and use; its relation to history, attitudes, and behavior; standard languages; social dialects; pidgins; and creoles. Identical with AN 375.

Prerequisite: One course in ALS, LIN, or AN 102.

**ALS 576      Sociolinguistics (4)**

Language in its social context: intrasocietal variation; social evaluation of language varieties (style, dialect) as an influence in language change; and the choice of a language variety as an index of group solidarity, social ideology, and individual attitudes. Identical with SOC 376.

Prerequisite: One course in ALS, LIN, or SOC.

**Linguistics**

**LIN 401      Phonetics (4)**

Introduction to articulatory and acoustic description of spoken language, and training in the recognition and production of sounds found in languages other than English. Identical with SCN 430.

**LIN 403      Phonological Theory (4)**

Theory and application of phonological analysis, with emphasis on original work.

Prerequisite: LIN 301 or equivalent.

**LIN 404      Syntactic Theory (4)**

Theory and application of morphological and syntactic analysis, with emphasis on original work.

Prerequisite: LIN 301 or equivalent.

**LIN 407      Semantic Theory (4)**

Inquiry into contemporary efforts to formulate and articulate a theory of meaning adequate for the analysis of natural language, with emphasis on the relation between syntactic and semantic analysis.

Prerequisite: LIN 301 or equivalent.

**LIN 410      Studies in the Structure of a Language (4)**

Study of the structural aspects of an individual language to be determined by the instructor. Among the languages for study are French, German, Hindi-Urdu, and Sanskrit.

**LIN 480      Seminar in Linguistics (4)**

Topics and problems selected by the instructor.

Prerequisite: LIN 301 or equivalent.

**LIN 490      Independent Study (2 or 4)**

Special research projects in linguistics.

Prerequisite: Permission of department.

**LIN 500      Practical Linguistics for English and Language Teachers (4)**

Designed to introduce teachers with and without previous formal study in linguistics to modern developments in theory and applications in the classroom; to establish background and teaching attitudes for making language study stimulating and creative; and finally to develop new insights and techniques on revealing to students the vast intuitive linguistic knowledge they already have, and to help them better exploit their linguistic competence.

**LIN 501      Linguistic Structures (4)**

Introduction to synchronic linguistic analysis, with structural problems in natural languages.

**LIN 502      Historical Linguistics (4)**

Diachronic linguistic analysis: language change, dialect geography, establishment of genealogical relationships, the reconstruction of earlier stages of languages, and the relationship of language change to synchronic analysis.

Prerequisite: LIN 501 or equivalent.

**LIN 503      Sound Patterns of American English (4)**

The fundamentals of articulatory phonetics with studies in American social and geographic dialects.

Prerequisite: LIN 501 or equivalent.

**LIN 580      Proseminar in Linguistics (4)**

Overview of current major issues and research in theoretical and applied linguistics.

Prerequisite: LIN 501 or equivalent.

**LIN 590      Directed Readings (4)**

Directed individual research on specific topics.

**LIN 600      Special Topics in Linguistics (4)**

Topics and problems selected by the instructor.

Prerequisite: Permission of instructor.

**LIN 601      The History of Linguistic Theory (4)**

Study of the development of linguistic sciences from ancient grammatical explanation to the 19th-century Indo-European scholars and 20th-century structuralism and transformational grammar.

Prerequisite: LIN 580.

**LIN 680      Seminar in Linguistics (4)**

A research seminar designed to develop a student's skill in linguistic investigation and exposition. Students must complete a research paper.

Prerequisite: LIN 580.

**LIN 690      The Master's Thesis (4)**

Completion of a project proposed by a degree candidate in consultation with his/her adviser.

Prerequisite: LIN 580.



# DEPARTMENT OF MATHEMATICAL SCIENCES

**Chairperson:** George F. Feeman

**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  
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  
Donald G. Malm, Ph.D., Brown University  
James H. McKay, Ph.D., University of Washington

**Associate Professors:**

J. Curtis Chipman, Ph.D., Dartmouth College  
Jon Froemke, Ph.D., University of California (Berkeley)  
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  
David J. Downing, Ph.D., University of Illinois  
Jerrold W. Grossman, Ph.D., Massachusetts Institute of Technology  
Maria M. Klawe, Ph.D., University of Alberta  
Hai-Ping Ko, Ph.D., Ohio State University  
Richard K. Molnar, Ph.D., University of North Carolina (Chapel Hill)  
Subbaiah Perla, Ph.D., University of Rochester  
Jean E. Roberts, Ph.D., University of Houston  
Bradley L. Sands, Ph.D., Oregon State University  
Sze-kai Tsui, Ph.D., University of Pennsylvania  
J. Barry Turett, Ph.D., University of Illinois  
Stephen J. Wright, Ph.D., Indiana University

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 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 Master of Arts in mathematics can be used as the first phase of a doctoral program. However, specific options will be 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 individually designed 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 M.A. in four semesters by taking an average of 9 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. Desirable preparation includes 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 the department's Committee on Graduate Programs. The committee judges the acceptability of the student's program and sets and administers the comprehensive examination after the student has completed 20 credits in the master's degree program.

A student's progress will be reviewed after each 12 credits attempted and after the comprehensive examination. If these reviews reveal unsatisfactory progress toward completion of the degree requirements, the student's dismissal will be recommended to the dean of graduate study.

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

The program leading to the Master of Arts in Teaching in mathematics serves teachers in secondary schools or community colleges in southeast Michigan and is designed to accommodate those who are not only primarily interested in teaching mathematics but also wish to complete a program with substantial mathematical content. The program prepares 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 interested in the program but who have not studied mathematics recently. To complete requirements for the M.A.T. degree, the student will need 36 credits of graduate work. In general, he/she will take seven 4-credit courses arranged by the department's Committee on Graduate Programs, one 4-credit course in education, and one in psychology. Among the courses arranged by the committee there must be 4 credits in independent reading, 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 4 credits in independent reading and the accompanying report, each candidate must take MTS 517 and MTS 514. 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 courses with MTS prefixes.

As soon as possible after completion of the six mathematics courses arranged by the committee, and before the independent reading assignment, M.A.T. candidates must take a special examination. The examination consists of approximately 10 problems, selected by the committee, which vary in context and difficulty. The can-

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candidate will have one month to work on these problems, after which he/she will give a verbal presentation on the solutions of some subset of the problems selected by the adviser.

Maximum flexibility is allowed in the choice of 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.

A student's progress will be reviewed after each 12 credits attempted and after the special examination. If these reviews reveal unsatisfactory progress toward completion of the degree requirements, the student's dismissal will be recommended to the dean of graduate study.

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

The program leading to the M.A.T. in mathematics for teachers with K-8 certification serves teachers in elementary and middle schools in southeast Michigan. It prepares people for leadership positions in mathematics teaching in those schools and in determining directions of curriculum development.

Students normally pursue this program on a part-time basis. During the fall and winter semesters they generally take a single course which meets in the late afternoon or evening. Participation in the eight-week summer session, on the other hand, is usually full-time. Following this schedule, a student can satisfy the degree requirements in about two and one-half years.

### Requirements for the Degree

The requirement for the degree is 36 credits of graduate work. In general, the candidate will take six 4-credit courses arranged by the department's Committee on Graduate Programs and three 4-credit courses in education and psychology (see below). Among the courses arranged by the committee there must be 4 credits in independent study (MTH 590), either in mathematics or an interdisciplinary area involving mathematics, to be concluded with a written report. Each candidate orally presents 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 is formed when the candidate begins his/her independent study.

Each candidate's program is supervised by the committee, which assists in formulating a meaningful plan of action for the candidate.

A student's progress will be reviewed after each 12 credits attempted. If these reviews reveal unsatisfactory progress toward completion of the degree requirements, the student's dismissal will be recommended to the dean of graduate study.

Mathematics courses designed for the program include MTE 610, 614, 615, 617, 618, 621-622, 625, and 628. The program assumes that students have had the equivalent of MTE 511 and 512 as prerequisites. Students without this background must take these courses or their equivalents before entering the degree program.

The education and psychology courses are chosen to suit the needs and interests of the degree candidate. 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.

## MATHEMATICAL SCIENCES (ARTS & SCIENCES)/55

| Group 1<br>(Psychology) | Group 2<br>(Curriculum) | Group 3<br>(General) |
|-------------------------|-------------------------|----------------------|
| PSY 510                 | ED 512                  | ED 500               |
| PSY 512                 | ED 513                  | ED 571               |
| PSY 513                 | ED 583                  | ED 589               |
| ED 562                  | ED 584                  | ED 580               |
| ED 501                  |                         | ED 503               |
| ED 591                  |                         | ED 585               |

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

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

MTS—mathematics for teachers (secondary education)

MTE—mathematics for teachers (elementary education)

### Course Offerings—M.A. in Mathematics

#### 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 461-462 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 covers 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. Categorical properties and functorial relationships are emphasized where possible.

**MTH 590 Directed Reading and Research (2, 4, 6, or 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 Reimann 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 505 Special Topics (2 or 4)**

Study of some topics in applicable analysis and mathematical modeling. May be taken more than once.

**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, Poincare-Bendixon 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.

**APM 590 Directed Reading and Research (2, 4, 6, or 8)****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 505 Special Topics (2 or 4)**

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

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

Combinatorial analysis, random variables, central limit theorem, recurrent events, distribu-

tion theory, sampling, statistical estimation, hypothesis testing, regression analysis, analysis of variance, and applications.

**STA 590**

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

**Course Offerings—M.A.T. in Mathematics (Secondary)****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)****MTS 510 The Secondary Mathematics Curriculum (4)**

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

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

Designed for M.A.T. 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)**

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 M.A.T. 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 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, nonparametric and sequential techniques, randomized blocks, Latin squares, balanced incomplete blocks, factorial and fractional factorial designs, screening experiments, surface fitting methodology, nonlinear 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.



**Course Offerings—M.A.T. in Mathematics (Elementary)**

Courses at the 500-level are open to undergraduates, while 600-level courses are 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)**

Topics in mathematics useful to elementary school teachers in line with current curriculum developments. Computer-assisted programs will be emphasized. Designed for M.A.T. candidates in elementary education.

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

Mathematics from ancient to modern times, its growth, development, and place in 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' 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 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 examines problems of the elementary mathematics curriculum. Topics are determined by the instructor and students. Enrichment mathematics and materials of instruction.

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

See page 109.

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

See page 114.

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

See page 114.

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

See page 114.

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

See page 114.

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

See page 115.

**PSY 510 Developmental Psychology (4)**

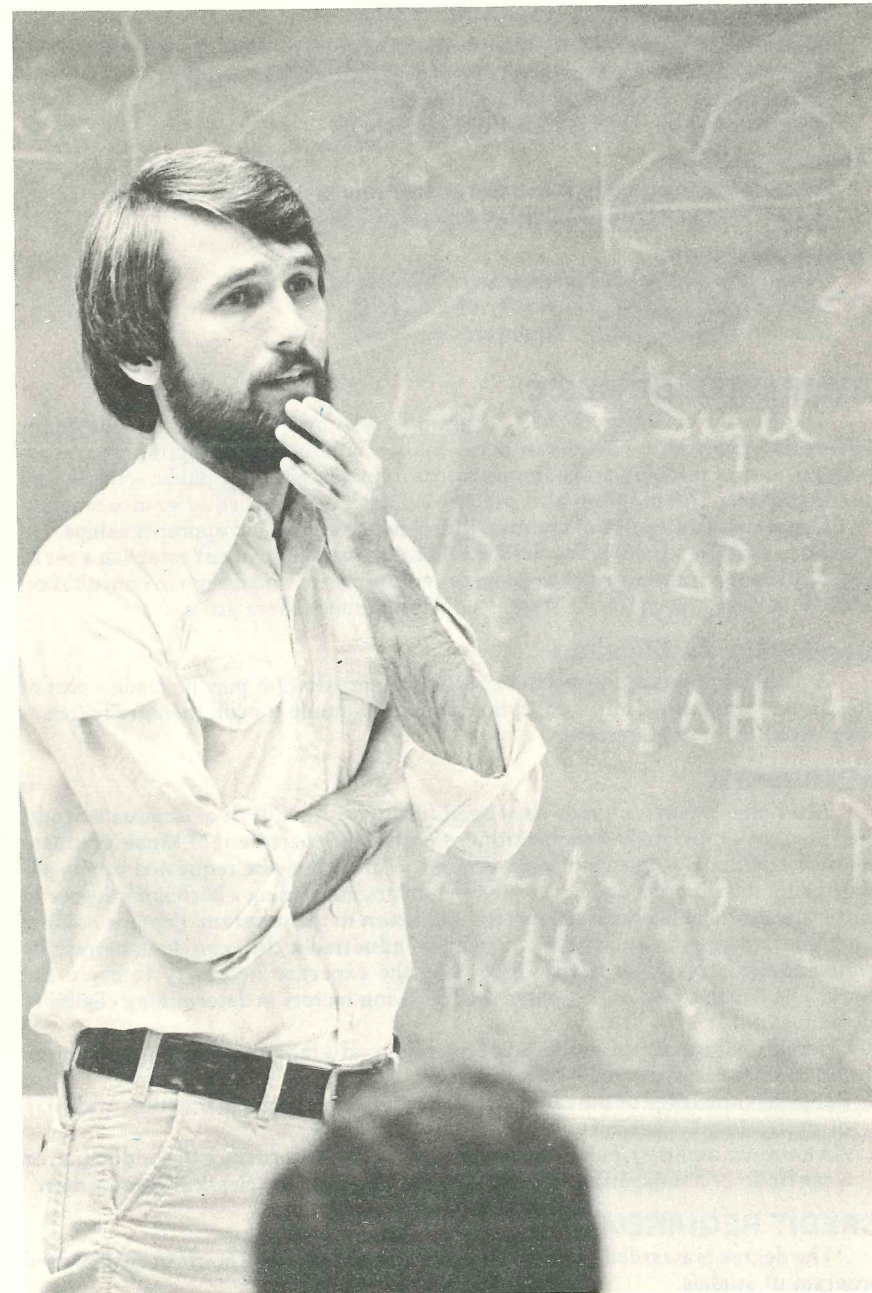
See page 74.

**PSY 512**

See page 74.

**PSY 540**

See page 74.

**Test and Measurements (4)****Behavior Theory and Learning (4)**



## DEPARTMENT OF MUSIC

**Chairperson:** Raynold Allvin

**Associate Professors:**

Raynold Allvin, D.M.A., Stanford University  
 David W. Daniels, Ph.D., University of Iowa  
 James E. Dawson, D.M.A., University of Michigan  
 David DiChiera, Ph.D., University of California (Los Angeles)  
 Robert Facko, Ed.D., Columbia University  
 Lyle Nordstrom, D.M.A., Stanford University

**Assistant Professors:**

Stanley Hollingsworth, B.M., Curtis Institute of Music  
 Flavio Varani, M.M., Manhattan School of Music

**Special Instructors:**

John Dvaras, M.M., Northwestern University  
 Alice Engram, M.M., University of Colorado  
 Marvin Holladay, M.A., Wesleyan University

### THE MASTER OF MUSIC

The Master of Music (M.M.) program is designed to prepare candidates for careers as practicing musicians in performance, conducting, composition and arranging, and as teachers and administrators in private studios, public schools, and junior colleges. The program also prepares candidates for further graduate work.

Degree work consists of courses, independent study, and apprenticeships. No specific pattern of studies is required. Rather, each candidate must establish a set of goals within the framework of the degree requirements, and design in consultation with an adviser a program of studies which will meet these goals.

### Continuing Certification

A planned program for teacher continuing certification may be made a part of the master's program in music education. Students should consult their graduate adviser about these requirements.

### ADMISSION

After application materials have been filed with the Office of Graduate Study, each student should make an appointment with the Department of Music graduate adviser. Additional evidence of achievement in music may be requested by the adviser or by the supervising faculty members. Persons holding a bachelor's degree in music are the most likely candidates for admission to the program. Persons holding a bachelor's degree in another major may be admitted if they can demonstrate by examinations or experience that they have the expertise necessary to begin the work. The department will consider the following factors in determining eligibility for admission:

1. Overall undergraduate grade point average and grade point average in music (normally expected to be 3.00 or better).
2. Personal knowledge of the candidate and/or letters of recommendation, and vitae of professional experience.
3. An entrance audition if electives will be in areas of performance or conducting, or a portfolio of compositions if electives will be in jazz or classical composition.

### CREDIT REQUIREMENTS

The degree is awarded upon satisfactory completion of 36 hours in an approved program of studies.

If the faculty deems areas of the candidate's undergraduate preparation deficient, undergraduate courses may be prescribed. Such work will not count as part of the 36 credits of the master's program.

### Transfer Credits

Twelve credits may be transferred from other accredited universities and colleges with permission of the graduate adviser. These credits must relate to the areas of music specialization elected by the student.

### PROGRAM OF STUDY

The degree program requires competency in music history and literature, music theory, and one or two elective areas of specialization. A culminating activity is recommended.

### Required Proficiency

1. **Music History and Literature:** Competency may be demonstrated by examination or successful completion of MUS 521 and 522.
2. **Music Theory:** Competency may be demonstrated by examination or successful completion of MUS 530. (This music theory requirement is waived for students who received an undergraduate music degree from Oakland University from 1970-77, when a theory competency examination was required.)

### Areas of Specialization

Each degree candidate will choose two areas of specialization. These may be diverse in emphasis or closely related and complementary. Exceptions to this requirement are music education and Orff pedagogy, which may be elected without a second area of specialization. In any case, the goals should be realistic given the time, credits, and resources available to support the study.

Program areas are: performance (piano, voice, orchestral instruments, guitar, jazz), piano pedagogy, vocal pedagogy, composition, jazz composition, conducting, early music, music education (secondary and elementary), and Orff pedagogy. Individual programs with other emphases may be designed in consultation with the graduate adviser.

### Typical Programs

#### Performance, Pedagogy, Composition, Conducting, Early Music

|                                                                                                  |          |
|--------------------------------------------------------------------------------------------------|----------|
| Music literature and history—MUS 521 and 522                                                     | 8        |
| Advanced Analysis                                                                                | 4        |
| Area or areas of specialization courses                                                          | 4        |
| Apprenticeship activities, lessons, or performance                                               | 8        |
| Independent study or research                                                                    | 8        |
| Culminating activity (recital, composition, concert of original works, conducted concerts, etc.) | <u>4</u> |
|                                                                                                  | 36       |

#### Music Education

|                                                                                                                          |          |
|--------------------------------------------------------------------------------------------------------------------------|----------|
| Music Literature and History—MUS 521 and 522                                                                             | 8        |
| Advanced Analysis                                                                                                        | 4        |
| Workshops, institutes, courses, or apprentice activities in areas of specialization                                      | 12       |
| Philosophy, research methodology, or supervision of music education                                                      | 8        |
| Culminating activity—research report, thesis, instructional materials, classroom demonstrations, directed concerts, etc. | <u>4</u> |
|                                                                                                                          | 36       |

## Degree Contract

Upon acceptance to the program, each master's candidate will negotiate a contract with the graduate adviser subject to approval of the Department Graduate Committee. The contract will specify a cohesive plan of individual projects and course work addressed to the candidate's objectives, including selected elective areas, how the requirements for each area will be met, and courses and projects the candidate will undertake to satisfy the requirements of each area.

The degree will be awarded only when all parts of the contract have been completed. Changes require recommendation of the adviser and approval of the Department Graduate Committee.

## Thesis or Recital

A student wishing to offer a thesis or recital to culminate his/her program should secure approval before starting preparation and at least four weeks before the beginning of the semester in which the thesis work or recital will take place. The graduate committee will act on requests for such approval, upon recommendation of the graduate adviser.

## Course Offerings

Courses are indicated by the following designations:

MUA—Applied Music

MUE—Music Ensembles

MUS—Music History, Literature, and Appreciation and Music Education

MUT—Music Theory

### MUA 501 Applied Music (2 or 4)

Individual lessons on a particular instrument or in voice. May be repeated for up to 10 credits.

### MUE 502 Ensemble Performance (2)

Participation in any university performing ensemble plus at least one of the following activities or duties: a musicological study of the work performed, section leader, section rehearsal assistant, assistant conductor, ensemble manager. May be repeated for up to 10 credits.

### MUS 503 Solo Performance (2)

Must be taken simultaneously with MUA 501 and must culminate in at least one public performance during the semester. May be repeated for up to 8 credits.

### MUE 504 Chamber Music Performance (2)

Preparation for public concert under the supervision of a chamber music coach. May be repeated for up to 8 credits.

### MUS 521 Seminar in Music Literature, Medieval to 1750 (4)

An intensive study of music literature and organology up to 1750. Emphasis will be given to a broad base of varied repertory in vocal and instrumental works. Students will perform extensive research in literature of a particular performing medium.

### MUS 522 Seminar in Music Literature from 1750 to Present (4)

An intensive study of music literature and organology from 1750 through contemporary works. Emphasis will be given to a broad base of varied repertory in vocal and instrumental works. The student will perform extensive research in literature of a particular performing medium.

### MUS 523 History of the Musical Theatre (4)

Survey and analysis of styles and technical aspects of Broadway musical theatre.

### MUT 530 Advanced Analysis (4)

A historical survey of music theory concepts which influence stylistic and technical aspects of performance including application of these concepts for analysis of the major works.

### MUT 540 Composition (2 to 8)

Private and group lessons in composition and composition laboratory: technique and individual style are emphasized. May be repeated for up to 10 credits.

### MUS 550 Repertory and Pedagogy of Jazz and Rock (2)

Rock instrumental, vocal, and ensemble instructional methods including arranging and com-

posing for school rock groups, organization and administration of rock ensembles, and curricular development based on rock for secondary music appreciation, music theory, and humanities classes. The course is designed to develop skills in teaching and using rock with secondary school students. Usually offered in summer sessions only.

### MUS 565 Advanced Studies in Performance Practice (2 to 6)

Study of music literature of specific periods and of established performance characteristics unique to a musical period and/or a specific instrument. Detailed analysis of melodic material, harmonic implications, formal structure, rhythmic drive, and textural balance are the basis for establishing foundations of appropriate interpretation. Usually offered in summer session only. May be repeated for a total of 6 credits.

### MUS 570 Independent Study in Jazz (2 to 6)

Individual study in jazz composition, arranging, performance practice, and rehearsal techniques. May be repeated for a total of 6 credits.

