1968

Bulletin - Western Michigan University: The Graduate Catalog 1968-1969

Western Michigan University

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School of Graduate Studies
Western Michigan University

1968
1969
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CALENDAR OF EVENTS

Spring, 1968

Final Registration ........................................ April 27, 1968
Classes Begin ................................................. April 29, 1968
Final Day to Add Classes ................................. May 1, 1968
Final Day to Drop Classes ................................. May 10, 1968
Applications for Admission to Graduate School
  Due for the Summer Session ......................... May 15, 1968
Diploma Applications Due for August Commencement : May 17, 1968
Memorial Day Recess ......................................... May 30, 1968
Applications for Admission to Graduate School
  Due for the Fall Semester ........................ June 15, 1968
Applications Due for July Candidacy Board Meetings : June 17, 1968
Session Ends .................................................. June 19, 1968
Approved Theses, Projects and Dissertations Due in
  Graduate Office for Summer Commencement ........ August 2, 1968

Summer, 1968

Final Registration ........................................ June 25, 1968
Classes Begin ................................................. June 27, 1968
Final Day to Add Classes ................................. June 29, 1968
Independence Day Recess .................................. July 4, 1968
Final Day to Drop Classes ................................. July 12, 1968
Approved Theses, Projects and Dissertations Due in
  Graduate Office for Summer Commencement ........ August 2, 1968
Applications Due for September Candidacy
  Board Meetings ............................................. August 12, 1968
Session Ends .................................................. August 16, 1968
Commencement ............................................... August 16, 1968

Fall, 1968

Final Registration ........................................ September 3, 1968
Classes Begin ............................................... September 4, 1968
Final Day to Add Classes ................................. See Fall Class Schedule
Diploma Applications Due for December
  Commencement ............................................... September 21, 1968
Final Day to Drop Classes ................................. See Fall Class Schedule
Applications for Admission to Graduate School
  Due for Winter Semester ............................... November 1, 1968
Thanksgiving Day Recess Begins .......................... November 27, 1968
Classes Resume .............................................. December 2, 1968
Approved Theses, Projects and Dissertations Due in
  Graduate Office for Fall Commencement ............... December 7, 1968
Applications Due for January Candidacy
  Board Meetings ............................................. December 16, 1968
Semester Ends ................................................ December 21, 1968
Commencement ............................................... December 21, 1968
Winter, 1969

Final Registration ........................................ January 4, 1968
Classes Begin ............................................. January 6, 1968
Final Day to Add Classes .................. See Winter Class Schedule
Diploma Applications Due for
  April Commencement .................................. January 18, 1969
Final Day to Drop Classes .................. See Winter Class Schedule
Applications for Admission to Graduate School
  Due for Spring Session .................... March 15, 1969
Approved Theses, Projects and Dissertations Due in
  Graduate Office for Winter Commencement .... April 5, 1969
Applications Due for May Candidacy
  Board Meetings .................................. April 14, 1969
Semester Ends ........................................ April 19, 1969
Commencement ........................................ April 19, 1969

Spring, 1969

Final Registration ........................................ April 26, 1969
Classes Begin ............................................. April 28, 1969
Final Day to Add Classes .................. See Spring Class Schedule
Diploma Applications Due for
  August Commencement ............................. May 9, 1969
Applications for Admission to Graduate School
  Due for the Summer Session ................ May 15, 1969
Final Day to Drop Classes .................. See Spring Class Schedule
Memorial Day Recess ................................ May 30, 1969
Applications for Admission to Graduate School
  Due for the Fall Semester ................ June 15, 1969
Applications Due for July Candidacy
  Board Meetings ................................ June 16, 1969
Spring Session Ends ................................. June 18, 1969
Approved Theses, Projects and Dissertations Due in
  Graduate Office for Summer Commencement .... August 1, 1969

Summer, 1969

Final Registration ........................................ June 23, 1969
Classes Begin ............................................. June 25, 1969
Final Day to Add Classes .................. See Summer Class Schedule
Independence Day Recess ................................ July 4, 1969
Final Day to Drop Classes .................. See Summer Class Schedule
Approved Theses, Projects and Dissertations Due in
  Graduate Office for Summer Commencement .... August 1, 1969
Candidacy Board Meetings .......................... August 11, 1969
Summer Session Ends .............................. August 15, 1969
Commencement ........................................ August 15, 1969
Board of Trustees

Mildred Swanson Johnson, Muskegon  
Term Expires: December 31, 1968

Robert D. Caine, Hickory Corners  
Term Expires: December 31, 1968

Fred W. Adams, Grosse Pointe  
Term Expires: December 31, 1970

Charles H. Ludlow, Kalamazoo  
Term Expires: December 31, 1970

Dorothy Upjohn Dalton, Kalamazoo  
Term Expires: December 31, 1972

John R. Dykema, Grosse Pointe Farms  
Term Expires: December 31, 1972

Dr. Julius Franks, Jr., Grand Rapids  
Term Expires: December 31, 1974

Philip N. Watterson, Plainwell  
Term Expires: December 31, 1974

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John J. Pruis, Secretary
Robert B. Wetnight, Treasurer
Administration

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Robert B. Wetnight, M.B.A., C.P.A., Vice President for Finance
John J. Pruis, Ph.D., Vice President for Administration
Paul L. Griffeth, Ph.D., Vice President for Student Services
George G. Mallinson, Ph.D., Dean, School of Graduate Studies
Leo C. Stine, Ph.D., Associate Dean, School of Graduate Studies
Sid Dykstra, Ph.D., Assistant Dean, School of Graduate Studies