### MUS 580 Advanced Choral Interpretation and Conducting Techniques (1 to 4)

Techniques and problems of correctly interpreting and conducting choral literature through style analysis, performance practices, choral tradition, and vocal production. Usually offered in summer session only. May be repeated for credit.

### MUS 581 Advanced Instrumental Interpretation and Conducting Techniques (1 to 4)

Techniques and problems of correctly interpreting and conducting major orchestral works through style analysis, performance practices, and various instrumentations, including works for a wide range of ensemble combinations. Usually offered in summer session only.

### MUS 582 Orff Schulwerk (1 to 4)

A progressive pedagogical system of elementary music education based on the principles of Carl Orff. May be repeated for a total of 12 credits.

### MUS 583 Orff Schulwerk Ensemble Development (1 to 4)

Techniques of teaching performance on instruments used in the Orff Schulwerk pedagogy.

### MUS 590 Musicological Research (1 to 8)

### MUS 591 Ethnomusicological Research (1 to 8)

### MUS 592 Introduction to Music Bibliography (2)

Skill development in rigorous and systematic research of music materials. Includes the study of principal music encyclopedia for content and reliability.

### MUS 593 Music Pedagogy (4)

Principles of music teaching and learning for the studio teacher. Includes observation and supervised teaching. May be repeated for a total of 8 credits.

### MUS 594 Philosophical and Pedagogical Foundations of Music Education (4)

The study of music in American society and the goals and objectives in the public schools. Includes research in current learning theory used to develop contemporary music pedagogy.

### MUS 595 Innovations in Music Education (1 to 4)

Innovative patterns of music instruction. Materials, methods, and curricula appropriate to changing philosophies of music education and current research on learning and teaching. Emphasis on structuring learning encounters. Usually offered in summer session only. May be repeated for credit.

### MUS 596 Supervision in Music Education (4)

Seminar in the techniques of music teacher evaluation, administrative practices, curriculum building, and test and measurements.

### MUS 599 Independent Study (2 to 12)

A program of independent study under the guidance of a faculty adviser. The study plan is subject to final approval by the Department Graduate Committee. May be repeated for credit.

### MUS 600 Graduate Seminar (1 to 6)

Special seminars in music performance, literature, and education. An in-depth study of current topics and issues.

### MUS 620 Conducting Apprenticeship (2 to 6)

An individual program under the supervision and in association with one of the major ensemble conductors of the Department of Music.

Prerequisite: Department Graduate Committee approval.



**MUS 640 Piano Master Class (1, 2, or 4)**

An intensive study of piano literature for stylistic characteristics and technical problems. May be repeated for a total of 8 credits.

Prerequisite: Audition and permission of instructor.

**MUS 680 Directed Research in Music Education (2 to 12)**

Independent or group research in music education methods, measurement, and curriculum.

Prerequisite: Approval of an adviser and the Department Graduate Committee.

**MUS 682 Orff Pedagogy Master Class (4)**

Master class in instructive systems based on the Orff Schulwerk pedagogy.

Prerequisite: Completion of Level IV of the Orff Schulwerk as prescribed by AOSA.

**MUS 690 Master's Thesis (2 to 6)**

A project of creative research or teaching approved by the candidate's adviser and the Department Graduate Committee.

**MUS 695 Master's Recital (2 to 6)**

A concert or recital demonstrating the candidate's creative and artistic strengths. Credit will be awarded only upon approval of a specially appointed jury committee.



## 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

Norman Tepley, Ph.D., Massachusetts Institute of Technology

Paul Tipler, Ph.D., University of Illinois

Robert M. Williamson, Ph.D., University of Wisconsin

**Associate Professor:**

W.D. Wallace, Ph.D., Wayne State University

**Assistant Professors:**

Beverly Berger, Ph.D., University of Maryland

Michael Chopp, Ph.D., New York University

Paul M. Doherty, Ph.D., Massachusetts Institute of Technology

**Adjunct Professors:**

Adrian Kantrowitz, M.D., Long Island College of Medicine

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 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.

**Admission to Course**

An applicant for admission to the M.S. 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: 4 credits of PHY 673 (Quantum Mechanics); one credit of PHY 600 (Seminar); 23 credits of additional 400-, 500-, or 600-level courses approved by the department; 8 credits of research, including a final written report or critical essay.

### THE MASTER OF SCIENCE IN MEDICAL PHYSICS

The Department of Physics, in conjunction with the Center for Health Sciences, offers a Master of Science program in medical physics. Approximately half the work is in physics and half in a clinical setting. Details, requirements, and course descriptions begin on page 137.

## RESEARCH FIELDS AND FACILITIES

The Department of Physics faculty 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 as well as the biomedical topics of magnetocardiography, the fluid dynamics of cerebral spinal fluids, radiation protection and dosimetry in diagnostic radiology, and image reconstruction in computerized tomography. 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 as well as the mechanical properties of shale. The theoretical group has been concerned with nuclear structure studies, investigation of hyperfine interactions, isomer shifts in ordinary and muonic atoms, and general relativity and cosmology. A computer group has been developing computer graphics programs for solving physics problems.

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 Magnetics Laboratory, unique in the U.S., which provides a nonmagnetic environment for use in biomagnetism studies using a sensitive superconducting magnetometer and 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. A number of telescopes with apertures up to 10 inches and some research capability are housed in a separate observatory. In addition, an environmental radiation laboratory is operated. Research facilities of neighboring hospitals are also available for medical physics topics. Supporting facilities include an electronics shop, a student shop, and a well-equipped machine shop staffed by experienced instrument-makers. Computer facilities include a Honeywell DPS-1 time-sharing computer, a Nova II minicomputer, and two Tektronix 4051 Graphics Computers.

## 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.

### PHY 418 Modern Optics Laboratory (2)

Laboratory studies employing modern, sophisticated laser, spectrometer, and photon-counting techniques and equipment including atomic absorption spectroscopy, intensity fluctuation spectroscopy, atomic and molecular fluorescence, and Brillouin scattering. Offered winter only. Prerequisite: PHY 371, and PHY 158 or 159.

### 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. Offered fall only. Prerequisite: PHY 361 and APM 255.

### PHY 470 Relativity (4)

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

gravitation. Offered winter only.

Prerequisite: PHY 361, or 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 operators, spin, perturbation theory, identical particles. With applications to atomic systems. Offered fall only. Prerequisite: PHY 351, 361, 371, and APM 255.

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

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

Prerequisite: PHY 381 and APM 255.

## GRADUATE COURSES

### PHY 504 Advanced Astrophysics I (4)

Observational properties of stars, galactic structure, stellar dynamics. Prerequisite: PHY 305, 361, 472, and 482.

### PHY 505 Advanced Astrophysics II (4)

Stellar structure and evolution, interstellar medium, galaxies, cosmology. Prerequisite: PHY 504.

### PHY 506 Projects in Astrophysics (2)

Individual or group projects in observation and data analysis. Corequisite: PHY 504 or 505.

### 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.

Prerequisite: PHY 421 and 552.

### PHY 525 Radiation Biophysics (4)

The study of molecular and cellular radiation biology, theories of biological effects of radiation, repair of radiation damage, effects of irradiation on human tissue and organs, and radio-sensitivity of human tumors.

Prerequisite: BIO 104 and PHY 372 or permission of instructor.

### 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 347 or equivalent.

### PHY 552 Theoretical Physics (4)

Topics and techniques common to graduate physics courses: partial differential equations, eigenvalue problems, special functions, spherical harmonics, Green's functions, variational methods, linear vector spaces, tensors.

Prerequisite: PHY 361, 371, and 381.

### PHY 562 Mechanics II (4)

Lagrange's and Hamilton's equations of motion, tensors, rotation of rigid bodies, coupled oscillations, canonical transformations.

Prerequisite: PHY 361 and APM 255, or equivalent.

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

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)

Nuclear properties, forces, models, decays, and reactions; nuclear energy, elementary particles. Prerequisite: PHY 372 and 472, or equivalent.

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

Introduction to the thermal, electrical, and magnetic properties of solids, including periodic



structure, lattice dynamics, electron interactions and behavior, transport properties, Fermi surface, optical behavior, and superconductivity. Emphasizes current experimental techniques. Prerequisite: PHY 371 or 472.

**PHY 582      The Physics of Semiconductor Devices (4)**

Begins with brief discussion of the physics of solids and transport phenomena; then presents detailed descriptions of such devices as p-n junction diodes, tunnel diodes, IMPATT diodes, junction transistors, field-effect devices, and various interface and thin-film devices. Prerequisite: PHY 371.

**PHY 583      Classical Electrodynamics (4)**

Review of electrostatics, magnetostatics, Maxwell's equations, and electromagnetic waves. Relativistic description of particles, fields, and interactions. Radiation by moving charges, bremsstrahlung, radiation damping, self fields. Prerequisite: PHY 482 and 552.

**PHY 600      Seminar (1)**

**PHY 673      Quantum Mechanics (4)**

Development of formal approach to quantum mechanics, selected illustrations, and applications. Prerequisite: PHY 472 and 552; PHY 562 advisable.

Prerequisite: PHY 472 and 552; PHY 562 advisable.

**PHY 674      Advanced Quantum Mechanics (4)**

Continuation of PHY 673. Additional illustrations and applications of formal quantum mechanics. Prerequisite: PHY 673.

Prerequisite: PHY 673.

**PHY 690      Research (2 to 12)**

## DEPARTMENT OF POLITICAL SCIENCE

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**Chairperson:** Carl R. Vann

**Director of Public Administration Program:** Edward J. Heubel

**Professors:**

Sheldon Appleton, Ph.D., University of Minnesota  
Thomas W. Casstevens, Ph.D., Michigan State University  
Edward J. Heubel, Ph.D., University of Minnesota  
Roger H. Marz, Ph.D., Michigan State University  
Carl R. Vann, Ph.D., Syracuse University

**Associate Professors:**

Thomas W. Church, Ph.D., Cornell University  
James R. Ozinga, Ph.D., Michigan State University

**Assistant Professors:**

Brian W. Coyer, Ph.D., Michigan State University  
Lawrence T. Farley, Ph.D., University of Denver  
Robert J. Goldstein, Ph.D., University of Chicago  
Vincent Khapoya, Ph.D., University of Denver  
Claude K. Rowland, Ph.D., University of Houston  
Don S. Schwerin, Ph.D., University of Minnesota

**Visiting Assistant Professor:**

William Macauley, Ph.D., University of Houston

### THE MASTER OF PUBLIC ADMINISTRATION (M.P.A.)

The master's degree program in public administration and public policy has been established to provide a challenging education for persons seeking professional careers in governmental and other public agencies. The need for such programs is recognized, given the growth in the number and the complexity of agencies at the state and local levels and the concern for both responsive and effective public service at all levels. The M.P.A. program seeks a generalist focus through a set of core courses and provides an opportunity for specialization through the electives and the directed project/internship option. Persons with significant experience in public service will be advised to undertake a research project; those seeking a transition to a public service career will be assisted in an assignment to a public administration internship in one of the area agencies.

### Admission Requirements

Admission to the program is selective. Applicants must hold a baccalaureate or the equivalent from an accredited undergraduate institution, and must have a grade record that indicates superior work. The program is designed to accommodate students with a wide variety of undergraduate preparations, provided that certain courses have been taken and skills acquired as part of those programs. Applicants must meet the university's general requirements for admission to graduate studies; they must also submit scores from either the Graduate Management Admission Test (GMAT) or the Graduate Record Examination. In addition to these requirements, the Department of Political Science will assess the writing ability of applicants and may interview the applicant.

### Undergraduate Preparation for the M.P.A.

Degrees in a wide variety of majors will prepare the student for admission, providing that the record includes:

1. Basic courses in political science, government, or public administration
2. Basic courses in economics
3. One course in accounting

Students otherwise qualified for admission to the program but lacking in these areas may be admitted conditionally with the requirement that the deficiency be corrected during the first year of the program by an appropriate undergraduate course. A departmental adviser will plan with the student an appropriate way of meeting these prerequisites. Undergraduate credits earned to meet these standards will not be counted toward the total of graduate credits needed for the degree.

### M.P.A. Degree Requirements

The requirement for the M.P.A. is 40 credits. The required courses will be offered during the evenings or, in some instances, on Saturdays. If the student successfully carries a normal load, it will be possible to complete the program in two calendar years, starting in the fall of one year and ending in the spring/summer of the next academic year.

### Core Program

The following core courses are required:

|            |                                            |    |
|------------|--------------------------------------------|----|
| PA 601     | Public Administration: Theory              | 4  |
| PA 602     | Public Administration: Issues and Problems | 4  |
|            | A course in quantitative techniques*       | 4  |
| PA 621     | Government Information Systems             | 4  |
| PA 653     | Public Budgeting and Finance               | 4  |
| PA 655     | Public Policy Evaluation                   | 4  |
| PA 654     | Public Personnel Evaluation                | 4  |
| Core Total |                                            | 28 |

\*The student showing a high level of attainment in mathematics and statistics may waive this course and substitute an additional elective.

|                       |   |
|-----------------------|---|
| Electives             | 8 |
| Internship or Project | 4 |

Total M.P.A. Credits — 40

The student is expected to complete two electives from the public administration offerings and from designated graduate course listings in other schools or programs at Oakland. At the end of course work, the student who has not had significant public service experience will be assigned an internship; others will be expected to complete a research project.

Assuming a yearly fall admission to the program, core courses and electives may be taken as follows:

|         | Fall                    | Winter   | Spring/Summer         |
|---------|-------------------------|----------|-----------------------|
| Year I  | PA 601                  | PA 602   | Elective              |
|         | Quantitative techniques | PA 621   |                       |
| Year II | PA 653                  | PA 655   | Internship or Project |
|         | PA 654                  | Elective |                       |

### Conditional and Special Graduate Status

Students who are conditionally admitted to the program must have the condition removed before undertaking the second year of the program. Students who have special graduate status may take up to two courses in the program without formal admission to the program; to proceed further in the course sequence requires

full admission to the program. Upon attaining full graduate status the work done as a special student will be credited toward the program.

### Course Offerings

#### PA 601 Public Administration: Theory (4)

Fundamental concepts of public administration, their origin and development. Distinguishes between public and private and between government and administration.

#### PA 602 Public Administration: Issues and Problems (4)

Contemporary controversies and trends in public administration systems. Cooperation and conflict between branches, units, and levels of government and its impact on the way programs are developed and services delivered.

#### PA 621 Government Information Systems (4)

Essential tools for management decision-making and program evaluation; data management, information retrieval, selected computer packages, and report writing are covered.

#### PA 653 Public Budgeting and Finance (4)

How governments raise funds and allocate them among competing purposes. Relations between agencies and executive budget offices and between executive and legislative branches of government. The elements of budget preparation, defense, and review under various systems, line-item, performance, program, PPBS and zero-base budgets are presented.

#### PA 654 Public Personnel Administration (4)

Study of the personnel function in public agencies, the legal and political environment, managerial concerns and employee rights, and the problems of public employee collective bargaining.

#### PA 655 Public Policy Evaluation (4)

How to judge the success of programs; problems of design, data collection, and analysis to sort out causes and evaluate effects; cost-benefit analysis; the organizational and political aspects of evaluation studies.

#### PA 658 Internship (4)

Supervised assignment in a public agency for approximately 16 weeks; periodic reports and evaluations.

Prerequisite: Completion of core program.

#### PA 690 Research Project (4)

Individual research project related to work or program of a public agency.

Prerequisite: Completion of core program.



## DEPARTMENT OF PSYCHOLOGY

**Chairperson:** David W. Shantz

**Professors:**

Edward Bantel, Ed.D., Columbia University  
David C. Beardslee, Ph.D., University of Michigan  
Jean S. Braun, Ph.D., Wayne State University  
Harvey Burdick, Ph.D., University of Minnesota  
Donald C. Hildum, Ph.D., Harvard University  
Boaz Kahana, Ph.D., University of Chicago  
Donald D. O'Dowd, Ph.D., Harvard University

**Associate Professors:**

Daniel N. Braunstein, Ph.D., Purdue University  
Max Brill, Ph.D., University of Cincinnati  
Kenneth Coffman, Ph.D., Northwestern University  
Algea O. Harrison, Ph.D., University of Michigan  
Lawrence G. Lilliston, Ph.D., Temple University  
David G. Lowy, Ph.D., University of Tennessee  
Virginia E. O'Leary, Ph.D., Wayne State University  
Dean G. Purcell, Ph.D., University of Toronto  
Ralph Schillace, Ph.D., University of Cincinnati  
David W. Shantz, Ph.D., Purdue University  
Irving Torgoff, Ph.D., University of Rochester

**Assistant Professors:**

Maria S. Brane, Ph.D., Wayne State University  
Ranald D. Hansen, Ph.D., University of Connecticut  
I. Theodore Landau, Ph.D., University of California, Berkeley  
Keith E. Stanovich, Ph.D., University of Michigan  
David M. Stonner, Ph.D., University of Missouri  
Harold Zepelin, Ph.D., University of Chicago

**Visiting Assistant Professors:**

Sam S. Rakover, Ph.D., The Hebrew University  
David L. Ronis, Ph.D., Ohio State University  
Dena Scher, Ph.D., University of Arkansas  
Sandra K. Webster, Ph.D., Southern Illinois University

### THE MASTER OF ARTS IN PSYCHOLOGY

The primary purposes of the programs leading to the degree of Master of Arts in psychology are to train students at the intermediate professional level and to initiate students into advanced scholarship to prepare for additional graduate study at other institutions. A student may concentrate in clinical psychology or developmental psychology.

### Financial Aid and Assistantships

For financial aid information, see page 17. A limited number of assistantships are available; second-year graduate students are given priority.

### Admission to and Requirements for Clinical Psychology

The program in clinical psychology is designed to prepare students to evaluate and treat patients in a clinical setting. Individuals interested in becoming school diagnosticians will require some further preparation in educational psychology, but will find the basic program appropriate to acquire needed clinical skills.

An applicant for admission should have a bachelor's degree from an accredited institution or proof of equivalent achievement. While an undergraduate major in psychology is not required, students are expected to be acquainted with the field to the extent of having had the following courses or their equivalents: Foundations of Introductory Psychology, Experimental Psychology, Statistics and Research 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 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 PSY 692. In addition, the curriculum must include PSY 624, 620, 621, 622, 623, and 625. Students in the clinical program have the option of completing a research project (PSY 690) or of taking an elective course, such as PSY 626. Students who plan to go on for a Ph.D. are urged to complete the research project.

Practicum placements must be arranged and 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.

A student is subject to dismissal from the program for any of the following reasons:

1. Two grades below 3.0.
2. Overall GPA below 3.00.
3. One grade below 2.5.
4. Less than 3.0 in each of the testing courses (PSY 620 and 621).
5. Failure to complete satisfactorily either practicum.
6. Failure to satisfy accepted professional 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. Applications should be accompanied by a biographical sketch, including a statement of the applicant's principal academic interests, relevant experience, and professional goals. Applicants should arrange for two letters of recommendation, preferably from previous instructors. Results of the Graduate Record Examination (GRE) for general aptitude and in psychology should also be submitted. 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—PSY 672 and 692; first year, second semester—PSY 671 and 673; second year, first semester—PSY 674 and an elective (to be approved by faculty adviser); second year, second semester—PSY 670, 675, and 690 (the thesis).

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 M.A.T. program.

### PSY 512 Test and Measurements (4)

Theories of measurement and evaluation. Construction and examination of tests of ability, achievement, interests, and special aptitudes. Objective tests of personality.  
Prerequisite: Permission of instructor or acceptance into the M.A.T. 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 M.A.T. 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 320.

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

Conditioning, reinforcement, punishment, drives, and transfer of training are 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 fall semester.  
Prerequisite: Permission of instructor.

### PSY 551 Advanced Statistics (4)

Following a review of descriptive and simple inferential statistics, major emphasis will be on 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 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)

Examination of critical areas of research and theory of the socialization process. Areas of focus: attachment and separation, conscience development, sex-role identity, ego-identity, role of principal agents, e.g., family, peers, schools, etc.  
Prerequisite: PSY 271, Child Development.

### PSY 578 Work with the Elderly (4)

Field work in community agencies and institutions combined with lectures and readings on psychosocial services for the elderly.  
Prerequisite: PSY 331 or 674 or their equivalent with consent of instructor.

### 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 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 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 for 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)

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: Techniques 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)**

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)**

Intensive study of developmental phenomena from adulthood to death. Topics 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 Proseminar (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

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**Office of the Dean:**

Norton C. Seeber, Dean

John E. Tower, Assistant Dean

**Professors:**

Eleftherios N. Botsas, Ph.D., Wayne State University

Daniel N. Braunstein, Ph.D., Purdue University

Karl D. Gregory, Ph.D., University of Michigan

Robbin R. Hough, Ph.D., Massachusetts Institute of Technology

Sid Mittra, Ph.D., University of Florida

Norton C. Seeber, Ph.D., University of California (Berkeley)

**Associate Professors:**

David P. Doane, Ph.D., Purdue University

Miron Stano, Ph.D., Cornell University

John E. Tower, Ph.D., State University of New York at Buffalo

**Assistant Professors:**

George Applewhite, Ph.D., New York University

Nancy S. Barry, Ph.D., Northwestern University

Alphonso R. Bellamy, Ph.D., Purdue University

Alice C. Gorlin, Ph.D., University of Michigan

Douglas D. Gregory, Ph.D., Northwestern University

Yong-ha Hyon, Ph.D., New York University

Richard M. Reese, Ph.D., University of Texas at Austin

Frederic B. Shipley, Ph.D., Northwestern University

Diane B. Stricker, Ph.D., Cornell University

Socrates D. Tountas, Ph.D., Wayne State University

**Instructors:**

Paul O. Kingstrom, M.A., Wayne State University

Thomas R. McCarthy, M.A., University of Maryland

Howard Schwartz, M.A., University of California

**Visiting Associate Professor:**

Robert J. Zolad, C.P.A., University of Chicago

**Visiting Assistant Professors:**

Badie Farah, Ph.D., Ohio State University

Oded Izraeli, Ph.D., University of Chicago

Larry E. Mainstone, Ph.D., Michigan State University

**Visiting Instructors:**

James L. Brock, M.B.A., San Francisco State University

John W. Henke, M.B.A., Michigan State University

Andrea L. Long, M.A., University of Michigan

David D. Sidaway, C.P.A., Ohio State University

**Adjunct Professors:**

Paul F. Lorenz, M.B.A., University of Chicago

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

## THE MASTER OF BUSINESS ADMINISTRATION

A program leading to the Master of Business Administration (M.B.A.) is offered by the School of Economics and Management. The program stresses recognized common elements in management rather than concentrating on narrow traditional specialties. It is designed to educate students for managerial roles in either 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 and business problems, students also are prepared for entry-level jobs.

The School of Economics and Management was established in 1969, and master's-level education began in 1972. Management classes are kept small to encourage substantial student-faculty and student-student interaction. Graduate students have the opportunity to exert significant influence on their own education and on their educational environment.

### PROGRAM PHILOSOPHY

The M.B.A. program assumes no academic preparation in management or business courses. A typical entering class may consist of undergraduate majors from the social and natural sciences, engineering, and the humanities as well as from other majors. The program is based on the belief that management education should:

1. Prepare students for careers involving problem identification, problem solving, decision making, and leadership in any type of organizational setting.
2. Emphasize determination of goals and effective utilization of scarce resources to achieve these goals.
3. Help students to understand and participate in their physical and social environments.
4. Stress understanding of human behavior and organizational settings, for much of management relates to people—understanding them, communicating with them, working with them, and leading them.

### ADMISSION TO PROGRAM

Admissions are selective and depend on several elements, including scholarship and an ability to communicate and interact effectively. A bachelor's degree or equivalent from an institution of recognized standing is required, except for a few outstanding Oakland University students admitted into the "Five-Year Track." The program is designed especially for students with little or no academic background in business administration. Applications are welcome from students with bachelor's degrees in all arts and sciences fields, engineering, nursing, education, and other professional schools.

Students are expected to possess certain skills in basic mathematics and in the social sciences, or to demonstrate an ability to acquire these skills early in their program. The applicant must also meet the general admission requirements for graduate study at Oakland University for the year in which he/she applies. All applications are considered by the Graduate Admissions Committee of the School of Economics and Management, which takes into account an applicant's qualifications as evidenced by his/her undergraduate record, letters of recommendation, responses to application questions, and scores on the Graduate Management Admission Test (GMAT).

### GRADUATE MANAGEMENT ADMISSION TEST

All applicants for admission must submit scores from the GMAT. This test is administered throughout the world by the Educational Testing Service four or more times a year, usually in October, January, March, and July. No other test may be substituted. Information about specific examination dates and locations may be ob-

tained by writing Educational Testing Service, Princeton, New Jersey 08540.

### FULL-TIME AND PART-TIME STATUS

All students, but especially those intending to enroll as part-time students, should be aware of the very high demands placed upon them by graduate work in the Oakland University M.B.A. program. These demands are more typical of an executive development program than of a standard M.B.A. curriculum. Prospective students should carefully consider the necessity of coordinating graduate study with commitments to work and/or family.

Students may enter the core program on a full-time or part-time basis. Full-time students normally take 12 credits (three courses) per semester in fall and winter for two years. Part-time students take 8 credits (two courses) per semester in fall and winter, plus one course in each spring and summer session, for two years.

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

### FIVE-YEAR TRACK

The School of Economics and Management, in conjunction with other university schools and departments, offers a five-year track leading simultaneously to a baccalaureate in a field other than management and to the M.B.A. Under this program, a student applies for acceptance during the winter semester of the junior year to allow him/her to start the M.B.A. courses in the senior year. Any student who participates in this track must satisfy all undergraduate degree requirements and can do so in part by counting the M.B.A. courses taken during the senior year as "free" undergraduate electives.

### Requirements for the Five-Year Track

1. The student will apply during the winter semester of the junior year. The student's major adviser must approve the application.
2. At the time of application for admission to the program, a student must have a GPA approximately in the top 15 percent of his/her class in the major field, as determined through consultation with the major department.
3. 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.
4. Formal admission to the M.B.A. program at the end of the senior year is presumed, subject to satisfactory performance in courses taken in the fourth year.
5. Up to 18 credits applicable to the M.B.A. program may be taken in the senior year as "free" undergraduate electives. The student must take at least 32 credits after receiving the baccalaureate degree. Additional information and applications may be obtained from the Office of the Dean of Economics and Management.

### LENGTH OF PROGRAM

The program varies from 50 to 58 credits, depending on the student's experience, training, and interests. The core program consists of 50 credits, which must be completed by all degree candidates. In addition, students may be required to take up to 8 additional credits depending on their backgrounds:

|          |                                      |     |
|----------|--------------------------------------|-----|
| MGT 500a | Conceptual Foundations of Management | (3) |
| MGT 500b | Computer Techniques                  | (1) |
| MGT 501  | Quantitative Methods for Management  | (4) |

These background courses may be recommended or required. Any M.B.A. student may choose to take any of these courses at the beginning of his/her program of study. These courses provide useful orientation for the program.



## TIME OF ADMISSION

The core program begins in both fall and winter semesters, but only students with appropriate background and skills may expect to start the core program immediately. Additional credits (MGT 500a, 500b, or 501) may be required of applicants who are otherwise qualified but have little experience in mathematics (through calculus), computers, or management. These preparatory courses are offered both in spring/summer session and in fall semester.

Applicants who wish to enter the core program in fall are advised to complete their applications before March 31. To start the core program in winter, applications should be submitted by July 31. However, qualified students may be admitted through the week before classes start if space is available.

Candidates should take the GMAT at least one month before submitting their applications for admission to allow time for the scores to be sent to Oakland University. However, applications without GMAT scores are not rejected. If an admission decision can be made without the GMAT score, the Admissions Committee will inform the applicant of the decision. All students must take the exam before completing 8 credits in the M.B.A. program.

## FINANCIAL AID AND ASSISTANTSHIPS

All students admitted to the M.B.A. program are eligible to apply for loans and grants through the Financial Aid Office. In addition, a limited number of assistantships are available each year for full-time students. These assistantships are based on academic excellence and provide for a minimum compensation of \$3,200 per academic year, as well as partial or full tuition remission in most cases.

Graduate assistants are employed 20 hours per week to assist one or more faculty members in the School of Economics and Management with research and/or teaching.

Assistantship applications can be obtained from the Office of the Dean of Economics and Management.

## PROGRAM OF STUDY

A visual description of the program of study is contained in the following program structure block diagram.

Because the core requirements are substantial and demanding, the School of Economics and Management does not offer formal majors within the program. However, through selection of electives or work on the optional second-year project, a student may complete the equivalent of a concentration in one of several areas. The list of elective courses (see page 86) should give some ideas of the choice set. Resource availability determines which electives can be offered in any given semester. Resources permitting, a student may pursue advanced work in accounting, economics, finance, health care management, human resource management, marketing, quantitative analysis, public management, or international management.



**PROGRAM STRUCTURE**

(for part-time students)

**SEMESTER 0**

|                                                               |                                           |
|---------------------------------------------------------------|-------------------------------------------|
| <b>500a (3)</b><br>Conceptual<br>Foundations of<br>Management | <b>500b (1)</b><br>Computer<br>Techniques |
| <b>501 (4)</b><br>Quantitative Methods<br>for Management      |                                           |

**SEMESTER 1**

|                                            |                                              |
|--------------------------------------------|----------------------------------------------|
| <b>511a (2)</b><br>Financial<br>Accounting | <b>511b (2)</b><br>Managerial<br>Accounting  |
| <b>520a (2)</b><br>Statistical<br>Analysis | <b>520b (2)</b><br>Microeconomic<br>Analysis |

**SEMESTER 2**

|                                                 |                                                  |
|-------------------------------------------------|--------------------------------------------------|
| <b>530a (2)</b><br>Organizational<br>Behavior I | <b>530b (2)</b><br>Organizational<br>Behavior II |
| <b>521a (2)</b><br>Optimal<br>Decisions         | <b>521b (2)</b><br>Operations<br>Management      |

**SEMESTER 3**

|                                                                  |                                               |
|------------------------------------------------------------------|-----------------------------------------------|
| <b>532a (2)</b><br>Problem Perception<br>and<br>Systems Modeling | <b>532b (2)</b><br>Integrative<br>Miniproject |
| <b>533a (2)</b><br>Finance I                                     | <b>533b (2)</b><br>Finance II                 |

**SEMESTER 4**

|                                                     |                                                         |
|-----------------------------------------------------|---------------------------------------------------------|
| <b>612a (2)</b><br>Human<br>Resources<br>Management | <b>612b (2)</b><br>Management<br>Information<br>Systems |
| <b>614a (2)</b><br>Macroeconomic<br>Analysis        | <b>614b (2)</b><br>Marketing                            |

**SEMESTER 5**

|                                               |                       |          |
|-----------------------------------------------|-----------------------|----------|
| <b>621 (4)</b><br>Policy, Strategy, and Goals |                       |          |
| <b>611 (6)</b><br>Master's Project            |                       |          |
| -----Or-----                                  |                       |          |
| 2-credit                                      | 2-credit<br>ELECTIVES | 2-credit |

**SEMESTER 6**

|                      |                      |
|----------------------|----------------------|
| 2-credit<br>elective | 2-credit<br>elective |
| 2-credit<br>elective | 2-credit<br>elective |

**PROGRAM STRUCTURE**

(for full-time students)

**SEMESTER 0**

|                                                               |                                           |
|---------------------------------------------------------------|-------------------------------------------|
| <b>500a (3)</b><br>Conceptual<br>Foundations of<br>Management | <b>500b (1)</b><br>Computer<br>Techniques |
| <b>501 (4)</b><br>Quantitative Methods<br>for Management      |                                           |

**SEMESTER 1**

|                                                 |                                                  |
|-------------------------------------------------|--------------------------------------------------|
| <b>511a (2)</b><br>Financial<br>Accounting      | <b>511b (2)</b><br>Managerial<br>Accounting      |
| <b>520a (2)</b><br>Statistical<br>Analysis      | <b>520b (2)</b><br>Microeconomic<br>Analysis     |
| <b>530a (2)</b><br>Organizational<br>Behavior I | <b>530b (2)</b><br>Organizational<br>Behavior II |

**SEMESTER 2**

|                                                                  |                                               |
|------------------------------------------------------------------|-----------------------------------------------|
| <b>532a (2)</b><br>Problem Perception<br>and<br>Systems Modeling | <b>532b (2)</b><br>Integrative<br>Miniproject |
| <b>521a (2)</b><br>Optimal<br>Decisions                          | <b>521b (2)</b><br>Operations<br>Management   |
| <b>533a (2)</b><br>Finance I                                     | <b>533b (2)</b><br>Finance II                 |

**SEMESTER 3**

|                                                     |                                                         |
|-----------------------------------------------------|---------------------------------------------------------|
| <b>612a (2)</b><br>Human<br>Resources<br>Management | <b>612b (2)</b><br>Management<br>Information<br>Systems |
| <b>614a (2)</b><br>Macroeconomic<br>Analysis        | <b>614b (2)</b><br>Marketing                            |
| 2-credit<br>elective                                | 2-credit<br>elective                                    |

**SEMESTER 4**

|                                               |                       |          |
|-----------------------------------------------|-----------------------|----------|
| <b>621 (4)</b><br>Policy, Strategy, and Goals |                       |          |
| 2-credit<br>elective                          | 2-credit<br>elective  |          |
| <b>611 (6)</b><br>Master's Project            |                       |          |
| -----Or-----                                  |                       |          |
| 2-credit                                      | 2-credit<br>ELECTIVES | 2-credit |



## MASTER'S PROJECT (Optional)

The guiding principle behind the optional master's project is that it is to be a meaningful experience within the professional and educational goals of the M.B.A. program. The project requires application of classroom training and extra classroom study to a practical management problem. It must involve collection and analysis of data in an actual organizational setting as well as cogent recommendations to management for resolving the problem. It is not conceived as a theoretical master's "thesis." It should not be directed at a specific academic discipline, but rather should be organized around a management problem which probably has inputs from more than one academic source, although one discipline may still be dominant.

### Specific Procedures

1. Each student designates a faculty project adviser, with the adviser's approval, as well as a second faculty person to act as the reader. The reader may be from another discipline. A copy of a project proposal with their signatures should be delivered to the project course coordinator during the first week of the semester in which the project course is taken. The course coordinator, acting in consultation with the dean, reserves the right to alter adviser assignments after discussion with the parties involved. Faculty or students may refuse a project assignment upon consultation with the project course coordinator. The proposal should contain a brief description of the problem, the host organization and the name and telephone number of the contact person, expected analytical techniques, anticipated difficulties, if any, and strategies for overcoming them, a preliminary outline, and required method of data collection.

Student joint projects are acceptable if each team member identifies a specific aspect of the problem for which he/she will be responsible and writes an individual report. Such allocations of problem areas should be identified in proposals of joint projects. Proposals involving teams of more than two members will be accepted only after careful scrutiny.

2. An interim progress report signed by the student's advisers will be submitted to the project coordinator by the end of the seventh week of the semester in which the student has enrolled for the project.
3. No projects will be accepted to satisfy graduation requirements for a particular semester after the Friday two weeks before the last day of classes. A project is deemed acceptable and complete when the adviser and reader have signed the title page. Three final copies of the project report containing these signatures are submitted to the graduate program coordinator. One is kept on file in the School of Economics and Management, one is sent to the Office of Graduate Study, and one is returned to the project adviser.
4. The project is graded S (Satisfactory) or N (Unsatisfactory). A grade of P (Progress) may be assigned if the project is not completed at the semester's end, and if sufficient progress has been made to warrant the P grade.

## STUDENT EVALUATION AND GRADING

M.B.A. students must maintain at least a 3.00 grade point average, in accordance with the university requirements for graduate students. An M.B.A. student will be warned or placed on probation if two or more course grades are below 3.0. Probationary students are subject to dismissal if they do not improve. Immediate dismissal may result from severe deficiencies, such as failure (less than 2.0) in any course, numerous course grades below 3.0, or insufficient progress toward a degree.

In making dismissal decisions, three criteria are considered: the student's overall grade point average, the number of course grades below 3.0, and faculty assessment of the student's academic potential and ability to master the skills emphasized in the program. Hence, a 3.0 grade point average does not necessarily guarantee continua-

tion in the program. Generally, three course grades below 3.0 within the first 24 credits of graduate work are viewed as excessive, especially when accompanied by a marginal GPA. Similarly, failure to complete individual courses on schedule jeopardizes progress toward the degree, regardless of GPA, making the student liable for probation or dismissal. The student may wish to present additional information in the event of an appeal. Even if students leave the program voluntarily and in good standing, readmission is not automatic. The student must reapply for admission.

## COURSE EXEMPTIONS

The M.B.A. program permits exemption of specific courses for qualified students. Generally, the minimum requirement for exemption is a grade of 3.0 or better earned recently in an equivalent course. This is not automatic, however. Interested students should discuss their situation with a faculty or administrative adviser. Course exemption forms are available in the School of Economics and Management office and may be referred for approval or disapproval to the faculty member teaching the course from which the student wishes to be exempted. The method of evaluation is up to the individual faculty member and may include an examination. If a student is exempted from a course, the student must replace this course with electives to meet the credit requirement for the degree.

## Course Offerings

### BACKGROUND COURSES

#### MGT 500a Conceptual Foundations of Management (3)

Lectures and essays designed to provide an overview of the economic, legal, and financial management decision-making environments. Includes discussion of the role of theory in approaching unstructured problems.

#### MGT 500b Computer Techniques (1)

Introduction to the interactive timesharing computer environment, including instruction in BASIC. Skills initiated in this short orientation course will be extended in subsequent core courses.

#### MGT 501 Quantitative Methods for Management (4)

Theory and application of mathematical skills required for core courses in the graduate program. Includes general review of linear models, calculus, probability, and their applications in management.

### CORE COURSES

#### MGT 511a Financial Accounting (2)

Focus is on financial accounting for external reporting; communications addressed to shareholders, government agencies, potential investors, and the public.

#### MGT 511b Managerial Accounting (2)

Emphasizes recording, reporting, and use of data within the enterprise. Cost accounting, budgeting, and internal control systems are stressed. The approach is strongly influenced by current research on the behavioral impact of accounting instruments, rather than solely on their mechanics.

#### MGT 520a Statistical Analysis (2)

Statistical methods useful in management. Includes statistical description, discrete and continuous probability models, estimation, hypothesis testing, and regression. Real-world applications are stressed, including use of "canned" computer programs.

#### MGT 520b Microeconomic Analysis (2)

Analysis of microeconomic decision makers in a market environment. Includes consumer theory, models of the firm, production processes, costs, pricing, resource allocation, markets, and industry structure.

#### MGT 521a Optimal Decisions (2)

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 521b Operations Management (2)**

Economic problems of production management in manufacturing and service industries, 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 530a Organizational Behavior I (2)**

Organizational behavior is analyzed at individual, group, and organizational levels. Individual and group processes such as perception, learning, motivation, communication, and conflict are studied in depth. Organizational-level topics include size, structure, complexity and effectiveness.

**MGT 530b Organizational Behavior II (2)**

Continuation of MGT 530a.

**MGT 532a Problem Perception and Systems Modeling (2)**

Identification of goals and use of resources for achieving them. Includes modeling of complex systems. This module is designed to develop skills in using tools, to make these skills transferable, and to enhance students' abilities to develop new skills as required by a given situation.

**MGT 532b Integrative Mini-Project (2)**

Students analyze unstructured, realistic problems, resulting in written analysis which illustrates the ability to perceive problems and suggest feasible analytical approaches.

**MGT 533a Managerial Finance I (2)**

Introduction to and survey of finance. Development of the tools of financial analysis and forecasting, the basics of investment decision making, the fundamentals of valuation theory, and the types and courses of long-term financing.

**MGT 533b Managerial Finance II (2)**

Continuation of MGT 533a. The fundamentals of working capital management and intermediate-term financing, the effects of risk on investment decisions, and the relevance of capital structure. Development of special topics such as portfolio effects, leasing, mergers, and bankruptcy.

**MGT 611 Master's Project (6)**

Independent project undertaken to fulfill degree requirements. See page 84 for details.

**MGT 612a Human Resources Management (2)**

Theoretical and empirical issues of 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.

**MGT 612b Management Information Systems (2)**

Evolution of an information system; elements and operation of the management information system; what the manager should know about the computer; computer-based information systems for decision making; planning management information systems; management information system selection; the future of management information systems.

**MGT 614a Macroeconomic Analysis (2)**

Construction, analysis, and interpretation of models of national and international aggregate economic behavior, including policy implications of alternative models, with emphasis on current economic events. Time permitting, computer games will be used to simulate real-world policy problems.

**MGT 614b Marketing (2)**

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 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.

**ELECTIVE COURSES**

Depending on student interests and availability of resources, electives may be

offered from the following list. Students are advised to consult the schedule of classes for a sampling of recent elective offerings.

**MGT 605 Advanced Systems Analysis (2-4)**

Topics in the modeling, instrumentation, and control of complex systems. Emphasis is on specification, testing, and implementation of policies in environments in which direct controls must be foregone in favor of educational control policies. Application areas include marketing, education, weather modification, living resource management, and energy-nutrient use management.

**MGT 608 Marketing Management (2-4)**

In-depth study of a selected topic relevant to management of the marketing function. Possible topics include 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)**

This course does not deal with theory in the scientifically precise sense, but rather with theory as the accountant defines it: the evolution of accounting practice by theoretical developments and opinions by the Accounting Principles Board of the American Institute of Certified Public Accountants, the American Accounting Association, and other professional committees.

**MGT 616 Contemporary Accounting Issues (2-4)**

Although its traditions are conservative, accounting is not static. This course considers implications of recent scholarly infusions from disciplines such as organizational behavior, economics, sociology, and anthropology. Topics include the changing role of the accountant in response to current social and legal demands for non-financial reporting.

**MGT 617 Financial Theory (2-4)**

Examines in detail securities market operations, including yields and returns expected by investors in various segments of the capital market. There follows a discussion of the relative merits of obtaining funds for company growth through stocks, bonds, and retained earnings. Finally, problems of marketing new issues of stocks and bonds are examined, including the theoretical basis for decision making and case studies.

**MGT 618 Portfolio Analysis (2-4)**

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 624 International Management Environment (2-4)**

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 626 Managing the Multinational Enterprise (2-4)**

Analysis of the scope, structure, and strategies of the multinational enterprise. 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)**

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 and morale surveys. Includes practice in collecting and evaluating data.

**MGT 636 Leadership and Group Performance (2-4)**

Comprehensive examination of different leadership theories, with 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. Includes the role of leadership, job design, environmental variation,



compensation policies, goal-setting techniques, and group influences. Aims at a viable synthesis between the various 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 640 Visiting Managers Forum (2-4)**

Informal discussions with leaders of industry, labor, government, and not-for-profit organizations. With faculty consultation, students will organize and carry out the forum. Includes class time for planning the forum and making reports and analyses.

**MGT 642 Managerial Finance III (2-4)**

Cases in financial management applying and expanding the principles taught in MGT 533a and 533b.

**MGT 650 Operations Research I (2-4)**

Topics in deterministic modeling of managerial decision problems from advanced linear programming, networks, dynamic programming, game theory, integer programming, and non-linear programming. Designed to refine the student's scientific problem-solving skills with emphasis on applications of these techniques.

**MGT 651 Operations Research II (2-4)**

Topics in modeling of decisions under uncertainty from Bayesian analysis, simulation, chance-constrained programming, queueing theory, and Markovian analysis. Designed to refine the student's scientific problem-solving skills with emphasis on applying these 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 methods. Attention is also given to 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 654 Research Methods (2-4)**

Topics in methods of organizational research. Representative subjects include development of hypotheses, sampling, research design, research types, measurement, methods of data collection, and analysis and interpretation of data. These are applied specifically to such areas as organizational structure, attitudes, group structure, and leadership style.

**MGT 655 Econometric Data Analysis (2-4)**

Formulation, estimation, and testing of statistical models with standard computer packages such as SPSS. Students undertake independent investigations with in-class discussion of findings. Topics include specification problems, analysis of residuals, recognition of common regression problems and their cures, dummy variable techniques, simultaneous equations models, and advanced multivariate methods.

**MGT 660 Launching and Managing Small Businesses (2-4)**

The role of small businesses in the U.S. economy, and the role and functions of the Small Business Administration. Evaluating franchise opportunities, consulting as a business, and launching, financing, and managing a small enterprise. A significant term project is required.