GRADUATE STUDIES COUNCIL, 1967-68

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Joseph Eisenbach, Ed.D., Department of Special Education
James Griggs, Ed.D., Dean, School of Education
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George Kohrman, Ed.D., Dean, School of Applied Arts and Sciences
Ralph D. Miller, Ph.D., Department of English
Nathan Nichols, Ph.D., Department of Physics
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Gerald Osborn, Ph.D., Dean, School of Liberal Arts and Sciences
Robert A. Palmatier, Ph.D., Department of Linguistics
Arnold Schneider, Ph.D., Dean, School of Business
Russell Seibert, Ph.D., Vice President, Academic Affairs
Robert Jack Smith, Ph.D., Department of Anthropology
An independent graduate program leading to the degree of Master of Arts in various curricula in the field of education was first offered at Western Michigan University in the fall semester of 1952-53. Today, twenty-nine education programs are offered at the Master of Arts level. Other programs leading to the Master of Arts degree are offered in Anthropology, Art, Biology, Chemistry, Earth Science, Economics, English, Geography, History, Home Economics, International and Area Studies, Language, Mathematics, Medieval Studies, Occupational Therapy, Physics, Political Science, Psychology, Sociology, and Speech Pathology and Audiology. The University offers the Master of Science degree in Accountancy, Librarianship, Paper Technology, and in Technology. The Master of Business Administration, Master of Music, and the Master of Occupational Therapy degrees are also offered.

A Specialist in Education degree is offered upon completion of a sixth-year program in Curriculum, Elementary School Administration, General School Administration, Guidance and Personnel Services, Secondary School Administration, Special Education and School Psychological Examiner. In addition, the University offers a Specialist degree in Business Education, English, History, Librarianship, Mathematics and Science Education.

Doctoral programs were initiated in four areas in 1966. Programs leading to the Doctor of Philosophy are offered in Chemistry, Sociology, and Science Education. A program leading to the Doctor of Education is offered in Educational Leadership.
SECTION I

Procedures and Regulations

Students entering the 1968 Summer session will be governed by this Bulletin of the School of Graduate Studies. For a list of the courses to be offered in each session and semester, refer to the schedule of classes available through the Registrar’s office.

ADMISSION—DATES

Admission to the School of Graduate Studies is required for permission to register for graduate classes on campus. Students planning to register for courses must apply for admission no later than:

- June 15 — Fall Semester
- November 1 — Winter Semester
- March 15 — Spring Session
- May 15 — Summer Session

Foreign students must apply for admission by April 15 for the fall semester and September 15 for the winter semester.

ADMISSION — APPLICATION FEE

All students applying for admission to the School of Graduate Studies except those whose fees are covered by special grants must send ten dollars with their applications.

ADMISSION—TYPES

1. Admission Without Reservation. This type of admission is awarded to the student who has an acceptable academic record, who has passed the required entrance examinations, and who has met the requirements of the program he plans to pursue. Acceptance to a definite program of study leading to a degree is dependent upon the approval of the unit in which the student plans to study. A point-hour ratio of at least 2.6 (A=4) for the credits completed in the last two years of undergraduate study is normally required for admission to a Master’s degree program. Students with an M.A. degree who wish to study in a second field for a second M.A. degree will ordinarily be admitted without reservation and without requiring an English examination. All other students must pass an English examination if they desire admission without reservation.
2. Tentative Admission Pending Receipt of the Bachelor's Degree. A student may receive tentative admission during the final semester or session of his undergraduate work if his academic record is satisfactory. Final admission will be determined when a transcript is submitted giving evidence of the Bachelor's degree. Such admission requires the completion of the English examination.

3. Dual Enrollment Admission. Senior students at Western Michigan University, who need no more than six hours to complete the requirements for the Bachelor's degree, may seek admission to the School of Graduate Studies for the semester prior to graduation. If admission is granted, the student may elect graduate courses, in addition to those required at the undergraduate level to complete the Bachelor's degree, to encompass a full academic program. Such dual enrollment is permitted for one semester only. Graduate credit thus earned may not be used to meet undergraduate requirements.

4. Admission to Non-Degree Status. Students who are eligible for admission to a degree program but who do not wish to pursue one or students whose point-hour ratio ranges from 2.30 to 2.59 in the final two years of undergraduate study may seek admission to non-degree status. Students admitted to non-degree status because of their low academic record may establish eligibility for admission to a degree program by securing no grades below "B" in any credits earned, by securing satisfactory scores on the Graduate Record Examination, and by passing the English entrance requirement. Students admitted on a non-degree basis are not permitted to include more than nine hours of credit earned as a non-degree student in a degree program. At least six of these nine credits must be taken on the campus of Western Michigan University. No assurance can be given non-degree students that the credits earned will be accepted in a degree program or used to meet the requirements for graduation.

5. Admission to the Professional Improvement Program. Students whose point-hour ratio is below 2.30 in the final two years of their undergraduate program are not eligible for admission to a degree program in the School of Graduate Studies. Such students cannot establish eligibility by studying on a non-degree basis. They may, however, secure admission to an organized Professional Improvement Program. Credits earned by students thus enrolled may be submitted for professional certification but will not lead to a degree.

6. Admission from a Non-Accredited College. A student who has received a Bachelor's degree from a non-accredited college, but who otherwise meets all the requirements for admission may be permitted to elect nine hours of graduate work with the stipulation that his admission will be reviewed after the completion of the nine hours. This admission will also require an English entrance examination.

7. Admission as Guest Matriculant. A student who is already enrolled in the Graduate School of another college or university may enroll for
courses at Western Michigan University as a Guest Matriculant. Application forms for such admission are available at the Graduate Office.

ADMISSION—PROCEDURES

Admission to the School of Graduate Studies is secured through the following steps:

1. Request the School of Graduate Studies to send an Application for Permission to Enroll. In your request indicate the degree level for which an application is desired: Master's, Specialist's, Doctor's.
2. Determine from Section I of the Bulletin the type of admission that is desired.
3. Select from Section II or III of the Bulletin the program of study that will be pursued.
4. Return the Application for Permission to Enroll before the published deadlines for admission.
5. Request the Registrar of all colleges previously attended, except Western Michigan University, to send transcripts of credits to the School of Graduate Studies, Western Michigan University. Transcripts are also due before the dates established as deadlines for admission.
6. Take the English entrance exam at the time specified by the School of Graduate Studies after applying for admission.
7. Check the calendar of events listed in the Bulletin for the registration days of each semester or session.

GRADING SYSTEM

Grades are indicated by letters, to each of which is assigned a certain value in honor points per hour of credit, as shown in the table below:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Significance</th>
<th>Honor Points Per Hour Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Above Average</td>
<td>4</td>
</tr>
<tr>
<td>B</td>
<td>Average</td>
<td>3</td>
</tr>
<tr>
<td>C</td>
<td>Below Average</td>
<td>2</td>
</tr>
<tr>
<td>E</td>
<td>Failure</td>
<td>0</td>
</tr>
<tr>
<td>I</td>
<td>Incomplete</td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>Withdrawn</td>
<td></td>
</tr>
<tr>
<td>CR</td>
<td>Credit</td>
<td></td>
</tr>
<tr>
<td>NC</td>
<td>No Credit</td>
<td></td>
</tr>
</tbody>
</table>
“E”—Failure—Students admitted to a degree program must secure three hours of “A” to offset each hour of “E” in their graduate record.

“I”—Incomplete—This is a temporary grade given for work which is passing in quality but lacking in quantity to meet course objectives. It is assigned when illness or necessary absence for other reasons satisfactory to the instructor prevent completion of the course requirements. A grade of “I” must be removed within one calendar year of the date it was assigned or a grade of “E” will be recorded for the courses. The one-year limitation does not apply to the thesis, project, or dissertation.

“W”—Withdrawn—A grade of “W” is given in a course when a student officially withdraws from that course or from the university before the mid-point of the semester or session.

“CR” or “NC”—Credit or No Credit—The pass-fail system will be used in Graduate Studies 712, Professional Field Experience. Accordingly, the permanent record will indicate “CR” when the course is passed and “NC” when the course is failed.

HONOR POINTS

The number of honor points earned in a course is the number of semester hours credit given by the course multiplied by the number of honor points per hour of credit corresponding to the letter grade received, as shown in the preceding table. For example, a grade of “B” in a four-hour course gives 4 x 3, or 12 honor points. Honor points are not involved in courses in which the pass-fail grading system is used.

RE-ENTRY

Ordinarily students who have once been admitted to the School of Graduate Studies need not file for re-entry except for the following reasons:

1. They have taken only extension classes.
2. They have not taken a class on campus within the past two calendar years.
3. They have completed a degree and received a diploma.

If re-entry is necessary, a student must notify the Graduate Office no later than two weeks before the beginning of the registration period in which the student intends to register.

GENERAL REQUIREMENTS FOR A MASTER’S DEGREE

1. Admission—(See Calendar of Events for application deadline.)
   a. Bachelor’s degree.
   b. Transcripts of all courses taken beyond high school.
c. An average grade of at least 2.6 (A=4) in the credits completed in the last two years of undergraduate work.

d. Approval of Application for Permission to Enroll.

e. Acceptance by a unit for a definite program of study.

f. Passing of the English entrance exam. A non-credit English course must be passed by students failing the English entrance exam.

2. Candidacy — (See Calendar of Events for application deadline.)

a. An application for Candidacy for the Master's degree is required during the semester in which the ninth hour of graduate credit at Western Michigan University is being completed. Candidacy boards meet the third week of each semester or session.

b. Deficiencies indicated at the time of admission must be removed within the first ten hours of graduate study.

c. An average grade of at least 3.0 (A=4) must be secured in all courses taken on campus. A 3.0 overall average is also required. Honor point deficiencies acquired in on-campus credits cannot be made up by credits earned at another university or by extension.

3. Graduation — (See Calendar of Events for application deadline.)

a. Diploma Application

A diploma application must be submitted no later than three months prior to Commencement.

b. Minimum Credit Hours

Completion of a program of study outlined by an adviser including a minimum of 30 hours of graduate credit. Only courses numbered 500 and above are acceptable for graduate credit. One-half of the credits earned must be in courses numbered 600 or above.

c. Residence Credit

Completion of a minimum of one full time session (5 semester hours minimum) or one semester (nine semester hours minimum or its equivalent) of residence on campus is required. Students who are employed on a twelve-month basis may register for four consecutive semesters of work on campus in lieu of the five or nine hour requirement. Of the total of 30 semester hours, a minimum of 18 hours must be taken on the campus of Western Michigan University except for those students who study in an approved residence center of Western Michigan University. Such students may offer a maximum of 20 hours of off-campus work. Work transferred from other institutions must be included within the 12 hours maximum off-campus work permitted or in the case of the student studying in a residence center within the 20 hours of off-campus work permitted.

d. Grade Point Average

A 3.0 average (A=4) is required for courses taken on campus as well as an overall 3.0 average. To maintain a B average each hour of C
must be offset by an hour of A and each hour of E must be offset by three hours of A. Grades of Incomplete will become E unless completed within one calendar year. Students who seek an extension of time must notify the Graduate Office within the year indicating the circumstances that warrant such consideration. This ruling does not apply to the course, Thesis 700.

e. Hours After Candidacy

The election and completion of at least six hours is required after being approved for Candidacy.

f. Transfer Credit

Six hours of graduate credit may be transferred from other schools provided:

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

2) The School of Graduate Studies approves the credits for transfer.

3) The student’s adviser verifies that the credits contribute to the student’s program of study.

g. Time Limit

All work accepted for the degree program must be elected within six years preceding the date on which the graduate degree is conferred.

h. Thesis

Students writing a thesis should consult the most recent edition of Specifications for Master’s Theses, Specialist in Education Projects, and Doctor’s Dissertations, available in the Campus Bookstore.

GENERAL REQUIREMENTS FOR A SPECIALIST DEGREE

1. Admission

a. See specific program description to determine the minimal entrance requirements. The requirements range from a Bachelor’s degree to a Master’s degree.

b. Transcripts of all courses beyond high school.

c. An average grade of at least 2.6 (A=4) in the last two years of undergraduate work for all programs permitting entrance with Bachelor’s degree. An average grade of at least 3.25 for all work undertaken beyond the Bachelor’s degree.

d. Personal interviews with representatives of the School of Graduate Studies and the unit in which the student desires to study.

e. Approval of both the School of Graduate Studies and the unit.
f. Attainment of satisfactory scores on the English entrance examination and the verbal and quantitative sections of the Graduate Record Examination or a prescribed substitute.