**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 created this framework. Topics include contracts, antitrust 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, are examined and benefit/cost analysis applied to public policy problems such as the public funding of medical research.

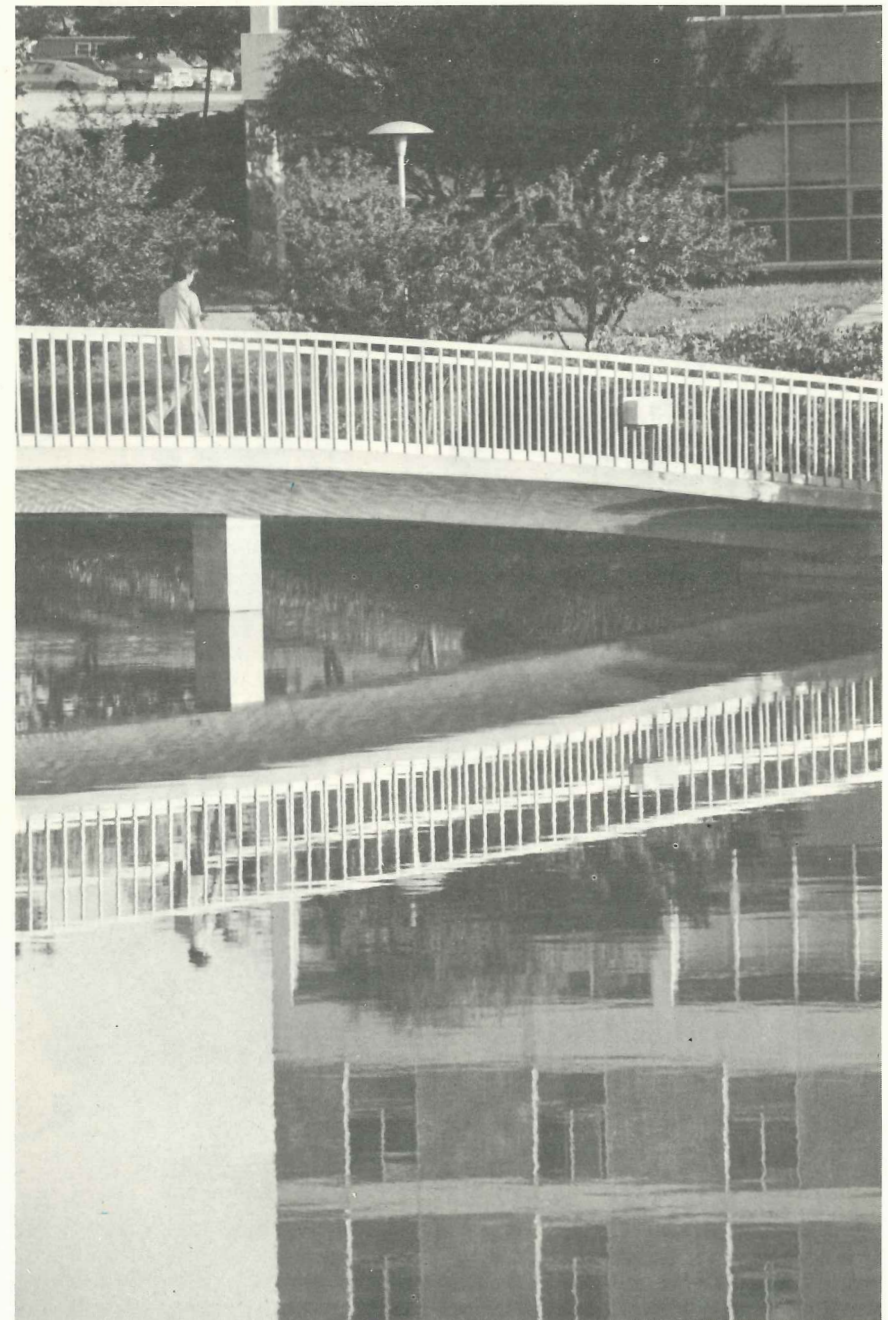
**MGT 670 Nonprofit Sector Management (2-4)**

Managerial principles for and cases on the management of nonprofit institutions. Goal setting, progress evaluation, cost-benefit analysis, program design, and financing.

**MGT 690 Independent Study (2-4)**

Independent research sponsored by a faculty member.

Prerequisite: Permission of instructor.







# SCHOOL OF HUMAN AND EDUCATIONAL SERVICES

## Dean:

George E. Coon, Acting Dean  
Robert G. Payne, Associate Dean  
Doris M. Sponseller, Associate Dean

## Department of Teacher Education:

Patrick J. Johnson, Chairperson

## 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 Chernow, Ph.D., Stanford University  
George E. Coon, Ed.D., Wayne State University  
Ronald L. Cramer, Ph.D., University of Delaware  
Peter Evarts, Ph.D., Wayne State University  
George F. Feeman, Ph.D., Lehigh University  
Geraldene Felton, Ed.D., New York University  
William Forbes, Ph.D., University of Connecticut  
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  
Donald G. Malm, Ph.D., Brown University  
Jack R. Moeller, Ph.D., Princeton University  
William F. Moorhouse, Ed.D., University of Wyoming  
Donald D. O'Dowd, Ph.D., Harvard University  
Lewis N. Pino, Ph.D., University of Buffalo  
Roderic E. Righter, Ed.D., Wayne State University  
Howard Splete, Ph.D., Michigan State University

## Associate Professors:

Richard F. Barron, Ph.D., Syracuse University  
Jane M. Bingham, Ph.D., Michigan State University  
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  
Robert L. Donald, M.A., University of Detroit  
Joel S. Fink, Ph.D., Boston University  
William C. Fish, Ed.D., Columbia University  
W. Dorsey Hammond, Ph.D., University of Delaware  
Patrick J. Johnson, Ed.D., Wayne State University  
Jacqueline I. Loughheed, Ed.D., Wayne State University  
David G. Lowy, Ph.D., University of Tennessee  
Kathryn M. McArdle-Piggott, Ph.D., Universidad Central de Madrid  
James McCormick, Ph.D., Indiana University



Frederick W. Obear, Ph.D., University of New Hampshire  
 Robert G. Payne, Ph.D., University of Michigan  
 Jacqueline R. Scherer, Ph.D., Syracuse University  
 James C. Schmidt, Ph.D., Wayne State University  
 Doris M. Sponseller, Ph.D., Michigan State University  
 Ronald M. Swartz, Ph.D., New York University  
 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  
 Gloria T. Blatt, Ph.D., Michigan State University  
 Robert Brown, Ph.D., Wayne State University  
 Gena Jos. D'Alessandro, Ph.D., Wayne State University  
 Jean L. Easterly, Ed.D., University of Arizona  
 Carolyn Epperly, Ed.D., Indiana University  
 Janice M. Guerriero, Ph.D., Wayne State University  
 Carol E. Halsted, M.A., Wayne State University  
 Bruce R. Harker, Ph.D., University of Chicago  
 William H. Jones, Ph.D., University of Michigan  
 Thomas Lambric, Ph.D., University of Northern Colorado  
 Linda Lentz, Ed.D., Temple University  
 James W. McGinnis, Ph.D., Yeshiva University  
 David P. Meyer, Ph.D., Arizona State University  
 Billy Joe Minor, Ph.D., Indiana University  
 Diane E. Norman, Ed.D., Western Michigan University  
 Mary L. Otto, Ed.D., Indiana University  
 Mary E. Sapp, Ph.D., Ohio State University  
 Robert M. Schwartz, Ph.D., University of Illinois  
 Kenneth E. Smith, Ph.D., Loyola University  
 Alfred W. Stransky, Ph.D., Florida State University  
 Harold E. Weiner, Ph.D., Michigan State University

**Instructors:**

Anne Cairns-Federlein, M.A.T., Oakland University  
 Carol A. Swift, M.A., Southern Methodist University

**Adjunct Professor:**

William I. Martin, Jr., Ph.D., Northwestern University

**Adjunct Associate Professor:**

Donald Trumpour, M.D., Wayne State University (College of Medicine)

**Visiting Assistant Professors:**

David Housel, M.A., Arizona State University  
 William Moskal, Ed.D., Wayne State University  
 Carlos Olivarez, Ph.D., Michigan State University

**Visiting Instructor:**

Mary Welch, M.A., Oakland University

*Editor's Note: The School of Education was changed to the School of Human and Educational Services in January 1979 as the catalog was going to print. All references to the School of Education refer to the new name as well.*

The School of Education offers programs leading to the Doctor of Philosophy degree in reading and 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 counsel-

ing. 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 38 and 53.

Applications are reviewed once each semester for admission the following semester. Students whose applications are incomplete on the review date may take classes as special graduates. They should be careful about the number of courses taken, because several programs restrict the credits in this status which can be applied toward the graduate degree.

In order to remain in good standing, students must earn a grade point average of 3.00. No grade below 2.0 can be applied toward a graduate degree, and two course grades below 3.0 or one below 2.0 automatically lead to an evaluation of progress and possible dismissal.

**THE DOCTOR OF PHILOSOPHY IN READING**

Reading education is concerned with a variety of areas including linguistics, psychology, literature, composition, and statistics. Training is also required in diagnosis, correction, language learning, and clinical and classroom instructional procedures for both children and adults. Reading is a specialized field, but its successful application in schools, universities, and research laboratories requires knowledge of related disciplines, the ability to conduct basic research, and an understanding of practical and theoretical applications to reading instruction.

The Ph.D. degree is intended for students who plan careers in public or private schools, universities, and in government research and development agencies.

**Admission to Course**

Admission to the Ph.D. program will be considered when the following have been submitted: application for graduate study, transcripts of all graduate and undergraduate work, three letters of recommendation, and scores on the aptitude test and advanced education test of the Graduate Record Examination or the Miller Analogies test. An interview with the reading area faculty may be required.

**Residence**

It is believed that students benefit from the concentrated effort that full-time status permits. Although students can begin doctoral study on a part-time basis, all students must complete two full-time semesters in residence, earning 12 credits each of the two semesters.

**Course Credits**

At least 90 credits must be earned beyond the bachelor's degree, including the thesis. Credits earned in a master's degree program at Oakland University or another accredited university may be applied toward the Ph.D. degree upon recommendation of the advisory committee.

**Course of Study**

The Ph.D. program has three components. The reading component provides a background of educational experiences and course work for clinical and classroom reading instruction, language learning, diagnosis and correction of reading disabilities, and theoretical models of reading acquisition. The minor specialization component provides depth in a cognate area related to reading such as linguistics, psychology, English, learning disabilities, early childhood, and other areas. The investigative processes component trains students in research and provides a background in statistics, research design, and applied research culminating in a thesis. Emphasis is placed on investigation of theoretical and practical problems in reading acquisition.

**Advisory Committee**

Upon acceptance into the program, a student is assigned an interim academic adviser to assist in the selection of initial courses and to provide academic guidance

and counseling. This arrangement allows the student to become acquainted with the faculty and the various program options before forming the doctoral advisory committee.

After completing 12 credits toward the Ph.D. at Oakland, the student must form an advisory committee to direct the thesis, determine transfer credit, and guide the student in preparing a Plan of Study. The Plan of Study is an agreement between the faculty and the student which spells out the transfer credit accepted and the course work the student must complete for the Ph.D. degree.

The doctoral advisory committee consists of five Oakland University faculty members, including three members from the reading area, one member from the student's area of minor concentration, and one member from the faculty at large.

The student may nominate his/her own thesis adviser, who serves as advisory committee chairperson, as well as the other advisory committee members. The student's nominees are always considered subject to availability, number of doctoral advisees a faculty member may be directing, and other constraints. The reading area chairperson, the dean of the School of Education, and the dean of graduate study must approve the selection of an advisory committee.

### **Admission to Candidacy**

The student may apply for admission to candidacy when 60 credits have been completed and approved toward the Ph.D. Acceptance into degree candidacy is contingent upon passing the oral and written qualifying examination and achieving a cumulative grade point average of 3.00 or above.

### **Qualifying Examination**

Before admission to candidacy, each student must pass a written and oral qualifying examination to certify the student's ability to apply theoretical and practical information obtained in areas of study.

The advisory committee, in concurrence with the student, decides when the student should take the qualifying examination. However, it may not be taken later than one semester before graduation or before completion of 60 credits applicable to the Ph.D. degree.

The written examination covers the major and minor components of the course of study. The chairperson and the advisory committee assemble the examination questions and evaluate the candidate's work. The oral examination, administered by the advisory committee, is only administered to candidates who pass the written examination.

The advisory committee may permit a student to repeat the qualifying examination no more than twice if the performance is deemed inadequate.

### **Thesis**

Each candidate must complete a thesis which makes a worthwhile contribution to the major field of study. The advisory committee chairperson will direct the candidate through the stages of thesis preparation.

When the advisory committee chairperson and the candidate have agreed on a thesis topic, the candidate must submit a written thesis proposal containing a description of the topic problem, justification for selection of the problem, and a description of the procedures to be used in the investigation. The candidate must orally defend the proposal before the advisory committee and any other interested faculty, insuring that all questions relevant to the selected topic, justification, and procedures are considered ahead of time. Once the advisory committee approves the proposal, the candidate may register for thesis credit.

A draft of the thesis must be submitted to the advisory committee for modification and approval before the final copy is prepared and approved by the advisory committee.

### **Thesis Research Credits**

Students with approved thesis proposals who are conducting thesis research should register for ED 706. At least 24 credits in ED 706 are required of all doctoral candidates. However, merely amassing credits does not indicate satisfactory progress toward or completion of the thesis. The thesis is deemed completed only after successful oral defense and after final approval of the document by the advisory committee and the dean of graduate study.

### **Oral Examination**

Each candidate must orally defend the thesis before his/her advisory committee. The examination is scheduled after the advisory committee has approved the thesis. While interested faculty and outside observers may be involved in the thesis defense, only the advisory committee votes on passing or failing the oral defense. The advisory committee may permit re-examination if the initial thesis defense is deemed inadequate.

### **Time Limits**

All requirements, including the thesis, must be completed within five years after admission to candidacy or within eight years after admission to the program.

### **Graduation**

Students expecting to graduate in a given semester must file an application for degree card at the Office of the Registrar and pay the graduation service fee. Failure to do so on time may preclude graduation in that semester.

## **MASTER OF ARTS IN TEACHING: EARLY CHILDHOOD EDUCATION**

The graduate program in early childhood education leads to the Master of Arts in Teaching (M.A.T.). The program trains persons to work with children through age nine in school, home, and agency settings. It also provides training for leadership 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. The program combines theory with observation and participation in clinical, community, and school practicum settings.

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.

To balance the academic program, practicums are available in a variety of predominantly urban settings including hospitals, nursery schools, day care centers, infant and toddler programs, kindergartens, and primary grade classrooms.

### **Special Options**

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 program option with special education is also available in which the student receives the M.A.T. in early childhood degree with the early childhood endorsement and with either the emotionally impaired endorsements or the learning disabilities endorsements. Persons who hold no elementary certificate may work toward certification during their pursuit of the M.A.T.; however, credits are required for this option in addition to those needed for the M.A.T.

### **Admission**

Candidates for the degree program must provide a written statement describing their philosophy of early childhood education, reasons for wishing to pursue the



degree, and career goals, in addition to the academic and reference requirements of the Office of Graduate Study. No more than 12 credits of special graduate status study will be accepted toward the degree.

### Requirements for the M.A.T. in Early Childhood Education

Degree requirements are 36 credits, distributed as follows:

#### EARLY CHILDHOOD FOUNDATIONS (16 credits—all required):

- ED 540 Theories of Early Childhood Education (4)
- ED 542a Applied Development Principles—Early Childhood (4)
- ED 543 Teacher as Child Advocate and Adult Educator (4)
- ED 650 Practicum in Early Childhood Education (4)

#### EDUCATIONAL FOUNDATIONS (4 credits):

- ED 503 Major Theorists in Education (4)
- ED 504 Literary Portrayals of Education Encounters (4)
- ED 509 School and the Disadvantaged Child (4)
- ED 601 History in Education (4)
- ED 602 Philosophy in Education (4)
- ED 603 Cross-Cultural Studies in Education (4)
- ED 604 Sociology in Education (4)
- ED 605 Politics in Education (4)
- ED 606 Psychology in Education (4)

#### PSYCHOLOGICAL FOUNDATIONS (4 credits):

- \*PSY 510 Developmental Psychology (4)
- PSY 513 Psychopathology of Childhood (4)
- ED 542b Applied Development Principles—Early Childhood: Special Topics (4)
- ED 547 Infants: Normal and Exceptional Development and Programming (4)
- ED 548 Toddlers: Normal and Exceptional Development and Programming (4)
- ED 549 Development of the Young Exceptional Child (4)

\*Required if student has not had an equivalent course

#### SPECIALIZATION SEQUENCES (12 credits):

Specializations are currently offered in administration/consultation, early childhood programming, reading/language arts, infancy, pediatric play, and special education. For those who do not choose to specialize, the 12 credits required to complete the program may be selected from a broad range of courses, with adviser approval. Required courses for the specializations follow:

**Early Childhood Programming:** ED 544 and 546, and one additional course from special options.

**Infancy:** ED 544, 547, and 548.

**Pediatric Play:** ED 544, 550, and 644.

**Administration/Consultation:** ED 544, ED 545 or 546, and one additional course from specific options.

**Reading/Language Arts:** ED 532 or 574, ED 544 or 546, and one additional course from specific options.

**Special Education (nonendorsement option):** ED 501, 544, and one additional special education course.

### MASTER OF ARTS IN TEACHING: ELEMENTARY EDUCATION

The master's program in elementary education is designed to enrich a classroom teacher's basic competencies as well as to provide expertise in related professional fields.

After completing an introductory education seminar (ED 510), participants elect one of the following five focus areas: educational leadership/supervision, curriculum and instruction, youth advocacy, social studies education, or science/mathematics education. Program focus area choices require faculty approval (see adviser for details).

All students take ED 512 and 554, which assist teachers in dealing more effectively with the curriculum and professional personnel. After completing at least 20 credits, students also take ED 611, which examines major problems in elementary education and helps students select one of two exit plan options: ED 699 (project/thesis) or ED 555 (practicum).

#### Exit Plan Options

Students choosing the ED 699 option complete either a terminal project or a thesis (4 credits) directed by their academic advisers. Under this plan, students complete the M.A.T. requirements in 36 credits. Those choosing the practicum option take ED 555 in an area related to their program focus and obtain 4 additional credits of prescribed electives. Under this plan, students complete the M.A.T. requirements in 40 credits.

#### Course Requirements

- ED 510 Introductory Seminar in Elementary Education (4)
  - ED 512 Curriculum Development in the Public School (4)
  - ED 554 Interaction Laboratory for Teacher Development (4)
  - or { ED 555 Practicum (4) and a 4-credit elective
  - ED 699 Terminal Project (4)
  - ED 611 Problems in Elementary Education (4 or 8)
- 16 credits from one focus area (see below)

#### Focus Areas

##### Focus A: Curriculum and Instruction (16 credits)

This area concentrates on principles, patterns, and procedures of curriculum development and factors affecting the organization and improvement of elementary school instruction. Requirements are:

1. ED 612.
2. One course from: SCS 505, ED 587, ED 589.
3. Choice of ED 580 or 509.
4. One course from ED 553, 583, 585.

##### Focus B: Youth Advocacy (16 credits)

This area concentrates on legal, diagnostic, labeling, legislative, and other critical issues in providing less restricted environments and programs of prevention, educational intervention, and reintegration of troubled youth. Requirements are:

1. ED 509, 585, and 590.
2. Choice of ED 593 or 580.

##### Focus C: Educational Leadership and Supervision (16 credits)

This area concentrates on curriculum improvement, inservice education, personnel supervision, and teaching competence improvement. Requirements are:

1. ED 580, 585, and 588.
2. One course from ED 553, 583, or 590.

**Focus D: Social Studies (16 credits)**

This area develops competence in problems and trends of current programs as well as skill in developing a balanced and articulated program of social studies. Requirements are:

1. ED 587 and 597.
2. Choice of ED 581 or 590.

**Focus E: Science-Mathematics (16 credits)**

This area concentrates on current trends in science and mathematics curricula as well as unified approaches to elementary curriculum. Methods of teaching in the outdoors, environmental education, and materials management are included. Requirements are ED 589, ED 590, SCS 505, and SCS 506.

**Focus F: Individually developed (16 credits)**

This area concentrates on special courses with adviser's consent and faculty approval.

**MASTER OF ARTS: GUIDANCE AND COUNSELING**

The guidance and counseling program is dedicated to educating and training persons to work in helping roles with children, youth, parents, and other adults in school and community settings.

**Admission Requirements**

All applicants must submit a written statement which explains reasons for wanting to enter the guidance and counseling program (including tentative program emphasis and setting). The statement should include employment goals and describe experiences and accomplishment in helping relationships with children, youth, and adults.

Candidates for the M.A. in guidance and counseling must have at least 24 undergraduate or graduate credits in behavioral disciplines such as psychology, sociology, economics, ethics, or anthropology before completing the degree work. Persons will not be admitted until they have at least 16 credits toward this requirement. This requirement is evaluated by the admissions committee. The student's adviser may recommend courses to remove any deficiency.

Recommendations are important to the application procedure, and the two references required for application to the guidance and counseling program must be from professionals who can attest to the applicant's academic ability and effective interaction with youth and adults. Therefore, the applicant should carefully choose persons to write recommendations.

**Graduation Requirements**

At least 36 graduate-level credits are required for the degree. A maximum of 12 credits earned in special graduate status at Oakland University may be accepted toward the degree.

A valid teaching certificate is required of applicants who seek recommendation for a school counselor endorsement on graduation. Students who complete the degree and who have followed the counseling emphasis in the school setting may be recommended for counselor endorsement at the K-9, 7-12, or K-12 level depending on completion of the specific course requirements for each endorsement level. Students must consult their advisers regarding endorsement.

Satisfactory full-time teaching or counseling experience equivalent to one school year or more is required before 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 internship in counseling or guidance or related course work beyond the 36-credit minimum as specified by the adviser and approved by the program chairperson.