2. Candidacy
   a. An application for Candidacy for a Specialist Degree must be filed during the semester in which the student completes his first 9 hours after admission.
   b. A grade point average of at least 3.25 must be secured in all graduate work taken.

3. Residence Requirement
   a. One semester on the campus of Western Michigan University — or
   b. Students studying for Specialist in Education may substitute two consecutive summer sessions and participation in a prescribed seminar or project during the intervening period.

4. Grade Point Average
   a. A grade point average of 3.25 is required for all work taken on the campus at Western Michigan University as well as all work taken for the degree.

5. Transfer Credit
   Students who have taken all of the credits for their M.A. degree at Western Michigan University may be permitted to transfer a maximum of twelve credits from another institution in a Specialist degree program.
   Students who have already transferred six credits in their M.A. degree program at Western may transfer a maximum of six additional credits in a Specialist degree program.
   Students who have secured their M.A. degree at an institution other than Western may include a maximum of thirty credits in a Specialist degree program. Units offering Specialist degrees are expected to give credit to transfer work only when the work is applicable and when it meets the same standards required for work completed at Western.

6. Extension Credit
   Credit for work done in residence centers may be offered up to a maximum of 26 hours. This maximum must be reduced by the amount of transfer credit accepted. Students entering with a Master's degree may include a maximum of 6 credit hours of extension or residence center credit in addition to work completed as a part of their Master's degree. No more than 18 hours of extension credit earned may be included if any of these credits are earned in other than residence centers.

7. Time Limit
   All work accepted for the degree program must be elected within six years prior to the date of receipt of the Specialist degree. Exception may be made for work completed as part of a Master's degree earned prior to admission. Students entering with a Master's degree will be permitted a maximum of five years instead of six.
8. Thesis or Graduate Paper

All students completing the Specialist degree must present a thesis or major project paper in a form acceptable to the unit and the School of Graduate Studies. In writing their paper, students should consult Specifications for Masters' Theses, Specialist in Education Projects, and Doctors Dissertations, available in the Campus Bookstore.

9. Minimum Credit Hours

The Specialist degree requires the completion of 60 hours of acceptable work beyond the Bachelor's degree.

10. Diploma Application

A diploma application must be submitted no later than three months prior to Commencement.

GENERAL REQUIREMENTS FOR A DOCTORAL DEGREE

Admission Requirements

A. Admission to the School of Graduate Studies.
   1. For students with a Bachelor's degree and not exceeding 20 hours of graduate study.
      a. An overall 3.0 point-hour ratio in undergraduate work and 3.25 for graduate work completed.
      b. Satisfactory completion of the English test administered by the School of Graduate Studies.
      c. A satisfactory score on the Aptitude and Advanced Tests of the Graduate Record Examination or an examination of similar nature approved by the Graduate Studies Council.
   2. For students seeking admission to take graduate work toward the doctoral degree with at least 20 hours of graduate work completed.
      a. All of the above except a.
      b. A 3.25 point-hour ratio for all graduate work completed.

B. Admission to a Doctoral Degree Program.

Having attained admission to the School of Graduate Studies, the student will be expected to meet the admission requirements established by the unit for the doctoral program itself.

Status as an Applicant

1. Students admitted with less than 20 hours of graduate study must request status as applicants after completing two full semesters of graduate work on campus or 18 semester hours of graduate work beyond those accumulated at the time of admission, whichever comes first.

2. Students admitted with more than 20 hours of graduate study must request status as an applicant after completing one full semes-
ter of graduate work on campus or 39 semester hours of graduate work completed, whichever comes first.

Criteria for being awarded status as an applicant include:

a. An overall point-hour ratio of 3.25 in all graduate work completed.
b. Commitment to a specific degree program.
c. Appointment of a five-man doctoral committee.
d. A decision by the unit that the student should be permitted to continue his study toward a doctoral degree.

Status as a Candidate

All students who are official applicants for a doctoral degree must seek candidacy no later than the end of the second calendar year or its equivalent and meet the following requirements:

1. An overall point-hour ratio of 3.25 in all graduate work completed.
2. Successful completion of the comprehensive examinations established for the program.
3. Completion of the research tool and/or language requirements.
4. Endorsement by the Doctoral Advisory Committee of the plan for the student’s dissertation.
5. Completion of all basic course requirements.
6. Completion of all approved unit requirements.

Approval for Graduation

1. Completion of a minimum of 90 hours of courses, seminars, research, and other requirements with an overall point-hour ratio of 3.25. (The dissertation will not be graded.)
2. Three years of study of which at least one complete year must be spent in full-time study on the campus.
3. Students will be allowed a period of seven years from the date of admission to complete all the requirements for the degree. Under extenuating circumstances, additional time may be allowed by the School of Graduate Studies.
4. Approval of the dissertation by three members of the Doctoral Advisory Committee selected to review the dissertation.
5. Satisfactory performance on the doctoral examination.

REGISTRATION

Registration will be held on the dates listed in the Schedule of Classes, which is published prior to each semester and session. This Schedule will be sent upon request and should be consulted for details regarding the time and place of graduate classes. Students who are permitted because of extraordinary circumstances to enroll after the
final day scheduled for registration are required to pay a late enrollment fee of $5.00.

Changes in Enrollment: Any classes added to the student's schedule must be added by the end of the first complete week of each semester and session. A student may drop graduate courses through the midpoint of each semester and session. The definite dates and procedures for making changes of enrollment will be announced in the Schedule of Classes.

STUDENT LOAD

The load for graduate students is governed by the following regulations:

1. The normal load for a graduate student devoting full time to graduate study is ten semester hours each semester. The maximum load is thirteen semester hours.
2. The maximum load for graduate students is seven semester hours during the spring and summer sessions.
3. Part-time graduate students, if employed full time in a field of education during the fall and winter semester may elect graduate courses granting not in excess of four hours of credit in a semester or one course during the spring session. An exception to this rule is made with the course, Thesis 700, which the student may elect during one semester for six hours of credit. Students employed full time in other fields may elect a maximum of six hours of graduate credit.
4. With permission of the Dean, a student employed full time in a field of education may elect graduate courses granting five hours of credit in a semester provided such credit shall not involve more than two graduate courses. Such an exception may be granted only once during the work for the Master's degree. These restrictions apply to all graduate courses a student may elect during a semester whether taken on campus, in extension and/or at some other institution.