**Required Core Courses**

All candidates for the M.A. in guidance and counseling must take three core courses as follows:

- |        |                                              |
|--------|----------------------------------------------|
| ED 562 | Measurement and Evaluation in Counseling (4) |
| ED 563 | Group Procedures in Guidance (4)             |
| ED 565 | Counseling Theory and Practice (4)           |

Upon completion of the core courses, each student must select an emphasis either in counseling or in guidance and career development and must select either the school or the community as the setting for their course work and internship or research. The courses required for each emphasis and setting are listed below.

**Counseling Emphasis in School Settings**

The following courses are for persons preparing for a position as a school counselor and seeking school counseling endorsement. In addition to the three core courses, students must take ED 561 or 566, ED 576, 661, 664, 665, and 666.

**Counseling Emphasis in Community Settings**

The following courses are designed for persons preparing for counseling positions in community, industry, and agency settings. In addition to the three core courses, students must take ED 576, 661, 664, 665, 666, and an elective (4 credits as approved by the adviser).

**Guidance and Career Development Emphasis in School Settings**

The following courses focus on the guidance and career education needs of educators who assist in areas such as self-analysis, development of interpersonal skills, and social-emotional growth for eventual application. This emphasis does not lead to endorsement as a school counselor. In addition to the three core courses, students must take ED 561 or 566, ED 667, 668, 675, 699, and an elective (4 credits as approved by the adviser).

**Guidance and Career Development Emphasis in Community Settings**

The following courses focus on the needs of community agency and personnel workers engaged in the delivery of guidance and related human services for youth and adults in areas such as: job development and placement, occupational, educational, and community information for career planning, advising, vocational rehabilitation, and organization, coordination, supervision, and evaluation of guidance programs. In addition to the three core courses, students must take ED 564, 665, 671, 678, 676 or 699, and an elective (4 credits as approved by the adviser).

**MASTER OF ARTS IN TEACHING: SPECIAL EDUCATION**

The master's program in special education allows 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.

**Admission**

Initial application for admission to the M.A.T. 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 M.A.T. degree 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 in a regular general education or special education classroom before admission to the program. Candi-



dates for admission to the M.A.T. program in special education and post-master's candidates for endorsement in special education must be interviewed by a special education admission adviser, and must submit three copies of a valid teaching certificate and a written statement describing personal and professional goals in special education. The interview, goal statement, and subsequent program authorization are part of the admission procedures, and must be fulfilled before a candidate's application can be acted upon. All courses taken before formal admission to special education programs are accepted for credit at the discretion of the special education admission adviser. Applicants should seek admission to the program as early as possible. Under no circumstances should an applicant take more than 12 credits before seeking admission.

Upon completion of the degree program, students will be recommended by Oakland University for state endorsement either in teaching emotionally impaired children or in teaching learning disabled children.

### Degree Requirement

A total of 36 to 44 credits, depending on program option, are required for the M.A.T. in special education and endorsement in either emotional impairment or learning disabilities.

### Course Work

The following course sequences are possible options to fulfill master's degree requirements and endorsement in emotionally impaired or learning disabilities. These courses are listed for information purposes only and do not constitute program authorization. A final program is tailor-made for each applicant and may deviate from the course listings. A final program authorization can only be made during the admissions interview by the special education admissions adviser.

#### GENERAL SPECIAL EDUCATION CORE (24 credits—all required)

|        |                                                                  |
|--------|------------------------------------------------------------------|
| ED 500 | Foundations of Reading Instruction (4)                           |
| ED 501 | Introduction to the Education of Exceptional Children (4)        |
| ED 502 | Skills and Competencies for Teachers of Exceptional Children (4) |
| ED 522 | Behavior Modification Techniques for Classroom Management (4)    |
| ED 619 | Theoretical Foundations of Exceptionality (4)                    |
| ED 625 | Transactional Analysis in the Classroom (4)                      |

#### Emotionally Impaired Core (8 credits—all required)

|        |                                                                 |
|--------|-----------------------------------------------------------------|
| ED 620 | Social Deviancy in Regular and Special Education (4)            |
| ED 621 | Curriculum and Management for Emotionally Impaired Children (4) |

**Prekindergarten Option (16 credits):** ED 540, 542a, 544, and 655. One course in the general special education core will be eliminated during advising for students electing this option.

**Elementary Option (12 credits):** ED 622 and two courses from PSY 513, ED 528, 529, 561, and 612.

**Secondary Option (12 credits):** ED 622 and two courses from ED 525, 538, 553, 583, 675, and PSY 513.

#### Learning Disabilities Core (4 credits required)

|        |                                                              |
|--------|--------------------------------------------------------------|
| ED 523 | Education Procedures—Children with Learning Disabilities (4) |
|--------|--------------------------------------------------------------|

**Prekindergarten Option (16 credits):** ED 540, 542a, 544, and 655.

**Elementary Option (16 credits):** ED 524, 626, 632, and 633.

**Secondary Option (16 credits):** ED 626, 632, 633, and one course from ED 525, 526, 529, 538, 553, 583, or 675.

When 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 one of the following program options: post-master's endorsement in emotionally impaired or learning disabled, M.A.T. in special education with no endorsement, or M.A.T. in special education with early childhood endorsement and either emotionally impaired or learning disabled endorsement.

### MASTER OF ARTS IN TEACHING: READING/LANGUAGE ARTS EDUCATION

The M.A.T. program in reading/language arts education is one of the broadest 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 is that relatively few other fields of study relate so directly to daily teaching concerns.

Although the program is classroom-teacher centered, students may choose to prepare for other positions. A number of graduates are now reading specialists, consultants, college teachers of reading, special project directors, supervisors, and principals.

### Degree Requirements

The requirement for the M.A.T. is 36 credits, including a 24-credit base sequence with required blocks and a 12-credit specialization or elective sequence. The base sequence meets standards for reading specialists set by the International Reading Association and assists in attaining basic competencies in three areas.

#### Base Sequence for 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                                                                   |
|        | or                                                                                 |
|        | Two courses approved in advance by student's adviser and the reading area faculty. |

\*An additional 4 credits are required if the student elects the two-course option for the terminal project.

#### Required Blocks—Reading

The student must select 8 credits (two courses) from the following blocks, with no more than one course from any block.

**Block I (Educational Foundations):** ED 503, 504, 601, 602, 603, 604, 605, 606.

**Block II (Psychological Foundations):** ED 505, 523, 591, PSY 510, 512, ALS 534.

**Block III (Language Arts and Children's Literature Foundations):** ED 534, 571, 573, 574, 575, 670.

#### Specialization Sequence—Reading

The specialization sequence consists of 12 credits in an area of personal interest. Specializations are currently offered in elementary reading, secondary reading, literature for children, early childhood education, and language arts. If the student does not choose to specialize, he/she may select the 12 credits required to complete the program with adviser approval.



## M.A.T. Reading/Language Arts with Learning Disabled Endorsement

See section on combined programs below.

## COMBINED PROGRAMS

As additional options for students, a number of combined programs are offered. Students must be specifically accepted into these programs with adviser approval of both the master's area and the concentration or endorsement area. Intent to enter a combined program should be stated on initial application to a master's program.

## M.A.T. in Early Childhood or in Special Education with both Early Childhood and Special Education Endorsements

Two options are available in this program. The student selects either the M.A.T. in early childhood or the M.A.T. in special education. Within either M.A.T., students work toward endorsements in both early childhood and emotionally impaired or in both early childhood and learning disabled. Students take both core sequences and select either the emotionally impaired or learning disabled option.

### Special Education Core

With adviser's consent, choose four courses from the following:

|        |                                                              |
|--------|--------------------------------------------------------------|
| ED 500 | Foundations of Reading Instruction                           |
| ED 501 | Introduction to the Education of Exceptional Children        |
| ED 502 | Skills and Competencies for Teachers of Exceptional Children |
| ED 522 | Behavior Modification Techniques for Classroom Management    |
| ED 619 | Theoretical Foundations of Exceptionality                    |
| ED 625 | Transactional Analysis in the Classroom                      |

### Early Childhood Core

|         |                                                  |
|---------|--------------------------------------------------|
| ED 540  | Theories of Early Childhood Education            |
| ED 542a | Applied Developmental Principles—Early Childhood |
| ED 543  | Teacher as Child Advocate and Adult Educator     |
| ED 544  | Play as a Learning Medium                        |

**Emotionally Impaired Option:** ED 547 or 548, 549, 621, 645, and 655.

**Learning Disabled Option:** ED 523, 542b, 549, 645, and 655.

## M.A.T. in Reading/Language Arts and Certificate Endorsement in Learning Disabilities

The reading/language arts area and the special education area of the School of Education offer a combined program leading to the M.A.T. in reading/language arts and a Michigan teaching certificate endorsement in learning disabilities. The dual program consists of 48 credits.

Courses are selected from four blocks:

**Block I: Reading Foundations (16 credits—all required):** ED 500, 632, 633, and 699 (candidates may substitute two adviser-approved courses for ED 699).

**Block II: Learning Disabilities Approval (24 credits—all required):** ED 501, 502, 522 or 524, 523, 621, 626.

**Block III: Reading Electives (4 credits):** Choose one course from ED 514, 531, 532, 536, 537, 538, 630, 634.

**Block IV: Educational Foundations (4 credits):** Select one course from either of the following groups:

**Language Arts/Literature:** ED 534, 571, 573, 574, 575, 670.

**Philosophical/Social Foundations:** ED 503, 504, 601, 602, 603, 604, 605.

This program involves a dual admissions/advising process. Following admission to graduate studies, an advising interview should be scheduled with reading and special education. Failure to arrange such an interview may result in loss of completed credits or suspension from the program.

## M.A.T. in Early Childhood or Elementary Education with Bilingual/Bicultural Endorsement

The bilingual/bicultural education endorsement program allows certified teachers to take 24 credits in bilingual/bicultural education. Students may select either the early childhood or the elementary education M.A.T. All students must demonstrate proficiency in Spanish for effective functioning in the language component of the program.

The following courses are required for the early childhood-bilingual option: ED 516, 532, 540, 542a, 543, 544, 586, 629, AS 500; one course from ALS 528, 534, and 575; and 4 credits of a modern language (selected with adviser approval).

The following courses are required for the elementary education-bilingual option: ED 510, 512, 516, 537, 586, 629, AS 500; one course from ALS 528, 534, and 575; and 4 credits of a modern language (selected with adviser approval).

## M.A.T. in Elementary Education with Health Education, Physical Education, Dance, and Recreation Concentration

**Core Courses in Education (all required):** ED 510 (must be one of first two courses); 512 or course from curriculum and instruction focus area; 585 or course from educational leadership/supervision focus area; 593 or course from youth advocacy focus area; and ED 699, or 555 plus 4 elective credits. Focus areas are listed on pages 97 and 98.

**Core Courses in Physical Education:** ED 506, 507, 508.

**Elective Courses in Physical Education:** Choose at least two courses from ED 518, 528, 551, 552, 556, 557.

## MICHIGAN CONTINUING CERTIFICATE PLANNED PROGRAMS

To meet the continuing certification requirements of the state of Michigan, persons must complete three years' experience and 18 semester hours of course work in a planned program after the provisional certificate is awarded.

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 18-20-credit planned program as a continuing certificate student.
  - a. Planned programs have been specified by the following areas in the Department of Teacher Education: bilingual, early childhood education, elementary education, foundations, guidance and counseling, middle school, physical education, reading/language arts, and special education.
  - b. Programs have been developed by various departments in the College of Arts and Sciences. For further information about such programs, the student should contact the 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 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 18-20-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 Bilingual/Bicultural Education (Leads to endorsement)**

**Core Courses (all required):** ED 516, 586, 629, AS 500.

**Electives (choose one):** ALS 528, 534, 575.

**Modern Languages:** 4 credits to be selected with adviser approval.

### **Planned Program in Early Childhood Education**

**Early Childhood Foundation (all required):** ED 540, ED 542a or PSY 510, ED 543, 544.

**Elective:** Choose one from ED 532, 542b, 545, 546, 550, 574. (Other electives may be selected with adviser's approval.)

### **Planned Program in Elementary Education**

The planned program in elementary education parallels the M.A.T. program in elementary education. All students must take ED 510 and either ED 512 or 554. Students then elect 8 credits from one of the program focus sequences and 4 credits from a second program focus sequence. Students should examine the M.A.T. elementary education program (page 97) for program focus requirements and course options.

### **Planned Program in Guidance and Counseling**

**Core Courses (all required):** ED 562, 563, 565.

**Electives:** ED 665 or 675, and one course from ED 561, 566, 667, 668.

### **Planned Program in Health, Physical Education, and Recreation**

**Core Courses (all required):** ED 506, 507, 518.

**Electives:** Choose at least 12 credits from ED 508, 528, 551, 552, 556, 558.

### **Planned Program for Middle School Endorsement**

The middle school endorsement program is designed for persons who hold secondary permanent certificates and wish to extend their grade 7-12 certificate to include grades 5 and 6. The program is also for elementary certificate holders who wish to enhance their qualifications for middle-school specialization, and for those with grade K-8 certificates to include grade 9. Finally, the curriculum serves as a

planned program for continuing certification by holders of either elementary or secondary provisional certificates.

Required courses are ED 520, 525, 533, 553 or 583, 569.

### **Planned Program in Reading/Language Arts**

1. Required: ED 500.

2. One course (4 credits) in philosophical foundations of education (ED 503, 504, 591, 601, 602, 603, 604, 605) or psychological foundations of education (ED 505, 523, ALS 534, PSY 510, 512).

3. Three courses (10-12 credits) in reading language arts education and/or related areas (subject to adviser approval).

### **Planned Program in Special Education**

Required courses are ED 501, 502, 619, 522 or 625, 523 or 621.

### **Foundations (The Teacher as Person: A Planned Program in Educational Studies)**

This is an 18-credit program of graduate education leading to continuing certification featuring:

1. A humanistically oriented program, focusing on the structure of the school and the teaching profession 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 interdisciplinary 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 maximize the student's opportunity to integrate academic work with personal experience. The heart of the advising program is development of a continuing portfolio, including sample academic work, a journal of experienced relations between study and professional possibilities, and other related material. Faculty work as a unit in planning courses, team teaching, and continuous advising.

Upon completion of the 18-credit program, faculty will assist students who desire to continue for one of the master's degrees in the School of Education.

**Core Courses:** Select 12 credits from ED 503, 504, 601, 602, 603, 604, 605, 606.

**Electives:** Choose at least 6 credits in consultation with an adviser from the foundations area.

### **Course Offerings**

#### **ED 500**

#### **Foundations of Reading Instruction (4)**

Lectures, demonstrations, discussions, and role-playing 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 are also introduced to significant reading research. Required of students in the M.A.T. reading program.



**ED 501 Introduction to the Education of Exceptional Children (4)**

Introduction to special education, its history and development, organization and structure, practices and procedures, emphasizing contemporary issues. Focus 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)**

Examines the Michigan Special Education Code and its implications for education of the handicapped. Students study special education procedures—classroom observations, writing referrals, and completing informal evaluations of students' skills, educational alternatives, and program assessment.

Prerequisite: Graduate standing.

**ED 503 Major Theorists in Education (4)**

Intensive study of the works of one or two major figures in the development of educational theories. The specific theorists vary each semester and are 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)**

Study of educational themes through novels, plays, personal accounts, and other literary modes. During different semesters, one or more of the following 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)**

Focuses on language acquisition, language and thought, dialects, and the interrelation of the language process and the implications for teaching reading.

**ED 506 Introduction to Research in Health and Physical Education (2)**

Emphasizes statistical treatment of data, critical analysis of experimental research, study of research methods, and development of research designs.

**ED 507 Theory and Practice of Physical Conditioning for Personal and Professional Use (2)**

Attempts to evaluate and improve the cardiorespiratory fitness of students in the course. Programs and teaching techniques involved in the development of various aspects of physical fitness are reviewed and improved if necessary. Subject matter includes weight control, aerobics, anaerobic exercises, weight training, ergogenic aids, and the relationship between cardiovascular disease and physical activity.

**ED 508 Physical Education in the Preschool and Elementary School (4)**

A theory and activity participation course in the philosophies, theories, and practices in physical education and movement education for preschool through elementary school children.

**ED 509 The School and the Disadvantaged Child (4)**

Study of the difficulties and opportunities in schooling disadvantaged children. Examines 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 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 become familiar with the major information retrieval systems, local, state, and national organizations, and professional journals. Assistance will be given students to improve their ability to organize and report on educational issues. Students will also be assisted in developing an individual plan of work in their M.A.T. program. Required of all students in the M.A.T. elementary education program. Must be taken within the first 8 credits.

**ED 511 Interaction Analysis (4)**

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 observation 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 curricula 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. Examines 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 is 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. 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 efforts to integrate all the elements of the curriculum in order to study the effects on reading instruction. 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)**

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. Emphasizes alternate strategies of teaching cultural awareness to young children.

Prerequisite: Admission to graduate study.

**ED 517 Simulation Gaming—An Interdisciplinary Mode (4)**

Introduction to the interdisciplinary field of simulation gaming. After playing a variety of games, students apply the course methodology to their own work settings by operating games and designing their own games.

**ED 518 Exercise Physiology (4)**

Acquaints the athletic coach and physical educator with recent innovations in human conditioning and performance. Emphasis is placed on the physiology of the cardiorespiratory systems with application to human performance. Laboratory experiences develop techniques for measuring physiological stress. Includes neuromuscular activity, circulatory and respiratory response to exercise and training, environmental aspects of exercise, and fatigue.

**ED 520 Applied Developmental Principles: Middle Childhood (4)**

Study of the physical, social, emotional, and intellectual development of the 10- to 14-year-old child, and of the environmental factors which affect this development. "Range of normality" changes in body structure and function, self concept and peer group identity, sexual awareness, cognitive transition to formal operations, and growth in skills, interests, and values are included. The teachers' role in applying knowledge of developmental factors to learning and to the ecological context for learning are emphasized. Includes observation and analysis of the child's behavior in educational and pediatric experiences and applying the knowledge of these behaviors to develop effective teaching strategies.

**ED 521 Special Education in the Regular Classroom (4)**

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 performance objectives are emphasized.

Prerequisite: Graduate standing.



**ED 522 Behavior Modification Techniques for Classroom Management (4)**  
Introduces teachers to the principles and application of behavior modification techniques. Includes specific methods for changing children's classroom behavior with emphasis on the child displaying learning or conduct problems.  
Prerequisite: Admission to graduate study.

**ED 523 Educational Procedures for Children with Learning Disabilities (4)**  
Examination of various theories of learning disabilities and major intervention methods. Students gain understanding of visual, auditory, and motor processes related to learning. Includes informal methods of assessing the learning processes, writing instructional objectives, and prescriptions.  
Prerequisite: ED 501 or 502 or permission of instructor.

**ED 524 Perception in the School Setting (4)**  
The process of perception, its relationship to learning, and its assessment. Students 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 525 The Exceptional Child in the Middle School (4)**  
Introduction to special education for the regular middle school classroom teacher. Emphasizes special problems of identification, assessment, and management of the middle-school child with learning and behavior problems.

**ED 526 Secondary Assessment Procedures in Special Education (4)**  
Basic concepts for interpreting standardized assessment instruments. Students become familiar with a number of assessment instruments commonly used to identify secondary students with learning disabilities and develop new informal assessment devices.  
Prerequisite: ED 501 or 502 and ED 619 or permission of instructor.

**ED 527 Problems in Educating Mentally Handicapped Children (4)**  
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 528 Movement Education—Physical Education for Handicapped Children (4)**

Theories and practices in movement education and physical education activities for the handicapped. Progressions in appropriate activities for varying abilities will be stressed as noted in current research and special programs.

**ED 529 Modification and Adaptation of Materials for Exceptional Children (4)**  
Provides training in the areas of materials development. Students develop materials in the affective domain as well as use of alternative approaches in the content areas.  
Prerequisite: ED 501 or 502 and ED 619 or permission of instructor.

**ED 530 Workshop in Reading (4 or 8)**  
Participants study, prepare, and use materials and resources to develop reading and language arts classroom skills. Focuses on involvement leading to a fuller understanding of the potential of various curriculum elements for giving young learners opportunities for improving their reading and language abilities. Strategies for inductive, elaborative, open-ended instruction in poetry, prose, and factual material and use of individual and small group work are stressed. Includes the role of cooking, drawing and painting, book making, sewing, photography, and similar expressive activities. Approaches to developing basic reading and writing skills through usage and methods of organizing the classroom to ensure student participation are examined. Students may register for this course once or twice up to a total of 8 credits.

**ED 531 Current Trends in the Teaching of Reading (4)**  
Current instructional practices, problems, and research in teaching reading are intensively examined. Trends in reading instruction are evaluated in light of cumulative findings on the development of reading skills.

**ED 532 Teaching Reading in the Primary Grades (4)**  
Examines principles, practices, and research related to early reading instruction. Includes

analysis of the relationship of the various language arts to reading skills and emphasizes the developmental skills of pupils, starting with kindergarten.

**ED 533 Teaching Reading in the Middle School (4)**  
Examines principles, practices, and research of teaching reading in middle-schools. Emphasizes the developmental reading skills in a reading program adjusted to individual needs, with focus on reading in the content areas.

**ED 534 Reading/Language Arts Instruction in the Elementary School (4)**  
Research, materials, and procedures for the development of spelling, composition, speaking, and listening skills in children are examined in a scholarly manner. Curriculum areas which directly influence language development are discussed. The course focuses on how a coordinated language arts approach and the use of literature can add balance to 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. 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 8 credits).

**ED 536 Teaching Reading to the Special Child (4)**  
The reading process as it relates to slow learners, emotionally disturbed, handicapped, and gifted children. Includes study of remedial instructional materials.  
Prerequisite: ED 501 or 502 or permission of instructor.

**ED 537 Teaching Learning Strategies for Reading and Related Language Arts Instruction (4)**  
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. The course is designed for teachers who seek options for providing young learners with opportunity to develop expressive as well as receptive language skills.

**ED 538 Guiding Reading/Learning in Content Subjects (4)**  
Primarily for middle school, junior high, and senior high school teachers who primarily teach one or more subject areas. Instead of subject matter, stresses the teaching of processes so students can independently acquire and apply content understandings. Requires access to a class of students.  
Prerequisite: ED 500 or permission of instructor.

**ED 540 Theories of Early Childhood Education (4)**  
Views of education discussed from perspectives of Montessori, Piaget, Bereiter-Englemen, British Infant Schools, behavior modification, and developmental or "traditional" schools. Students analyze these approaches and synthesize their own viewpoints. 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)**  
Enables students to understand development of infants and young children and observe the "range of normality" in a variety of 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 development of infants, toddlers, preschoolers, and kindergarten children as seen from pediatric, developmental, and educational perspectives. May be elected twice. The first level (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 home learning 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 teachers in child advocacy issues. Includes methods for working with parents, paraprofessionals, volunteers in the classroom and home, and with diverse community team members and referral resources for children with special needs.

Prerequisite: ED 540, 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 using play in the early childhood curriculum.

**ED 545 Administration and Direction of Early Childhood Programs (4)**

Administrative aspects such as budgeting, legislation, rules, and employee concerns. Includes procedures for developing programs, writing proposals, and identifying funding sources. Examination of types of agencies involved in early childhood programs, child-care trends in the community, and problems in direction of centers.

Prerequisite: ED 540, 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—are emphasized, and methods for development of workshops and learning centers in these areas are stressed. Includes special uses of audiovisual and programmed materials in the learning center. May have different emphasis in different semesters, but in all semesters a major focus will be on workshop presentations.

**ED 547 Infants: Normal and Exceptional Development and Programming (4)**

Intense study of research on infants to 15 months, including exceptional infants. Students are trained in reading and evaluating research articles, with analysis of appropriate play environments and learning experiences. Students are also trained to work with infants in small groups and learn how to train and interact with infants and parents. After this training, students work directly with infants and parents at the Lowry Infant/Parent Program for at least 32 hours. Inservice student/faculty seminars are held throughout the semester in regard to the infant/parent center operation.

Prerequisite: ED 542a or PSY 510 or equivalent.

**ED 548 Toddlers: Normal and Exceptional Development and Programming (4)**

Intense study of developmental/intellectual aspects unique to toddlers (15 to 36 months), including exceptional toddlers. Students read, discuss, and evaluate research on toddlers. Analysis of appropriate play environments and learning experiences is included. Students must work with toddlers and their parents at least 32 hours per semester. Students participate in training sessions on interaction with toddlers and parents, followed by weekly oral evaluations. Training also focuses on evaluating toddler and parent development and behavior.

Prerequisite: ED 542a or PSY 510 or equivalent.

**ED 549 Development of the Young Exceptional Child (4)**

Overview of child development research applied to exceptional children in early childhood classrooms. Views the child from a developmental perspective and includes, along with study of normal behaviors in all preprimary children, curriculum strategies for mainstreamed and special education settings.

**ED 550 Special Problems in Education—Early Childhood (2, 4, or 8)**

Special problems in early childhood education, applied development, or parent education. Specific topics will be based on student and/or community needs. May be taken more than once for a total of no more than 8 credits. May be elected for independent study.

**ED 551 Cooperative-Independent Study in Health, Physical Education, and Recreation (4)**

Independent study in cooperation with a faculty member in the Department of Physical Education and Athletics.

**ED 552 Issues and Problems in Health, Physical Education, Recreation, and Athletics (4)**

Examines contemporary issues in physical education, recreation, and competitive athletics, with attention to problems confronting the schools in which the participants are teaching. Includes lecture and group discussion of methods for possible implementation in schools where the participants work.

**ED 553 The Curriculum and Environment of the Middle School (4)**

Investigates the middle school curriculum and environmental factors which affect its design, content, and methods of delivery. Psychological factors, philosophical bases, and methods for middle-school curriculum development are examined. Teachers develop a subject area curriculum that considers environmental factors such as characteristics of the preadolescent, organizational patterns, scheduling, teaching techniques, the architectural design of middle school facilities, and staffing patterns.

**ED 554 Interaction Laboratory for Teacher Development (4)**

Acquaints students with the importance of human relations skills in teaching; provides exposure to interpersonal problems among pupils, parents, and fellow teachers within a school setting, and helps 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.

**ED 555 Practicum (4)**

A class experience designed as a culminating activity for M.A.T. elementary education students who do not wish to pursue an individualized 4-credit activity. Students meet weekly with a faculty member, who will help students synthesize knowledge from all their M.A.T. courses, and to apply this knowledge to more positive behaviors in the teaching profession. Students partake in several mini-activities designed by themselves or a group to try out the new behaviors as "master teachers," "educational leaders," and "curriculum and instruction designers."

Prerequisite: See M.A.T. program requirements, page 97.

**ED 556 Creative Movement for Children and Youth (4)**

Explores movement as a means of artistic, emotional, and physical expression. Movement is used as a means of communication and a medium for aiding children's growth and development.

**ED 557 American Red Cross First Aid and Safety Practices (4)**

Theories, principles, and techniques of first aid. A safety program will be developed for facilities, equipment, supplies, procedures, and personnel.

**ED 558 Prevention, Care, and Rehabilitation of Activity-Oriented Injuries (4)**

Includes both didactic and practicum components in prevention, care, and rehabilitation of injuries incurred in physical education, recreation, and competitive sports. The purpose and management of the school first-aid room and athletic training room are described. Laboratory experiences include instruction and practice in techniques for prevention and care of student injuries, including protective wrapping and taping.

**ED 560 Special Problems in Guidance and Personnel Work (2, 4, 6, or 8)**

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. May be taken more than once, but for no more than a total of 8 credits. May be elected for independent study.

Prerequisite: Permission of instructor.

**ED 561 Guidance in Elementary-Middle Schools (4)**

Theories, issues, trends, and models for guidance and counseling in elementary and middle schools. Examines dimensions of prevention vs. treatment and direct vs. indirect services to children. 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.

**ED 562 Measurement and Evaluation in Counseling (4)**

Application of assessment procedures with children, adolescents, and adults for educational and career planning. Includes subjective and objective methods of measurement and evaluation of human growth and development with implications for starting realistic client or student goals and a planned program for client progress. Covers commonly used statistical procedures, comprehensive assessment programs, and basic research methodology.

Prerequisite or corequisite: ED 565.

**ED 563 Group Procedures in Guidance (4)**

Study of group processes and the counselor's role 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.  
Prerequisite or corequisite: ED 565.

**ED 564 Delivery of Human Services (4)**

Surveys key issues in providing human services to the public. Legal, historical, and social factors are examined. Includes case histories of the delivery of employment, mental health, vocational rehabilitation, and welfare services. Applied general systems theory to human services.  
Prerequisite: ED 562, 563, and 565 or permission of instructor.

**ED 565 Counseling Theory and Practice (4)**

An introduction covering historical, theoretical, and ethnic backgrounds for the counseling and guidance profession. Includes models for organizing and delivering guidance and counseling programs.

**ED 566 Guidance in Secondary and Adult Education (4)**

Study of theories, issues, trends, and models for guidance and counseling with adolescents and adults in educational settings. Examines dimensions of prevention vs. treatment and direct vs. indirect services to students.

**ED 567 Workshop in Guidance and Personnel Services (2, 4, 6, or 8)**

Opportunity for teachers, counselors, administrators, and other personnel to evaluate and develop various aspects of guidance and student personnel programs. Offered on request from school systems or agency personnel to provide inservice education for counselors and other personnel service workers.

**ED 569 Personal Growth and Interpersonal Skills (4)**

Developmental, competency-oriented laboratory course in personal growth and interpersonal skills designed as an opportunity for enrollees to discover, explore, and understand their personal resources (values, beliefs, feelings, perceptions, needs, and effects of same on learning environments). Emphasis is on interpersonal skills for initiating, developing, and maintaining effective and fulfilling relationships. Role playing, demonstrations, simulations, and other experiences are a major part of the course.

**ED 571 Children's Literature in the Elementary and Middle School Curriculum (4)**

Presents criteria for selecting and evaluating children's literature, along with specific ways to incorporate worthwhile literature into the school curriculum to enhance the children's understanding and enjoyment of literature.

**ED 572 Storytelling and Creative Dramatics (4)**

Methods of encouraging children to use their imaginative and dramatic skills to interpret literature and create plays, pantomimes, and other creative drama. Opportunities for learning to select, learn, and tell stories to children of various ages through lectures, discussions, and practice. Students plan, carry out, and evaluate a storytelling program and creative dramatics sessions.

**ED 573 Adolescent Literature in Middle Schools, Junior and Senior High Schools (4)**

Use of adolescent literature in middle schools and junior and senior high schools. Students are introduced to a variety of relevant books and other materials (films, filmstrips, light and sound shows, and tapes). Topics include current trends in books, publishing, methods of presenting books, stimulating reluctant readers, and incorporating trade books into content areas.

**ED 574 Literature for the Young Child (4)**

Preparation for the selection and use of appropriate books, rhymes, stories, records, and filmstrips with preschool and early elementary school children. Students should have access to preschool or early elementary school children while taking the course.

**ED 575 Creative Writing and Reading (4)**

Focuses on teaching composition to elementary- and secondary-level children. Topics include the relationship between reading and writing; the skills of composition, editing, and revision; the nature and nurture of writing; therapy and imitation in writing; poetry; evaluating children's writing; and other topics pertinent to the writing and reading processes.

**ED 576 Developmental Guidance and Counseling (4)**

Application of developmental theories to counseling children, adolescents, and adults. Includes case studies in assessing developmental needs of clients in a variety of settings.  
Prerequisite: ED 562, 563, and 565 or permission of instructor.

**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 content of both contemporary and historical topics of black Africa applicable to new elementary and secondary social studies programs; material evaluation, selection, and use of black African topics appropriate for elementary and secondary use; and 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)**

Aids secondary school instructors in staging effective dramatic productions. All phases of dramatic production—technical, philosophical, and economic—are examined. Each instructor receives a manual detailing skills required for implementing each primary area of play production.

**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. Includes an in-depth analysis of the relationship of this organizational pattern to contemporary educational, social, and student needs. Staff members are drawn 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 study and evaluate the open classroom within the contexts of psychological, ecological, social, and curricular foundations.

**ED 585 The Law and the Teacher (4)**

Introduction to school law for the classroom teacher. 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 *Tinker vs. Des Moines* and *Schemp vs. Abington* are studied, applied, and interpreted by a lawyer and a faculty member. Offers teachers a unique opportunity to study a crucial area in public education in a nontraditional team-teaching setting.

**ED 586 Bilingual Education—Theories and Practices (4)**

Familiarizes teachers and other educators with aspects of Latino education. Lectures, readings, and discussions 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)**

Intensive study of current trends, challenges, characteristics, and content of effective social studies programs, with emphasis on the relationships among social studies discipline areas. Stresses application of these studies in urban elementary schools.

Prerequisite: ED 245 and acceptance into a graduate or certification program.

**ED 588 Supervisory Skills for Cooperating Teachers (4)**

Strengthens and/or develops the supervisory skills of teachers who will be working with student teachers, as well as students in pre-student teaching experiences. Special emphasis is on observation and feedback techniques.

**ED 589 Unified Science and Mathematics (2 or 4)**

Explores methods and materials for implementing a realistic problem-solving approach in the elementary school classroom. Emphasis is on problems which have natural science, social science, and mathematical components.

**ED 590 Special Problems in Education (2, 4, 6, or 8)**

Depending on clientele and staff needs, specific topics may differ each semester. See adviser for title appropriate to each area or focus. May be taken more than once, but for no more than a total of 8 credits. May be elected for independent study.



**ED 591 Ecology of the Classroom (4)**

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)**

Study of research techniques in the behavioral sciences and education, methods of gathering evidence, elementary statistical concepts in education, research design, etc. Especially useful for students preparing to start their terminal project.

**ED 593 Evaluation and Accountability in Teaching (4)**

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. Utilizes the facilities of Henry Ford Museum and The Greenfield Village, the Oakland University facilities, and those of other community resources. This 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 50 students. A \$25 laboratory fee is assessed to cover materials and supplies.

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

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 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 over the ages. Emphasizes motivation, the organization of knowledge, and the different views of human development.

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

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: Investigation of local school policy formulation and ways of relating policy to the people it affects. (c) International education policies: 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)**

Investigation into schools as social systems, the environmental effect of schools on students and teachers, and the impact of schooling on American society. During different semesters, one or more of the following themes will be emphasized: (a) The sociological implications of

work: How the teacher's work 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 nonformal 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 perceived 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 606 Psychology in Education (4)**

Emphasizes the concept of personhood throughout the life cycle, including conceptions of mind, intelligence, cognition, consciousness, meaning awareness, competence, and the capacity to contemplate and communicate about such matters in the metaphors of psychology and the behavioral sciences. In different semesters, one or more of the following themes will be emphasized: behavioral-analysis, situation-analysis, psychoanalysis.

**ED 611 Problems in Elementary Education (4 or 8)**

Study of issues in the organization, curriculum administration, and methodology of elementary schools. Students' needs and preparation determine the specific topics in a given semester. Students may register for this course once or twice, up to a total of 8 credits.

**ED 612 Curriculum Studies (4)**

Study of practices and research in curriculum in modern elementary schools. Investigates the total of experiences provided for young people in school settings and challenges established practices on the basis of recent curricular developments.

**ED 619 Theoretical Foundations of Exceptionality (4)**

Introduction to the theoretical and conceptual models of emotional disturbance; the psychodynamic, biological, behavioral, sociological, icological, and counter theoretical. Includes theoretical foundations of learning disabilities.

**ED 620 Social Deviancy in Special and Regular Education (4)**

Critically analyzes social deviance from individual, institutional, and societal perspectives. Socio-cultural factors which directly influence the perceptions of deviant behavior are examined. Sensitization and assistance will be provided to classroom teachers in programming for 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)**

Provides experience and enhancement of skills necessary to observe and assess the emotionally impaired child. Includes an opportunity to explore in depth the models of current etiologies in the field to explain emotional impairment, and their implications for intervention techniques based on an understanding of the model. Use of videotapes and demonstrations as well as emphasis on observation of emotionally impaired children are included.

Prerequisite: ED 501 or 502 or permission of instructor.

**ED 622 Practicum in Special Education—Emotionally Impaired Children (2, 4, 6, or 8)**

Specialized 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 receives 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.  
Corequisite: ED 623.

**ED 623 Project in Special Education (2)**

An action-research project. Field testing intervention techniques, designing new education models, or evaluating special education instruments are examples of projects. Seminars may be required.  
Corequisite: ED 622.

**ED 624 Directed Teaching in Special Education (6)**

Supervised full-time teaching experience in classrooms corresponding to the student's special education concentration. 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)**

Provides teachers with skills and experiences in the analysis of their own and their students' classroom behaviors using a Transactional Analysis (TA) perspective. Teachers apply theory to achieve greater awareness and understanding of themselves, so that they can positively affect their classroom behavior. Teachers 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)**

Specialized experience in a special education setting for learning disabled children. Includes observation, tutoring, diagnostic and prescriptive teaching, and use of materials and equipment. The student receives 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)**

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)**

Geared to the education, background, and training of the student, designed to provide in-depth 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)**

Specialized field work in a bilingual/bicultural classroom setting for bilingual children. Observation, tutoring, diagnostic-prescriptive teaching, and use of bilingual materials are included.  
Prerequisite: Completion of all other requirements for credentials 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 are carefully analyzed in a seminar. Enrollment is limited.  
Prerequisite: Two courses in reading instruction and permission of instructor.

**ED 631 Problems in Reading Instruction (4 or 8)**

Diagnostic, methodological, organizational, and administrative issues in reading programs. Student needs and preparation determine the specific topics included in a given semester. May be taken once or twice up to a total of 8 credits.  
Prerequisite: Admission to a M.A.T. program and at least one previous course in reading instruction.

**ED 632 Diagnosis of Reading Disabilities (4)**

A laboratory course to analyze factors which contribute to or cause reading disabilities in elementary and/or secondary school pupils. Selection and administration of both formal and standardized tests are included as well as preparation and evaluation of case reports.  
Prerequisite: Admission to a M.A.T. program, ED 500, and permission of instructor.

**ED 633 Correction of Reading Disabilities (4)**

A laboratory course focusing on methods, materials, and practices of instruction of disabled readers. Provides opportunities to plan, organize, and conduct remedial instruction for children under supervision of the instructor.  
Prerequisite: Admission to a M.A.T. program, ED 632, and permission of instructor.

**ED 634 Advanced Study of Classroom Strategies in an Integrated Language Arts Curriculum (4)**

Focuses on instructional strategies in all curriculum areas which promote reading-language development. Particular attention is paid to a process curriculum and current linguistic concepts which make adequate provisions for a range of language-inducing and language-production options. Participants prepare materials which will cause young learners to experiment, examine, organize, systematize, analyze, and evaluate the reading-language abilities they employ. Attention is also given to changes in the language behavior of young people for the purpose of evaluating linguistic maturation.

**ED 635 Organization of Elementary and Middle School Reading Programs (4)**

Designed for master's candidates in reading who plan to become reading specialists or consultants. Topics include conducting a needs assessment of the language arts curriculum, program planning in reading, guidelines for ongoing and long-range in-service staff development, analyzing reading materials, defining the reading consultant's role, and strategies for working with classroom teachers. Requires school field work, preferably where the graduate student is presently employed.

**ED 636 Organization of Secondary School Reading Programs (4)**

Designed primarily for reading teachers or consultants in grades 7-12. The first segment involves learning to initiate and maintain a differentiated program of secondary-level reading services (developmental, corrective, and remedial). In addition to an overview of appraisal and diagnostic procedures, examples of various program components are studied and evaluated. The second segment involves independent field work in which the student conducts a needs assessment within a school (preferably the one in which the student is currently employed). Students are assisted in (a) interpreting the results of the needs assessment, (b) writing results in a manner suitable for presentation to administrators or school board members, and (c) planning initial development of key program components.  
Prerequisite: ED 500 or permission of instructor.

**ED 644 Play and Development of the Hospitalized Child (4)**

Introduction to the hospitalized child's developmental problems and methods of utilizing play to ease developmental problems. Course components are children's developmental needs and the relationship of illness to development; the procedures and routines in hospital care and the effects of hospitalization on children; and techniques for utilizing play in the pediatric program. Includes a practicum in the hospital pediatric setting.  
Prerequisite: ED 542a or PSY 510 or equivalent, and ED 544.

**ED 645 Assessment of the Young Exceptional Child (4)**

Intense study of assessment of young exceptional children, with training in interpreting standardized tests for young children. Critical evaluation and actual use of these tests are included. Emphasizes examining and using appropriate developmental tests and alternative assessment procedures. Students also learn to develop and use their own assessment tools.

**ED 650 Practicum in Early Childhood Education (4)**

A culmination experience for the early childhood program. Students write a proposal, select appropriate materials and methods, and implement and evaluate the action phase. Primarily an "on-site" course, 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 degree requirements.

**ED 655 Practicum in Special Education/Early Childhood (combined) (4)**

Culmination of requirements for the joint endorsements of early childhood and special education (emotionally impaired or learning disabled). Includes a specialized experience in a special education/early childhood setting for LD or EI children, with observation, tutoring, diagnostic and prescriptive teaching, and use of materials and equipment. The student has individual, small group, and total group responsibility. Includes writing a proposal relating to the special-



ization and evaluating its usefulness in the special education/early childhood classroom.  
Prerequisite: Completion of all other requirements of the combined program.

**ED 661 Techniques of Counseling and Consultation (4)**

Systematic training in the development of individual and group counseling and consultation skills and application of counseling theory and research to practice. Development of a personal theory of counseling is expected. Prepracticum counseling experiences include audio- and video-taping of counseling interviews with review by course instructors.  
Prerequisite: ED 562, 563, 565, and admission to the guidance and counseling program.

**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 are approached through seminar and field experiences. Students develop a written description of their own group counseling approaches and validate the description with concurrent application in a group counseling setting. The study and application of relevant research literature are stressed.

Prerequisite: ED 563, 661, and permission of instructor.

**ED 664 Consultation and Counseling Practicum (4)**

A study of consultation theories and models used in assisting students and other clients indirectly by consulting with teachers, parents, and employment supervisors. Provides for application of consultation and counseling skills to actual clients under supervision.  
Prerequisite: Admission to program in guidance and counseling and ED 661.

**ED 665 Career Development and Life/Work Planning (4)**

Covers theories of career development, psychological and sociological basis for career choice, and strategies for life/work planning with primary focus on adolescents and adults. Emphasizes the process of providing guidance information and counseling to develop self-understanding of interests, abilities, and awareness of opportunities for education and work, as a basis for decision-making.

Prerequisite: ED 562, 563, 565, and admission to program in guidance and counseling or permission of instructor.

**ED 666 Internship in Counseling (4 or 8)**

A terminal course for the Counseling emphasis in the School or Community setting. Includes a field placement experience under the supervision of an approved guidance and counseling practitioner. Placement is at a site suitable to the developmental requirements and interests of the student within the scope of degree requirements. Related course seminars are conducted by the university instructor. The age of counselees must correspond to the level of school counseling endorsement being sought.

Prerequisite: Completion of final course work as specified in the student's authorized degree program plan.

**ED 667 Interpersonal Skills in Guidance (4)**

Concepts and skills for effective interpersonal communication which enable the teacher to enter the student's frame of reference and develop the learning relationship. Explores several communications models and examines strategies for analyzing teacher-pupil and pupil-pupil interaction to improve teaching-learning effectiveness.

Prerequisite: ED 563 and 565 or permission of instructor.

**ED 668 Affective Approaches in Guidance (4)**

Emphasizes a synthesis in education of the affective and cognitive domains. Presents models for the enhancement of affective learning and development including theoretical bases, rationale, and strategies for application. Examines legal and ethical issues in affective education.  
Prerequisite: Teaching experience or permission of instructor.

**ED 670 Topics in Literature for Children (4)**

Literature for children is read and evaluated according to specific literary criteria. In-depth study may include one or more of the following topics: authors and illustrators of children's books; the history of children's literature; controversial issues in the field of children's literature; research on children's responses to literature. Emphasis is on broadening the student's knowledge and appreciation of children's literature.

**ED 671 Supervision in Human Services (4)**

A study of supervision models for analyzing and resolving interpersonal and organizational communications in human service programs. Includes program organization, employee supervision (motivation, negotiation, and consultation), employee development and training, and performance evaluation.

Prerequisite: ED 562, 563, 565, or permission of instructor.