STUDENT FEES

The following fees will be charged for graduate study:

<table>
<thead>
<tr>
<th>Semester Hours</th>
<th>Resident Students</th>
<th>Non-Resident Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 2</td>
<td>$ 54.00</td>
<td>$130.00</td>
</tr>
<tr>
<td>3 - 4</td>
<td>83.00</td>
<td>200.00</td>
</tr>
<tr>
<td>5 - 6</td>
<td>111.00</td>
<td>270.00</td>
</tr>
<tr>
<td>7 - 8</td>
<td>138.00</td>
<td>340.00</td>
</tr>
<tr>
<td>9 - 10</td>
<td>167.00</td>
<td>410.00</td>
</tr>
<tr>
<td>11 or more</td>
<td>185.00</td>
<td>450.00</td>
</tr>
</tbody>
</table>
For the Spring and Summer Sessions, the above schedules apply up to a maximum of $92 per session for Michigan residents and $225 for non-Michigan residents. Student fees are subject to change by the Western Michigan University Board of Trustees at any time without notice.

POLICY FOR REFUNDS AND CHANGE OF CLASS LOAD

All changes in registration or complete withdrawal must be cleared with the Graduate Office. Complete withdrawals must also be cleared with the Office of Student Affairs. A student who withdraws from the University or who reduces his credit hour load, resulting in lower fees, will be granted a partial refund (see schedule below) of the total paid—subject to the following conditions:

1. Reducing Credit Hour Load: A refund will not be granted for reducing the credit hour load after the final day for adding a course as established by the Registrar.

2. Withdrawal from the University: A refund will not be given for withdrawal from the University after the 49th calendar day after the last established registration day.

For Complete Withdrawal:

<table>
<thead>
<tr>
<th>Period</th>
<th>Fall/Winter Semesters</th>
<th>Spring/Summer Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>90% Period</td>
<td>Through the final day for adding a course as established by the Registrar.</td>
<td>Through the final day for adding a course as established by the Registrar.</td>
</tr>
<tr>
<td>60% Period</td>
<td>Final day above through the 21st day after the last established registration day.</td>
<td>Final day above through the 10th day after the last established registration day.</td>
</tr>
<tr>
<td>40% Period</td>
<td>22nd through 35th day after the last established registration day.</td>
<td>11th through 17th day after the last established registration day.</td>
</tr>
<tr>
<td>20% Period</td>
<td>36th through 49th day after the last established registration day.</td>
<td>18th through 24th day after the last established registration day.</td>
</tr>
</tbody>
</table>

NOTE: The refund date will normally be determined by the date that the Records office receives a completed Withdrawal Request card or Application for Change in Enrollment Form.

MILITARY SERVICE: A special refund schedule is applicable to students voluntarily called to active duty in the military service and is on file in the Controller's Office.
FLIGHT TRAINING FEES: Refund of flight training fees will be made in accordance with the policy established by the Controller of the University.

RESIDENCY

The following policy adopted by the Board of Trustees of Western Michigan University on May 15, 1964, applies to all students:

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

2. A person who is at least 21 years of age at the time of registration in the institution and who has resided in this state six months next preceding the date of registration without being registered at a college or university during that period is deemed a resident of this state for the purpose of such registration.

3. The residence of a wife follows that of her husband, except that a woman student who is a resident under paragraph 1 or 2 may continue to register as a resident of this state although subsequently marrying a non-resident.

4. No person is deemed to have gained or lost residence in this state while a student at any institution in this state, public or private, except by changes in status effected under paragraphs 1, 3 or 5.

5. A person in the service of the United States, and his wife or minor children, who have met the six months residence requirements in paragraph 2, may register as residents of this state.

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

7. A member of the University staff and his dependents may register as residents of this state.

It shall be the duty of every student at registration, if there are any possible questions as to his right to legal residence in Michigan under the rules stated above, to raise the question with the Controller and have such questions passed upon and settled prior to registration.

FELLOWSHIPS, AWARDS AND LOANS

Graduate Fellowships: Fellowships valued at $2,600 will be made available to selected students holding bachelor's degrees from accredited colleges and universities. These fellowships are granted on the basis
of merit to persons planning to pursue full-time work on the campus leading to advanced degrees. Such persons must possess a combination of qualities indicating potential leadership in their respective fields with specific emphasis on high scholarship and desirable personal attributes. Fellows are required to pay all fees normally required of other graduate students. Application forms may be secured from the Graduate Office. All applications, transcripts, and letters of recommendation must be submitted by February 15.

Graduate Associateships: Associateships carrying a somewhat greater stipend than the Fellowships will be offered to a limited number of graduate students who have completed a Master's degree and are registering for work on an advanced degree. Students interested in such assistance should request application forms from the Graduate Office.

Graduate Assistantships: Many of the departments provide graduate assistantships with stipends of approximately $2,400 to promising students. Students receiving an assistantship are expected to participate in approximately fifteen hours per week in professional service in the department and to adjust their academic load accordingly.

Loans: Graduate students who enroll for a minimum of nine hours of on-campus credit in a semester may qualify for some type of student loan. Students desiring information regarding a student loan should contact the office of Student Financial Aid.

Graduate Awards: Each calendar year an outstanding graduate student pursuing a Master's degree is selected for a graduate award from each of the five schools of the University. In making the selection, the schools will seek to identify the top scholar in their Master's degree program. Ordinarily, the students who qualify will have a record of all "A's", have a high degree of professional integrity as revealed in their relationships with faculty and colleagues, and have the ability to communicate their ideas in an effective manner. The students will be selected from among those who were graduated in the three commencements immediately preceding the Spring Honors Convocation.

The awards will be designated as follows:
1. Elmer H. Wild's Scholar in the School of Education
2. Alice Louise LeFevre Award in the School of Graduate Studies
3. School of Business Graduate Faculty Award
4. School of Applied Arts Graduate Faculty Award
5. James O. Knauss Award in the School of Liberal Arts

UNIVERSITY SERVICES

Housing: Information on room, board, and other living expenses may be secured by writing to the Director of Housing. Foreign students should request assistance from the Foreign Student Adviser. In making requests for housing, graduate students should identify themselves as
graduate students to assist the Director of Housing in placing them in quarters with other graduate students. Because of the shortage of housing facilities requests for housing should be made early.

Testing Service: The services of the Testing Center are open to all graduate students and their families. Interest Inventories, Aptitude Test Batteries, Personality Measurements and Achievement Tests are available. All these different instruments are administered and interpreted at no cost to the student. Self-awareness and self-knowledge are great weapons in a student's arsenal. The Testing Service will help with career planning.

Counseling Service: The services of the Counseling Center are offered to all graduate students, their spouses and their children. Their services include assistance in selecting an area of study, vocational-educational planning, personal counseling, testing and group counseling. Reading material is available in the Counseling Center Occupational Information Files concerning various aspects of employment, occupations and qualifications.

The services of the Counseling Center are committed to a profound faith in the worth, dignity and great potentiality of each individual human being. Confidentiality is considered paramount in the realization of this commitment.

Health Service: This service is offered to all graduate students who are considered to be full-time students, and who are present on the campus while classes are in session. Clinics are held daily from 8:00 a.m. to 4:30 p.m. with a physician present to advise medical care and treatment. The main clinic and health service is located on the East Campus of the University. A West Campus clinic is located in the Hillside Apartments. A twenty bed infirmary, open twenty-fours a day, is available for students who are found to be seriously ill. Laboratory work and x-rays are available at the infirmary for a nominal fee. Medicines are provided at cost to students and a small charge is made for the use of the infirmary. There are no physician fees involved.

Accident and Illness Insurance: A University approved accident and illness insurance policy (covering major illness and hospitalization) is offered to all students by a private insurance company for a nominal fee. Graduate students and their families are urged to give serious consideration to additional protection. Information on this insurance can be secured from the Dean of Students.
SECTION II

Master's Degree Programs

Each degree candidate must choose a graduate program that is compatible with his objectives. The programs listed on the following pages have been developed to provide students with the basic experiences that implement these objectives. The programs are, however, sufficiently flexible to allow for the differing needs of individual students.

It is obvious that growth in personality and the development of professional abilities are aims of primary importance in graduate education. Hence, through the counseling process, graduate advisers will help the students choose courses, both cultural and professional, to meet their individual needs. Courses and experiences should be chosen so that the graduate student becomes a more mature and professionally proficient person—a person with greater professional skill, increased ability to analyze and interpret life situations, and greater insight into problems involved in professional leadership.

Many of the courses listed will not be offered every semester or session. By studying "the Schedule of Classes," the student will find the session or semester when the desired courses are available. Each student is expected to work out his graduate program with his adviser.

Accountancy

The Master of Science in Accountancy degree program allows the student an opportunity to concentrate in Accountancy at the graduate level. His knowledge and understanding of the theory, literature, and controversial concepts of accounting is developed as well as his ability to carry out research. The student's understanding of the relationship of accounting to other fields in business and to other disciplines is also stressed. The program is designed for graduates of accredited institutions who have had a substantial undergraduate concentration in accounting. However, other candidates may qualify by completing prerequisite work.

The following prerequisites are required:
A. Accounting: Elementary and Intermediate and two of the following: Advanced, Auditing, Cost, and Income Tax.
C. Principles of Economics.

Before admission to candidacy, the student must have earned 10 hours of graduate credit at Western Michigan University with a 3.0 grade point average. In addition, all prerequisites must be fulfilled.
Specific requirements for the M.S. Degree are a minimum of 30 semester hours of graduate work. At least 20 graduate credits must be earned in work numbered 600 or above. Included in the program must be either:

A. 700, Thesis, six credits, or
B. 601, Research Methods in Accounting, three credits, and 710, Independent Research, three credits.

It is expected that a minimum of 21 semester hours of the total degree requirements (including the credit in 601, 700, and 710), will be in accounting. However, in special cases, a closely related course offered by another department may be substituted as part of the program. Students who have not had accounting experience will be encouraged to include in their program 712, Professional Field Experience. In addition to the accounting major requirements, the student must complete a minor of six to nine credits outside of the Department of Accounting.

Anthropology

William Garland, Adviser

The Master of Arts degree program in Anthropology is intended to provide the student with a sound understanding of the discipline as a whole. In addition it requires a concentration, appropriate to its academic level, upon one of the major branches of Anthropology. These may be identified as archeology, ethnology (cultural anthropology), linguistics, and physical anthropology.

Eligibility for Admission

1. Students should have completed a minimum of 15 semester hours in undergraduate work in Anthropology, or 24 hours in Anthropology and related disciplines, such as Geology, Zoology, and the Social Sciences, of which at least 9 hours must be in Anthropology.
2. Accumulation, during the final two years of undergraduate work, of a point-hour ratio of at least 3.0.
3. If these requirements have not been met on the undergraduate level, the student may be admitted with the understanding that additional course work as specified by the department will be required to provide the necessary background.

Degree Requirements

1. Complete at least thirty semester hours, selected in consultation with the master's adviser. At least twenty of the hours must be in Anthropology. The remainder may be in Anthropology or in related disciplines as determined by the needs of the student. Six of the hours will be earned with the thesis.
2. Anthropology courses 601, 602, and 603, or their equivalents, are required.
4. Pass a comprehensive written examination on the field of Anthropology.

Art

Charles E. Meyer, Harry S. Hefner, Advisers

The Master of Arts degree program in Art has two possible emphases. The first is an emphasis in art education, the second an emphasis in art practice. Students concerned with advanced study in both art practice and art education, essentially for furthering their skills as public school or junior college teachers, should elect the first. Those wishing advanced training in art practice for professional reasons, or as preparation for MFA terminal programs in art, should elect the second.