**ED 675 Career Education (4)**

Deals with knowledge and competency in facilitating self awareness, career awareness and exploration, career decision-making, planning, and placement. Emphasis is on strategies for infusing career education enabling experiences into the school academic curriculum. Includes identification and application of career information and retrieval systems.

Prerequisite: Teaching experience or permission of instructor.

**ED 676 Internship in Guidance (4)**

A terminal course for the Guidance and Career Development emphasis in the Community setting. Includes a field placement under the supervision of an approved guidance practitioner. Placement is at a site suitable to the student. Related course seminars are conducted by the university instructor.

Prerequisite or corequisite: Completion of final course work as specified in the student's authorized degree program plan.

**ED 678 Guidance Program Planning and Evaluation (4)**

Covers programs, materials, and systems for the comprehensive practice of vocational guidance in a broad range of community, business, and industry settings. Includes methods of vocational assessment, vocational rehabilitation, job training, and job development and placement. Emphasizes skills for managing, evaluating, and obtaining funding for government-supported human service programs.

Prerequisite: ED 562, 563, 564, 565, and 665 or permission of instructor.

**ED 699 Terminal Project (4)**

Planning and execution of significant research or project in accordance with student's advisory committee.

Prerequisite: Admission to a graduate program in elementary education, guidance and counseling, or reading instruction and written approval of the student's advisory 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 spring, summer, or fall. Students must present the completed project at least two weeks before the end of classes in the semester of graduation.

**ED 700 Introduction to Educational Statistics and Research Designs in Reading/Language Arts (4)**

Study of the design and analysis of educational research investigations. Representative topics include development of hypotheses, sampling, research design, measurement, methods of data collection, and analysis and interpretation of data. Analysis procedures will focus on descriptive and inferential statistics with a major emphasis on nonparametric applications.

Prerequisite: Admission to Ph.D. program or permission of instructor.

**ED 701 Doctoral Seminar in Reading (4)**

Advanced topics in reading selected by the instructor in consideration of the needs and interests of doctoral students. Research and other significant writing relevant to the topic will be analyzed and interpreted. Research designs, procedures, and findings will be discussed. Critiques of research and other writings will be written and presented orally by the students.

**ED 702 Applied Research in Reading/Language Arts (4)**

An independent research project. The major course requirement is design, conduct, and analysis of a research investigation. The study should be based on significant revision of a proposal submitted in partial fulfillment of the requirements of ED 700. The student will write research results in a manner suitable for publication and submit this material to his/her doctoral committee for discussion and evaluation.

Prerequisite: ED 700, 701, PSY 551, or MGT 653 or permission of instructor.

**ED 703 Advanced Diagnostic and Corrective Reading (4)**

A clinical course focusing on the application of diagnostic and corrective teaching procedures in reading instruction. Students will supervise master's degree students' work with children, present case staffing at staff conferences, conduct diagnostic and corrective teaching demon-



strations, and direct intake interviews of children and parents into the Oakland University Reading Clinic. All work is done under the supervision of the reading area faculty.  
Prerequisite: ED 500, 632, and 633.

#### **ED 704 Reading as a Language Process (4)**

Focuses on psycholinguistic theory as it relates to reading acquisition. Topics include dialect and its role in oral and written language, the relationship between reading, writing, and listening, cue redundancy and miscue analysis, semantic fulfillment, and reading comprehension theories.

Prerequisite: Admission to Ph.D. program or permission of instructor.

#### **ED 705 Theoretical Models and Processes of Reading (4)**

Examines various theoretical models of reading acquisition including such models as the sub-strata factor theory, information processing models, psycholinguistic models, semantic fulfillment models, and other theoretical processes that have been proposed to account for the processes of reading acquisition. The various models are compared and contrasted for comprehensiveness, assumptions on which they are based, structural differences, research hypotheses generated and implications for classroom instruction and materials development.

Prerequisite: Admission to Ph.D. program or permission of instructor.

#### **ED 706 Thesis Research (4)**

Preparation of a research project culminating in the doctoral thesis.

### **Special Courses**

Students enrolled in the M.A.T. elementary degree program described in this catalog may need one or more of the following courses. For specifics on their applicability within a given program, see the description of that program, page 97.

#### **SCS 505 Basic Concepts and New Developments in Science (4)**

Basic concepts in science and sciences methodology. An intensive study of one science area (e.g., biology, chemistry, physics, etc.) and a study of the new science curricula for the elementary school.

#### **SCS 506 Teaching Strategies for Elementary School Environmental Studies (4)**

Designed for elementary school teachers interested in environmental education. The content is interdisciplinary including the typical environmental concerns and focusing on air, water, soil, energy, living things, ecological systems, and conservation. Application to the classroom situation is stressed. A local nature center will provide appropriate field experiences. The teacher's role of assisting pupils in data collection and consequences and alternatives are emphasized.

# **SCHOOL OF ENGINEERING**

#### **Office of the Dean:**

Mohammed S. Ghausi, *Dean and John F. Dodge Professor of Engineering*  
Howard R. Witt, *Associate Dean*

#### **Professors:**

Benjamin F. Cheydleur, B.A., University of Wisconsin  
August J. Durelli, Ph.D., Sorbonne, *John F. Dodge Professor Emeritus*  
David H. Evans, Ph.D., Brown University  
Mohammed S. Ghausi, Ph.D., University of California (Berkeley),  
*John F. Dodge Professor*  
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  
Nan K. Loh, Ph.D., University of Waterloo  
Gilbert L. Wedekind, Ph.D., University of Illinois  
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  
Ronald R. Maurant, Ph.D., Ohio State University  
Dhiraj Pradhan, Ph.D., University of Iowa  
Tung H. Weng, Ph.D., University of Missouri

#### **Assistant Professors:**

Yau Yan Hung, Ph.D., University of Illinois  
Michael Shur, Ph.D., A.F. Ioffe Institute of Physics and Technology, Leningrad

#### **Visiting Assistant Professor:**

Bhushan L. Bhatt, Ph.D., Oakland University

#### **Adjunct Professors:**

Martin A. Erickson, M.M.E., Chrysler Institute of Engineering  
John G. Gievers, Ph.D., Technical University, Darmstadt  
Ralph M. Grant, Ph.D., Technical University of Netherlands  
Kenneth A. Meade, Sc.D. (Honorary), Eastern Michigan University

#### **Adjunct Assistant Professors:**

Susanne M. Gatchell, Ph.D., University of Michigan  
Josette Morel, Ph.D., Illinois Institute of Technology  
Ranjit K. Roy, Ph.D., University of Missouri

The School of Engineering offers work leading to the Master of Science degree in electrical and computer engineering, mechanical engineering, systems and industrial engineering, and computer and information science, and the Doctor of Philosophy degree in systems engineering.

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, two-phase flow phenomena, system simulation, human factors, circuits, communications and control, mechanical and electrical properties of materials, thin-film microelectronics,



and computer systems. Students have access to the various computer facilities of the School of Engineering as well as to the university computer, a Honeywell 68/DPS-1 MULTICS system. These facilities are complemented by fully equipped and staffed electronics and machine shops.

## THE DOCTOR OF PHILOSOPHY IN ENGINEERING

Students may earn the Doctor of Philosophy (Ph.D.) degree in systems engineering. The goal of the doctoral program is to train engineering practitioners who have 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 conservation and production systems, fluid and thermal systems, resource management, transportation systems, and telecommunication and information processing systems. Oakland's School of Engineering is concentrating its Ph.D.-level efforts in this area. 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 as well as an academic career. Students can begin doctoral study on a part-time basis, availing themselves of late afternoon or evening courses while working full-time in local industry. However, later phases of study and research will require full-time devotion to the program, and the student must fulfill a residency requirement.

### Admission to Course

The Ph.D. program is designed for students with academic backgrounds in engineering, mathematics, or the physical sciences. Superior performance 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 achievements and promise. Foreign applicants must submit scores from the Graduate Record Examination Aptitude and Advanced Engineering Tests.

### Entrance Classification

All students who have been accepted for admission to doctoral study are classified as regular Ph.D. students and are subject to all of the general degree requirements listed below. Although students who have compiled extraordinary undergraduate academic records may be admitted directly as doctoral students, normally a minimal admission requirement is possession of an appropriate master's degree. Applicants with a master's degree who do not intend to pursue a degree program but wish merely to attend one or two courses are classified as post-master's students. Credits earned as a post-master's student are not applicable toward an Oakland degree unless the student subsequently transfers to regular status and the courses are accepted as part of the Ph.D. program.

### Transfer from Post-Master's to Regular Status

Post-master's students who have demonstrated outstanding achievement and who later wish to become degree-seeking students may request transfer of status. Students desiring to transfer status must complete a Change of Status/Curriculum form, available from the Office of Graduate Study, and submit appropriate transcripts and letters of reference if these were not included with the original application for admission. When considering changes of status, the engineering faculty will weigh most heavily the applicant's performance level at Oakland.

## Advisory Committees

A student admitted to the Ph.D. program will be assigned an interim adviser to assist in initial formulation of a program of study. After completing 12 credits toward the Ph.D. at Oakland, the student must form an advisory committee to direct the progress of the program. The interim adviser is not necessarily a member of the student's doctoral advisory committee. The committee is composed of four Oakland faculty members, including three faculty members nominated by the student, one designated chairperson and one a member of a department outside the School of Engineering, and one member appointed by the dean of engineering. Upon recommendation of the advisory committee, following successful completion of the qualifying examination, one member from outside the university community may either be added to the committee or replace a member for the thesis proposal and review.

The entire committee must have approval of the dean of engineering and the dean of graduate study.

The courses required of a particular student for the Ph.D. degree are specified by the advisory committee, subject only to the minimal requirements listed in the following section. Incoming students seeking the degree are urged to discuss their proposed concentration area with faculty members in that area, with a view toward formation of an advisory committee. Students are urged to form the committee as soon as possible to receive maximum benefit from its counsel. The student must formulate a Plan of Study and secure the approval of the doctoral advisory committee. The plan spells out the courses accepted in the Ph.D. program and the course work the student must complete for the degree. An advisory committee is not obligated to accept toward the degree any credits earned prior to its formation.

## Examinations

Each Ph.D. student must pass three special examinations administered by the advisory committee: preliminary exam, thesis proposal, and thesis defense. Examinations must be scheduled at least three weeks in advance through forms from the Office of the Dean of Engineering. The purpose and scope of the several examinations are described in the following section.

## Doctoral Degree Requirements

The basic requirement for the Ph.D. is completion of a unified program of formal course work and independent research, directed and approved by the advisory committee. While the courses and examinations for a particular student are specified by the advisory committee, all programs are subject to the following general regulations.

**Residence:** Writing a doctoral thesis requires full commitment to research. Such research cannot effectively be pursued in an environment which places that research in a secondary role. Traditionally, the doctoral student has been required to be a full-time student for the one or two years of his/her active thesis research. When possible, the doctoral student should arrange such a period of residency. Although this represents the ideal, there are alternatives for creating a supportive environment for doctoral research, including:

1. A two-semester campus residency while the student pursues doctoral research full-time.
2. If the student's employer and faculty advisory committee agree that the thesis research will constitute a major portion of the student's job assignment while he/she is actively pursuing thesis research, then such an agreement constitutes a full commitment to research. The doctoral advisory committee will periodically review the student's research progress and determine the effectiveness of the



work/study agreement. If the student and his/her employer are unable to live up to the terms of the agreement, the advisory committee can declare the residency requirements to be unfulfilled.

The student must obtain an agreement from the advisory committee at the time of the thesis proposal to pursue any alternative to a two-semester residency requirement.

**Course Work Credits:** At least 56 credits must be earned for course work beyond the bachelor's degree (exclusive of thesis). The normal full-time load is 12 credits per semester. Students who have earned 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 the student's prior work and allow Ph.D. credits for courses relevant to the proposed Ph.D. course of study. All candidates must complete at least 16 credits exclusive of these at Oakland University.

**Preliminary Examination:** Before earning more than 12 credits toward the Ph.D., the Ph.D. student must pass a preliminary examination administered by the advisory committee. The examination has both oral and written components and covers basic engineering concepts as well as assessing analytical reasoning facility essential to Ph.D. research. The advisory committee may ask a student to repeat the examination in a subsequent semester if his/her performance is deemed inadequate. No additional repeat examinations are permitted.

**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 his/her field of endeavor. A draft of the thesis must be submitted to the advisory committee for review, modification, and approval before the final copy of the thesis is prepared and approved.

### Thesis Proposal Review

As soon as a candidate and the advisory committee chairperson agree on a specific thesis research topic, the candidate must prepare a written thesis proposal. This document contains a formulation of the problem, the background work leading to the formulation, and a plan for the subsequent research. The candidate must then orally present the proposal to his/her advisory committee and any other interested faculty, when the committee may question his/her preparedness to carry out the research.

### Thesis Research Credits

Students who have advisory committee approval of their thesis proposals and are conducting thesis research should register for EGR 709. At least 24 credits in EGR 709 are required of all doctoral candidates. However, merely amassing credits does not indicate satisfactory progress toward or completion of the thesis. These judgments are always made by the advisory committee. The thesis is judged completed upon successful completion of the final examination.

### Final Examination

Each Ph.D. candidate must satisfactorily defend the thesis in a final oral examination administered by the advisory committee. The examination is taken after the advisory committee certifies that the thesis is ready for final review. At the committee's option, one reexamination may be permitted if a candidate fails to pass the final examination.

The final draft of the thesis must conform with the regulations of the Office of the Dean of Graduate Study.

### Continuity of Program

Students have a seven-year time limit to complete all requirements for the Ph.D.

### Graduation

Students expecting to graduate in a given semester must file an application for degree card at the Office of the Registrar and pay the graduation service fee. Failure to do so on time will preclude graduation in that semester.

## REGULATIONS FOR MASTER'S DEGREE PROGRAMS IN ENGINEERING AND COMPUTER AND INFORMATION SCIENCE

### Admission to Course

The programs leading to the degree of Master of Science are designed to accommodate students with a wide variety of undergraduate backgrounds. A bachelor's degree in physics, mathematics, or a compatible engineering field is excellent preparation for electrical and computer engineering, mechanical engineering, and systems and industrial engineering, while a bachelor's degree in computer science, mathematics, or engineering is suitable for computer and information science. A degree in any other science field is also acceptable, but a student presenting such a degree should plan to spend additional time in residence to gain proficiency in the fundamentals necessary to their chosen major.

Admission to master's study is selective; applicants should have a GPA of 3.00 or better. Applicants should present academic transcripts and recommendations from two members of the undergraduate major department who are familiar with their accomplishments and promise. These recommendations form an important part of the admission credentials. Graduate Record Examination Aptitude Test scores are required of all foreign students and are encouraged for other applicants whose credentials do not meet regular admission criteria. Additional entrance requirements for the computer and information science program are listed on page 128.

### Entrance Classification

A graduate student is classified in one of three categories:

**Regular Status:** For students who meet normal entrance requirements and who are seeking the M.S. degree.

**Probationary Status:** For students whose credentials do not meet criteria for regular admission and who are seeking the M.S. degree; this category is not used to admit students who present substantially weak credentials for graduate study. Probationary status may be granted for one semester; the minimum requirement for continuation in the program is a GPA of 3.00 for the probationary semester.

**Special Status:** For applicants who merely wish to attend classes and do not intend to pursue a degree. To be admitted to special status, students must provide evidence of technical competence and must obtain approval from the Office of the Dean of Engineering. Credits earned as a special student do not apply toward the M.S. from Oakland University unless the student subsequently transfers to regular status and the courses are accepted as part of the M.S. program.

### Transfer from Special to Regular Status

Students desiring to transfer to regular status must complete a Change of Status/Curriculum form, available from the Office of Graduate Study, and submit appropriate transcripts and letters of reference if these were not included with the original application for admission. When considering changes of status, the engineering faculty will weigh heavily the applicant's performance at Oakland. A 3.00 cumulative average in Oakland graduate courses is a minimal requirement.

### Master's Adviser

The progress of each regular student toward the M.S. degree is directed by his/her master's adviser, who is a School of Engineering faculty member nominated



by the student and approved by the dean of engineering. Each regular student must select an adviser during the first semester of enrollment. Incoming students seeking the degree are urged to discuss their proposed concentration area with faculty members in that area, with a view toward selecting an adviser later in the semester. In order to receive the maximum benefit of counseling, students are urged not to delay the selection of an adviser.

### Course Credit

Normally, graduate credit is awarded only for courses numbered 500 or higher. However, up to 4 credits of senior-level courses in the major can be approved for graduate credit by the master's adviser. With the added approval of the engineering graduate committee, an additional 4 credits of senior-level courses can also be counted toward the required 32 credits.

### Transfer Credits

A student may request up to 12 transfer credits for work done at another institution. A petition endorsed by the master's adviser 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, the candidate is responsible for demonstrating that the work done is relevant and complementary to the Oakland program.

### Work Load and Scheduling

Full-time students normally register for up to 12 credits per semester, although additional credits may be taken with the approval of the dean of engineering. Students holding half-time assistantships in the School of Engineering normally register for 8 credits, but they may register for an additional course with permission of their assistantship supervisor.

For the convenience of part-time students employed in industry, courses are arranged in late afternoon and early evening. However, these students should be aware of the very real demands of graduate studies and should keep outside work commitments and their academic load in balance.

### Review of Progress

In the semester following completion of 16 graduate credits, each student's progress will be reviewed by the Office of the Dean of Engineering. Students whose cumulative grade point averages at this point are below 3.00 will be terminated from the program except by special petition.

### Continuity of Program

Credits which are more than six years old may not be counted toward the M.S. degree.

### Graduation

Students expecting to graduate in a given semester must file an application for degree card at the Office of the Registrar and have paid the graduation service fee. Failure to do so on time will preclude graduation in that semester.

## REQUIREMENTS FOR THE M.S. IN ENGINEERING PROGRAMS

Students may earn the Master of Science in electrical and computer engineering, mechanical engineering, and systems and industrial engineering. Programs do not require a thesis, although a design project is optional. The object of the M.S. program is to provide participants with broad training in an area of engineering rather than a narrow apprenticeship in a specific research area.

- To fulfill the requirements for a M.S. degree in engineering, a student must:
1. complete at least 32 credits of graduate-level work, of which at least 24 credits must be in engineering courses.
  2. earn a cumulative grade point average of at least 3.00 in courses applied toward the degree.
  3. complete the requirements specified for the program in electrical and computer engineering, mechanical engineering, or systems and industrial engineering. As part of the requirements the student must complete two-course sequences in at least two of the depth areas appropriate to the program.
  4. complete at least 4 credits in mathematics as follows: mechanical engineering—MTH 531 or 532. Electrical and computer engineering and systems and industrial engineering—4 credits chosen from APM 531, MTH 531-532, and MTH 555-556.

### Electrical and Computer Engineering Requirements

**Depth Area:** Minimum of two two-course sequences

|                  |         |                                        |
|------------------|---------|----------------------------------------|
| Networks         | EGR 520 | Signal and System Representation       |
|                  | EGR 625 | Integrated Active Network Design       |
| Controls         | EGR 520 | Signal and System Representation       |
|                  | EGR 622 | Optimal Control I                      |
| Devices          | EGR 573 | Solid-State Electronic Devices         |
|                  | EGR 672 | Field-Effect Devices                   |
| Digital Systems  | EGR 570 | Microprocessors and Microcomputers     |
|                  | EGR 670 | Digital Signal Processing              |
| Microprocessors  | EGR 570 | Microprocessors and Microcomputers     |
|                  | EGR 571 | Microprocessor Systems Applications    |
| Random Processes | EGR 530 | Engineering Probability and Statistics |
|                  | EGR 633 | Noise Analysis and Signal Detection    |

**Mathematics:** At least 4 credits but not more than 8 credits from the approved list of mathematics courses.

**Electives:** Remaining courses must be chosen from the following approved electives (24 credits in the program must be in EGR courses): EGR 505, 555, 557, 571, 575, 580, 585, 586, 609, 705, 723, 725, 726, 740, 750, 773, 783; CIS 530, 551; PHY 562, 574, 673.

### Mechanical Engineering Requirements

**Depth Area:** Minimum of two two-course sequences

|                              |          |                                 |
|------------------------------|----------|---------------------------------|
| Heat Transfer                | EGR 548* | Thermal Energy Transport        |
|                              | EGR 652  | Thermal Transport Phenomena     |
| Fluids                       | EGR 549* | Fluid Transport                 |
|                              | EGR 651  | Convective Transport Phenomena  |
| Solid Mechanics              | EGR 561* | Advanced Mechanics of Materials |
|                              | EGR 663  | Applied Elasticity              |
| Experimental Stress Analysis | EGR 565  | Experimental Stress Analysis I  |
|                              | EGR 665  | Experimental Stress Analysis II |

**Required Course:** EGR 516\* Dynamics or EGR 553\* Fluid and Thermal Systems

**Mathematics:** MTH 531 or MTH 532 Mathematical Methods in Engineering I or II

**Electives:** Remaining courses must be taken from the following approved electives (24 credits in the program must be in EGR courses): EGR 505, 520, 562\*, 564, 580, 609, 610, 622, 705; courses in engineering, mathematics, physics, and chemistry appropriate to the student's plan of study, but with prior approval of the faculty adviser.

\*These courses are double-listed as advanced undergraduate and graduate courses.



Students who have completed these as 400-level courses may use them to meet depth requirements, but may not count them toward the 32-credit requirement of graduate-level work.

### Systems and Industrial Engineering Requirements

**Depth Area:** Minimum of two two-course sequences

|                                                |         |                                                  |
|------------------------------------------------|---------|--------------------------------------------------|
| Control                                        | EGR 520 | Signal and System Representation                 |
|                                                | EGR 622 | Optimal Control I                                |
| Industrial Engineering/<br>Operations Research | EGR 531 | Industrial Engineering/Operations<br>Research I  |
|                                                | EGR 631 | Industrial Engineering/Operations<br>Research II |
| Digital Systems                                | EGR 570 | Microprocessors and Microcomputers               |
|                                                | EGR 670 | Digital Signal Processing                        |
| Random Processes                               | EGR 530 | Engineering Probability and Statistics           |
|                                                | EGR 633 | Noise Analysis and Signal Detection              |
| Mechanical Systems I                           | EGR 563 | Fluid and Thermal Systems                        |
| or                                             | EGR 548 | Thermal Energy Transport                         |
|                                                | EGR 549 | Fluid Transport                                  |
| Mechanical Systems II                          | EGR 516 | Dynamics                                         |
|                                                | EGR 564 | Vibrations                                       |

Only one of the mechanical systems depth areas may be applied toward the M.S. in systems and industrial engineering.

**Mathematics:** At least 4 credits and not more than 8 credits from the approved list of mathematics courses.

**Electives:** Remaining courses must be taken from the following list of approved electives (24 credits in the program must be in EGR courses): EGR 505, 571, 580, 585, 586, 609, 635, 705, 723, 732, 734, 735, 736.

### MASTER OF SCIENCE IN COMPUTER AND INFORMATION SCIENCE

The Master of Science program in computer and information science is designed to prepare students for significant computer-related careers in business and industry and simultaneously for further graduate study. To be accepted into the M.S. degree program in computer and information science, an entering student must have a bachelor's degree from an accredited institution. Preference will be given to students with majors in CIS, mathematics, and engineering. In addition, prospective students must:

1. demonstrate familiarity with assembly language programming and proficiency in at least one high-level programming language.
2. have received credit for college-level courses in data structures and machine organization. Students not having formal course work in these areas but who feel they have gained sufficient background in them through work or self-study may request a competency examination.
3. have received credit for at least two years of college mathematics including calculus and linear algebra. Course work in discrete mathematics and statistics is beneficial.

Students not meeting these requirements, but who have strong academic or professional records, may be required to complete appropriate undergraduate work before being admitted to the program.

### Requirements for the M.S. in Computer and Information Science

To fulfill the requirements for the M.S. in computer and information science, a student must:

1. successfully complete 32 credits of approved graduate-level work
2. complete the following 12 credits of CIS graduate core courses:
 

|         |                                                      |
|---------|------------------------------------------------------|
| CIS 530 | Data Structures                                      |
| or {    | CIS 540 Run-Time Structures in Programming Languages |
|         | CIS 551 Computer Organization and Architecture       |
|         | CIS 550 Operating Systems                            |
3. complete APM 563, Mathematical Methods in Computer Science I.
4. complete 16 credits of approved graduate electives, with at least 12 credits in CIS or computer engineering courses. Typical electives are: CIS 505, 531, 541, 555, 557, 560, 570, 571, 580, 581, 583, 588, 609; MTH 516; EGR 585, 670. Up to 8 credits of project courses can be used toward satisfying degree requirements. Either CIS 540 or 551 may be taken as an elective if not taken as part of the core. Other graduate electives that relate to the student's individual interests may be approved by petition.
5. complete at least one of the following course sequences: CIS 530-531, CIS 530-560, CIS 580-581, CIS 540-541, CIS 550-551, CIS 570-571.
6. have a cumulative grade point average of at least 3.00 in courses applied toward the degree.

### Engineering Course Offerings

#### EGR 500 Graduate Seminar (1)

Lectures and discussions conducted by 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 516 Dynamics (4)

Matrix-tensor methods of analysis of the motion of particles and rigid bodies. Energy and momentum methods applied to mechanical systems. Euler and Lagrange methods applied to forces and motion. An introduction to mechanical vibrating systems. Keplerian motion and kinematics.

#### 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 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 531 Industrial Engineering/Operations Research I (4)

Linear programming, the simplex method, duality, special linear programs; branch and bound, integer and 0-1 programming; nonlinear programming, quadratic programming, geometric programming, modular design; networks and network flows, dynamic programming.

#### 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 multidimensional 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 553 Fluid and Thermal Systems (4)**

Study of systems involving fluid and thermal phenomena. Emphasis on systematically applying fundamental integral, differential, and lumped modeling techniques to formulate theoretical descriptions of such systems for analysis, design, and optimization. Examples from energy conversion, transport processes, pollution control, and measurement problems.  
Prerequisite: Permission of instructor.

**EGR 555 Computer Networks (4)**

Identical with CIS 555.

**EGR 557 Fault-Tolerant Computing (4)**

Identical with CIS 557.

**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 noncircular 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 nonmetals—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 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 570 Microprocessors and Microcomputers (4)**

Introduction to microprocessors and microcomputers; the CPU on a chip; interfacing microprocessors with external systems; programming considerations; logic design with microcomputers; hands-on laboratory experience. Identical with CIS 570.

**EGR 571 Microprocessor Systems Applications (4)**

Design of microprocessor-based equipment and systems. Interfacing techniques. Serial asynchronous and synchronous communications methods. Direct memory access, A/D and D/A converters, peripheral interface devices, computer graphics. Project-oriented course. Identical with CIS 571.  
Prerequisite: EGR 570.

**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 nonequilibrium condition,  $p$ - $n$  junctions, and junction devices. Included are light-emitting diodes, IMPATT diodes, bipolar and junction field-effect transistors. Introduction to MOS devices and their applications in large-scale integration.  
Prerequisite: EGR 530.

**EGR 574 Integrated Electronics (4)**

Crystal growth—bulk and epitaxial techniques. Fabrication of  $p$ - $n$  junctions. Ion implantation. Integrated circuits technology. Semiconductor materials. Tunnel diodes, photodiodes, light-emitting diodes, semiconductor lasers, switching devices.  
Prerequisite: EGR 473 or 573.

**EGR 575 Integrated Electronics Laboratory (2 to 4)**

Experimental projects on solid-state materials and devices. Experiments on material preparation, characterization, fabrication, and parameter measurements of devices.  
Prerequisite: Permission of instructor.

**EGR 580 Applied Numerical Methods (4)**

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 585 Switching Theory (4)**

Algebraic symbolization for nets of binary switched circuits. Computation of nonredundant 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, microcontrol, and input/output and network interfacing.  
Prerequisite: EGR 585 or permission of instructor.

**EGR 609 Engineering Design Project (4 to 12)**

Independent design effort by the student, who should develop theoretical studies first and subsequently design appropriate hardware. Laboratory and computer studies are included. Emphasis on completing the project properly within time limits and on preparation of final report.  
Prerequisite: Permission of instructor.

**EGR 610 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 elastoplasticity, and linear viscoelasticity.

**EGR 622 Optimal Control (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 625 Integrated Active Network Design (4)**

Introduction to network synthesis, basic concepts in synthesis with emphasis on filter theory and design, active RC filter design, multiple loop feedback design, sensitivity considerations.  
Prerequisite: EGR 520.

**EGR 631 Industrial Engineering/Operations Research II (4)**

Stochastic systems; waiting-line models and queueing theory, decision trees, and decisions under uncertainty. Markov chains, dynamic programming under uncertainty, simulation of stochastic systems.

**EGR 633 Noise Analysis and Signal Detection (4)**

Study of systems subjected to noisy inputs and 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 635 Human Factors Engineering (4)**

Consideration of behavioral characteristics which affect performance at the man/machine interface. Man's sensory, information processing, and motor capabilities are studied in a systems context. Techniques for collecting and analyzing human performance data are included.

**EGR 651 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



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the conservation equations. Convective transfer of momentum, mass, and charge. Introduction to turbulent transport processes.  
Prerequisite: Permission of instructor.

**EGR 652 Thermal Transport Phenomena (4)**

Development of the fundamental continuum equation expressing energy conservation. Radiation and conduction heat transfer; extended surfaces; multidimensional 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 663 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 665 Experimental Stress Analysis II (4)**

Modern contemporary optical methods in experimental stress analysis, including three-dimensional photoelasticity, speckle methods, correlation methods, x-ray and optical diffraction methods. With laboratory.

**EGR 670 Digital Signal Processing (4)**

Analysis of discrete signals and systems. Introduction to digital filters including discrete Fourier and Fast Fourier transformation, Z-transform, finite and infinite impulse response filters, application of digital filters.

**EGR 672 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 705 Special Topics (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 709 Doctoral Thesis Research (4 to 12)**

Directed research toward the thesis.

**EGR 723 Optimal 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. Gaussian Markov random processes; optimal filtering, prediction, and smoothing; optimal feedback control for linear systems with additive noise, Kalman filtering, the separation principle.  
Prerequisite: EGR 622.

**EGR 725 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 726 High-Frequency Electronics (4)**

Topics in 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 732 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. Includes both established methods and results of current research.  
Prerequisite: EGR 530 or equivalent.

**EGR 734 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 735 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 736 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 740 Electromagnetic Signals and Waves (4)**

Electromagnetic theory with applications such as radiation, wave propagation diffraction, resonant cavities, and guided waves.  
Prerequisite: EGR 520.

**EGR 750 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 773 Microwave Solid-State Devices (4)**

General properties of negative-resistance amplifiers and oscillators. Microwave bipolar and FET transistors, Gunn amplifiers; generators and logic elements; IMPATT and TRAPATT devices, microwave integrated circuits. Parametric amplifiers, harmonic generators, mixers and detectors, microwave switches, attenuators, and limiters.  
Prerequisite: EGR 573.

**EGR 783 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, biomedical and pictorial data.  
Prerequisite: EGR 530 and working knowledge of FORTRAN or ALGOL.

## Computer and Information Science Course Offerings

**CIS 505 Special Topics in CIS (4)**

Courses taught by regular faculty or by visiting experts to investigate the latest trends, developments, and research in some area of computer science.

**CIS 530 Data Structures (4)**

Theory and advanced applications of data structures. Trees, including general and binary; threaded trees; tree traversal; trees and grammar; trees and sorting. Graphs: paths and cycles in diagraphs; graphs of programs; applications of graphs in scheduling, networks and information retrieval. File organization: relations, indexed files, hashed files. Applications in searching, sorting, and memory management.



**CIS 531 Design and Analysis of Algorithms (4)**

Top-down structured programming and program correctness; a survey of algorithm design methods including sobgoals, hillclimbing, working backward, heuristics, backtrack programming, branch and bound, and recursion. Applications to current computer science algorithms such as sorting, searching, arithmetic and logical expressions, paging, and parallelism.

**CIS 540 Run-Time Structures in Programming Languages (4)**

Language processors, data storage structures, operations in programming languages, sequence control structures, data control structures, storage management, operating environment and block structures, syntax and translation.

**CIS 541 Compiler Design (4)**

The student is directed through the development of a compiler for a simple language. Major items include overview of the formal definition of grammars and languages, scanning input strings from a source language, parsing via bottom-up and top-down methods, precedence grammars, internal forms for source programs, semantic routines, and symbol tables organization. The compiler is constructed in a high-level language.

**CIS 550 Operating Systems (4)**

Introduction to the concepts, technology, and implementation of operating systems. Provides a working knowledge of supervisory programs, utility programs, file management, and concurrent servicing via a series of creative programming assignments; includes some mathematical modeling of the internal nets and flows within global systems. Typical topics: operating system services, job and task management, data management, symbol binding, macros and I/O supervision sharing in dynamically allocated systems, deadlock problems, interactive language services, bootstrapping operating systems for mini- and micro-computers.

**CIS 551 Computer Organization and Architecture (4)**

Interchangeability between software and hardware; automatic parsing stacking and list structure management; near-term future structures for miniprocessors and networks; Boolean models for sequential control in processor systems; exercises in microprogramming of the CPU and input/output flows.

**CIS 555 Computer Networks (4)**

Resource-sharing principles; communications and networks; packet switching; the ARPANET; network performance using principles of queueing theory; network design principles; capacity assignment; flow assignment; topological design. Other related topics.

**CIS 557 Fault-Tolerant Computing (4)**

General introduction; fault-models; test generation techniques; logic simulation; redundancy techniques; error-correcting codes; software reliability; testing tools and measurement; proving program correctness; case study of fault-tolerant architectures.

**CIS 560 Database Systems (4)**

A study of the design and implementation of relational, hierarchical, and network database systems. Query/update data languages; conceptual data models; physical storage methods; database system architecture. Database security and integrity. Includes the study of existing systems such as SEQUEL, QUERY-BY-EXAMPLE, DSL, ALPHA, IMS, and CODASYL DBTG network systems.

**CIS 570 Microprocessors and Microcomputers (4)**

Identical with EGR 570.

**CIS 571 Microprocessor Systems Applications (4)**

Identical with EGR 571.

Prerequisite: CIS 570.

**CIS 580 Applied Numerical Methods: Approximations (4)**

Application of various numerical methods in engineering and science, with emphasis on such aspects as suitability of the algorithm to the problem programming techniques, software library documentation, and software testing and evaluation. Includes introduction to linear systems; nonlinear equations; methods of approximation applied to least squares, splines, quadrature, ordinary and partial differential equations.

**CIS 581 Applied Numerical Methods: Matrix Methods (4)**

A continuation of CIS 580. Includes systems of linear and nonlinear equations, eigenvalue problems, optimization methods, statistical methods.

**CIS 583 Pattern Recognition (4)**

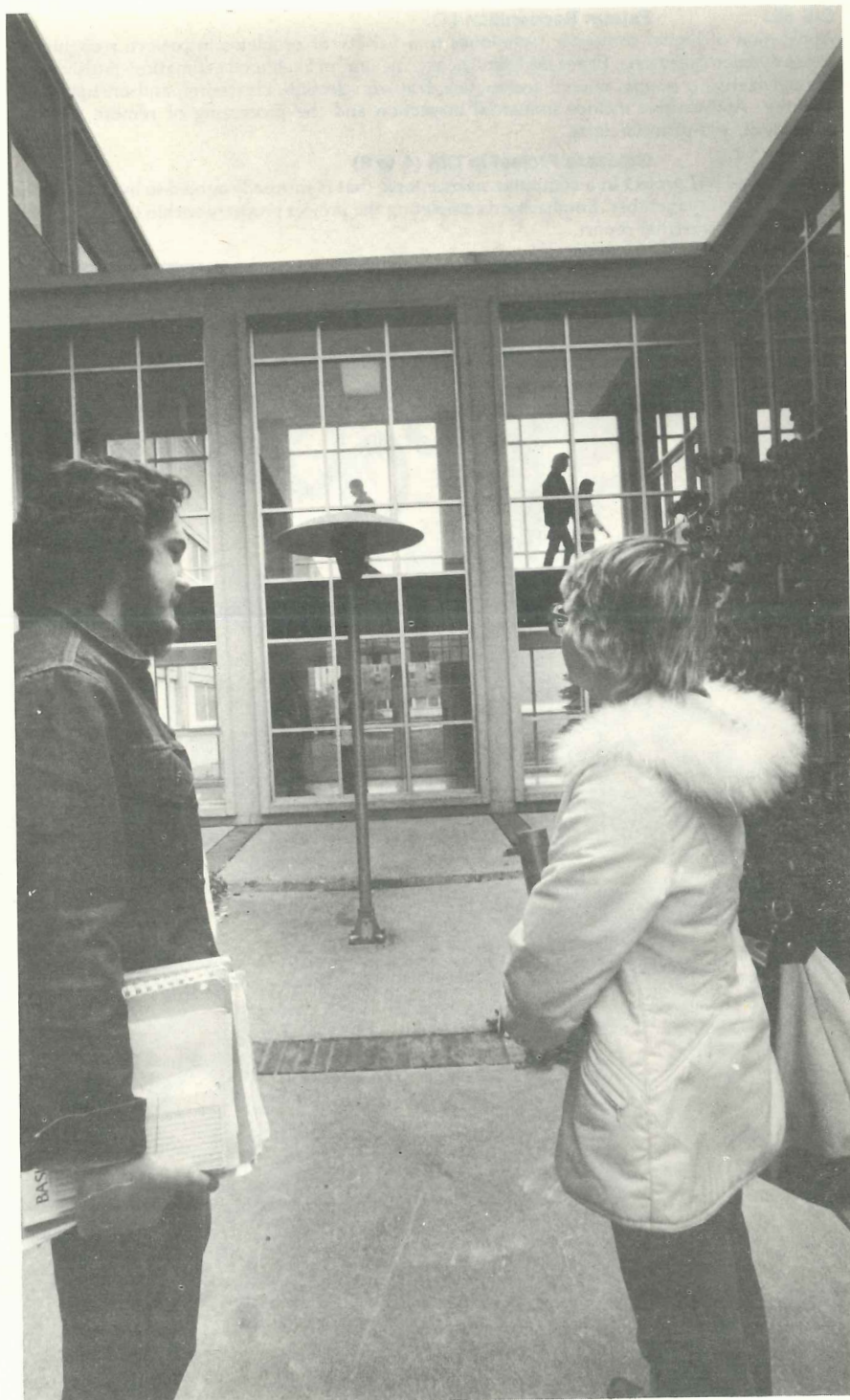
Application of digital computer techniques to a variety of problems in pattern recognition; linear decision functions, Bayes decision theory, maximum likelihood estimation, multivariate normal features, nonparametric techniques, feature selection, clustering, and unsupervised learning. Applications include industrial inspection and the processing of remote sensing, biomedical, and pictorial data.

**CIS 609 Graduate Project in CIS (4 to 8)**

A graduate-level project in a computer science topic that is mutually agreed to by the student and a CIS faculty member. Emphasis on completing the project properly within time limits and on preparing the final report.







# CENTER FOR HEALTH SCIENCES

## MEDICAL PHYSICS PROGRAM

### Director:

Abraham R. Liboff, *Physics*, Ph.D., New York University

### Assistant Director:

Michael Chopp, *Physics and Health Sciences*, Ph.D., New York University

### Clinical Professors:

Howard J. Dworkin, M.D., Albany Medical College

Harold D. Portnoy, M.D., Wayne State University

### Clinical Assistant Professor:

Ronald A. Rocchio, M.S., University of Pittsburgh

## MASTER OF SCIENCE IN MEDICAL PHYSICS

The program leading to the degree of Master of Science in medical physics consists of lecture and laboratory courses, in-hospital clinical training, research, seminar participation, and a thesis. Graduates will be prepared to work as medical physicists in hospitals, to take the American College of Radiology (ACR) Certification Examination in medical physics, or to work toward the degree of Doctor of Philosophy in medical physics.

The candidate will receive strong preparation both in pure physics and in the medical applications of physics and will gain experience in local hospitals as part of the degree requirements. The courses include an introduction to the physics of diagnostic and therapeutic radiology, nuclear medicine, and radiation biophysics. The average candidate entering in the fall semester usually requires two academic years in addition to a spring and summer session to complete the degree. The clinical course work will satisfy one year of the hospital residency requirement for ACR certification.

## ADMISSION TO COURSE

An applicant for admission to the Master of Science in medical physics program should have (a) a bachelor's degree from an accredited institution, (b) a strong background in physics and mathematics, and (c) course work in physiology and anatomy. The student may meet entrance requirements (b) and (c) by satisfactorily completing either Modern Physics (PHY 371) or Quantum Mechanics (PHY 472) and Physiology/Anatomy (BIO 221-222) by the end of the first year.

## DEGREE REQUIREMENTS

1. Successful completion of 44 credits of graduate course work distributed as follows:

|         |                                     |
|---------|-------------------------------------|
| PHY 417 | Advanced Laboratory (2)             |
| PHY 525 | Radiation Biophysics (4)            |
| PHY 542 | Advanced Electronics (4)            |
| PHY 548 | Advanced Electronics Laboratory (2) |
| PHY 552 | Theoretical Physics (4)             |
| PHY 573 | Nuclear Physics (4)                 |
| PHY 600 | Graduate Seminar (2)                |



|         |                                                   |
|---------|---------------------------------------------------|
| MPH 441 | Physics of Radiology I (2)                        |
| MPH 442 | Physics of Radiology II (2)                       |
| MPH 443 | Physics of Nuclear Medicine I (2)                 |
| MPH 541 | Physics of Non-Ionizing Diagnostic Techniques (4) |
| MPH 605 | Special Topics (4)                                |
| MPH 651 | Physics of Radiotherapy (4)                       |
| MPH 690 | Research (4)                                      |

## 2. Master's thesis.

By petition to the department, a maximum of 12 credits may be waived from the master's degree requirement if the student has successfully completed equivalent course work as an undergraduate.

## RESEARCH FIELDS

Medical physics research in the Department of Physics involves several areas: the hydrodynamics of the cerebrospinal fluid and intracranial pressure monitoring, magnetocardiography and magnetic measurements of cardiac bloodflow, radiation dosimetry and radiation protection in diagnostic radiology and radiotherapy, laser light scattering and optical diffraction of cataracts, toxins and other biological materials, and electrically mediated growth mechanisms in living systems. The department has access to various research resources in local hospitals, including CT-scanning, linear accelerators, ultrasonic diagnostic devices, and computerized treatment planning.

## Course Descriptions

Courses labeled PHY under Degree Requirements are described in the Department of Physics section, page 66.

### MPH 441 Physics of Radiology I (2)

Physical principles underlying the practice of radiology. Offered fall only.

Prerequisite: Department approval and PHY 371, 381, and either PHY 247 or 347.

### MPH 442 Physics of Radiology II (2)

A continuation of MPH 441. Offered winter only.

Prerequisite: MPH 441.

### MPH 443 Physics of Nuclear Medicine I (2)

Physical principles of diagnostic and therapeutic applications of radionuclides. Offered fall only.

Prerequisite: Approval of department, PHY 371, 381, and either PHY 247 or 347.

### MPH 444 Physics of Nuclear Medicine II (2)

A continuation of MPH 443. Offered winter only.

Prerequisite: MPH 443.

### MPH 541 Physics of Non-Ionizing Diagnostic Techniques (4)

The clinical applications and biological effects of electromagnetism and heat. Topics include ultrasound, thermography, EEG, ECG, evoked potentials, and lasers in medicine.

Prerequisite: PHY 351 and 371 or equivalent.

### MPH 605 Special Topics (2 or 4)

Current topics of special interest in medical physics. May be taken more than once.

Prerequisite: PHY 351 and permission of instructor.

### MPH 651 Physics of Radiotherapy (4)

Design and calibration of high-energy accelerators and teletherapy machines: cyclotrons, betatrons, linear accelerators, and cobalt and cesium units. External beam treatment planning by various modalities: charged particle beams, high energy x-ray and  $\gamma$ -ray beams. Design of a therapeutic prescription through analysis of tomographs, transmission measurements for inhomogeneities, wedges, specification of bolusing, alignment procedures, etc. Multiple field and rotation planning for cobalt 60 linear accelerator and high energy electron treatment. *In-vivo* dosimetry and internal treatment planning: identification and localization of radioactive seeds and needles, computer reconstruction of their location, and computation of dose distributions.

Prerequisite: MPH 441, 442, 443, or permission of instructor.

### MPH 690 Research (2, 4, 6, or 8)

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