Core requirements for both areas of emphasis are:
1. Admission to WMU's Graduate school.
2. A 3.0 (B) grade point average in art work taken during the last two undergraduate years.
3. A BA or BFA in art, or its equivalent, and this degree plus slides of work must be evaluated by the art department for possible collateral work prior to program admission.
4. 12 hours of art courses from one of the following areas: painting, sculpture, weaving, printmaking, jewelry or graphic design.
5. 6 hours in advanced art history.
6. 2 hours in the graduate seminar in art.
7. Adviser's approval for all course work elected.
8. A review of work by a master's degree committee before the end of the first semester, or its equivalent.
9. Another review before the end of the last semester, or its equivalent.
10. Submission of a portfolio of major work, in photographs, during the final semester.
11. A show of work in the final semester, from which one work will be selected for the department's permanent collection.

Special requirements for the two emphases are:
With an Emphasis in Art Education (Minimum total hours of credit —36)
1. 9 hours in advanced art education courses.
2. 7 hours in art practice areas apart from those selected above, or in approved cognates.
3. A final paper or thesis.

With an Emphasis in Art Practice (Minimum total hours of credit —30)
1. 7 hours in art practice areas apart from the above selected areas, or in art history.
2. 3 hours in cognates approved by the departmental adviser.
3. An oral defense of the final semester's show of work before the MA committee.

**Biology**

Clarence J. Goodnight, Adviser

The Master of Arts degree program in Biology provides a general background in the field with a limited amount of specialization in the area of the student's major interest. It is designed to meet the needs of people in teaching, research, laboratory and field work, and conservation. It may be used as a foundation for continued graduate work leading to a doctor's degree at another institution, or may be considered terminal.

To satisfy the requirements for the master's degree in Biology, a student must successfully complete a minimum of 30 hours of graduate work in Biology and related areas. The choice of courses will be made with the recommendation of the student's advisory committee and must be related to the student's goals. Successful completion of a qualifying examination is required for admission to candidacy in the Biology program.

A thesis must be prepared under the direction of the advisory committee. The chairman of the student's advisory committee will be a member of the graduate faculty having competence in the area of the student's major interest. Specialization is permitted in most of the major areas of biology.

**Business Administration**

Leo Niemi, Chairman of Graduate Business Programs

The Master of Business Administration degree program is designed to meet the need for well trained generalists and specialists in our complex society with its highly interrelated business and industrial organizations, as well as governmental and service establishments. It is a professional degree program which aims to develop in the participants such knowledge, attitudes and comprehensions which will assist in preparing them to assume responsible leadership roles in their chosen fields of endeavor. The program is so designed that it can meet the professional developmental needs of students with baccalaureate degrees in such diverse areas as liberal arts, sciences, engineering, or other fields as well as those having an undergraduate major in business. Under the guidance of the graduate staff of the School of Business, the participant is provided personal programming in the selection and arrangement of his courses.

The MBA degree can be earned by completion of a program approved by the candidate's graduate adviser consisting of either 33 hours of course work, or 24 hours minimum of course work and a thesis.
Undergraduate deficiencies, as determined by the graduate adviser must normally be met prior to admission to candidacy.

The student's program will usually consist of coursework in (1) his area of concentration, (2) other areas of business that meet his educational objectives, and (3) areas outside the School of Business with special emphasis on economics and the behavioral sciences.

The Admission Test for Graduate Study in Business and the English Test are also required of all applicants. For the part-time student, residence requirements may be fulfilled by taking one or more courses during four consecutive semesters.

Chemistry

The Master of Arts degree program in Chemistry is planned to provide a broad background in the various fields of chemistry with concentration in one.

Entrance requirements include admission to the School of Graduate Studies and the attainment of a satisfactory grade in qualifying examinations covering the fields of Analytical, Organic, and Physical Chemistry. These examinations must be taken on the following dates:

- August 29, 1968—9:00 a.m.—Analytical; 1:00 p.m.—Organic
- August 30, 1968—9:00 a.m.—Physical
- January 3, 1969—Any
- April 25, 1969—Any
- June 20, 1969—Any
- August 29, 1969—9:00 a.m.—Analytical; 1:00 p.m.—Organic
- August 30, 1969—9:00 a.m.—Physical

Deficiencies indicated by these examinations must be removed by the completion of appropriate undergraduate courses with a minimum grade of B. Students attaining lower grades are not allowed to continue in the curriculum.

The student is required to elect twenty to twenty-four hours in the field of Chemistry, including the thesis and six to ten hours in a related field or fields. A final oral examination by the student’s graduate committee is a requirement for the degree. The course sequence will include (if not previously elected):

1. Nine hours of 600 level courses from at least three of the following areas: Analytical, Biochemistry, Inorganic, Organic and Physical.
2. 520—Advanced Analytical Chemistry
3. 505—Chemical Literature
4. 601—Graduate Seminar. (Attendance required every semester)
5. Thesis. (6 hours)
Economics

Robert S. Bowers, Adviser

To earn the Master of Arts degree in Economics, the following departmental requirements must be met:

1. For admission to candidacy, satisfactory completion, at the graduate and/or undergraduate levels, of a total of at least twenty-four hours in the social sciences with a minimum of ten hours in economics, or in equivalents approved by the graduate adviser.

2. A program of thirty hours of graduate credit (33 hours if additional courses are submitted in lieu of the thesis) is to be approved by the major adviser and the department head and is to include the following courses:
   a. 503 Price Theory
   b. 606 Seminar in the Evolution of Economic Thought
   c. 662 National Income Analysis

3. Pass a written comprehensive examination.

4. Complete a thesis approved by an examining committee of the Department, for which six hours of credit will be allowed. Students may petition for permission to submit additional course work in lieu of the thesis.

Education

William P. Viall, Chairman of Advisers

The degree of Master of Arts in the field of Education is awarded in the following general categories: 1) Administration and Supervision, 2) Guidance and Personnel Services, 3) Curricula in Teaching, 4) Teaching at the Junior College Level, 5) Special Education, 6) School Psychologist, 7) Visiting Teacher, 8) Audiovisual Education, and 9) Blind Rehabilitation.

The programs in Administration and Supervision and Guidance and Personnel Services are provided by the Department of School Services.

The programs in Teaching at the Junior College Level, Audiovisual Education, and Curricula are offered by the Department of Teacher Education in collaboration with a number of departments in the schools of Applied Arts and Sciences, Business, Education, and Liberal Arts and Sciences.

The programs in Special Education, Visiting Teacher, and School Psychologist are provided by the Department of Special Education.

The Master's programs in Blind Rehabilitation are provided by the Institute for Blind Rehabilitation.

These curricula are planned to provide professional preparation for students who are interested in teaching, administration, and certain specialized positions in elementary and secondary schools and junior colleges. The Guidance and Personnel Services curriculum may
also be chosen by individuals interested in the ministry, business counseling and counseling positions in social service occupations. With the exception of students in the above categories who are interested in Guidance and Personnel Services and those students who plan to teach at the junior college level, all students applying for Candidacy in the curricula of the School of Education are expected to have completed a minimum of fifteen hours of undergraduate work in professional education. In some instances students may present equivalent preparation which meets the minimum requirements for teacher certification when such preparation is approved by the School of Education.

CURRICULA PROVIDED BY THE DEPARTMENT OF TEACHER EDUCATION AND COOPERATING DEPARTMENTS

Master of Arts degree programs are intended to prepare teachers for superior classroom performance and a deeper understanding of their roles as teachers in the American system of education.

Audiovisual Media

Adviser: Daniel Moore

The Master's Degree program in Audiovisual Media is designed to provide teachers and supervisory personnel with competencies in the audiovisual field.

Requirements for the degrees are:

1. Thirty hours of graduate credit in professional education, audiovisual and cognate fields.
2. Nine hours of professional education courses including Introduction to Research, Social, Philosophical and Psychological Foundations in Education and in the area of Curriculum.
3. Fifteen hours in Audiovisual Media including courses in Production, Selection, Administration and Research in Audiovisual Media.
4. A paper of significance will be required in either Ed. 648, Instructional Media Seminar, or, in 710, Independent Research.
5. The remaining six hours will be selected from related fields.

Teaching the Culturally Deprived

Advisers: John B. Bergeson, Jess M. Walker

The rapid urbanization of our population accompanied by profound changes in industrial technology has created a large group of economically underprivileged people living in environmental conditions and maintaining value systems significantly different from those of the traditional middle class. This disparity has created both a problem and a challenge for the education profession.

This master of arts degree is designed to prepare elementary and secondary teachers to work with economically and educationally disadvantaged children.

Requirements for the degree are:
1. Thirty hours of graduate credit including the required course of Ed. 560, Practicum: Sociological and Psychological Foundations of Teaching the Disadvantaged, Ed. 601, Introduction to Research in Education, Ed. 659, Seminar, Problems of Teaching the Disadvantaged, and 712, Professional Field Experience. Note: Ed. 535 may be substituted for Ed. 560 with the consent of the adviser.

2. The remainder of the degree requirement may be satisfied by selecting courses in the student's major and minor fields of specialization, from related areas and from areas of special need, depending upon the background of the student, the educational level of children taught, and the vocational goal to the student. These courses are selected to provide depth and breadth in subject matter fields as well as to improve understanding of the social, cultural and educational problems of disadvantaged children.

Teaching at the Junior College Level

Adviser: Owen Middleton

The requirements for this curriculum including a minimum of thirty hours of graduate level work courses in professional education and the student's major and minor fields distributed as follows.

1. Seven hours made up of the following professional courses: Education 601, Introduction to Research, 650, Characteristics of the College Age Student, and 690, The Community College.

2. A minimum of sixteen hours in the student's major. It is assumed that the student will also have completed an undergraduate major in this field.

3. A maximum of seven hours may be elected from the student's minor area for cognate courses related to the major field.

Teaching of Reading

Adviser: Dorothy J. McGinnis

Prerequisites: Completion of a minimum of fifteen hours of undergraduate work in professional education including a course in the teaching of reading. Accumulation, during the last two years of undergraduate work, of a point-hour-ratio of at least 2.6, and a minimum of one year of teaching experience before candidacy.

Requirements for the Degree are: Thirty hours of graduate work are required as a minimum for graduation and may be selected from the following three groups:

1. Eight or nine hours selected from the following courses in the Education core: Education 601, Introduction to Educational Research; 602, School Curriculum, or 510, The Elementary Curriculum, or 622, Junior High School Curriculum and Instruction; 603, Social and Philosophical Foundations of Education, and 604, Psychological Foundations of Education.

2. Fifteen or sixteen hours in education, twelve of which must be in reading. The following courses are required: 586, Clinical
Studies in Reading; 587, Educational Therapy in Reading; 597 Reading and Related Language Experiences; and 615, Seminar in the Teaching of Reading.

3. Six hours outside the School of Education which have been approved by the adviser.

Curricula in Teaching

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

1. Nine hours selected from the four three-hour courses in the Education core:
   a) 601 Introduction to Educational Research
   b) 602 School Curriculum (Students enrolled in Teaching in the Junior High School, or are teaching or planning to teach in the Junior High School should substitute T.Ed. 622 for T.Ed. 602.)
   c) 603 Social and Philosophical Foundations of Education
   d) 604 Psychological Foundations of Education

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

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

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

Teaching in the Elementary School
Advisers: Mary Cain, Louis Govatos, Betty Johnson, Allen Klingenberg, Sara Swickard, Roberta Westra

Teaching in the Junior High School
Adviser: Clara Chiara

Teaching of Art
Adviser: Charles E. Meyer
Prerequisite: Twenty-five hours in art or the equivalent

Teaching of Business Education
Adviser: Darrell Jones
Prerequisite: Minor in business or the equivalent

Teaching of Distributive Education
Adviser: Adrian Trimpe
Prerequisite: Must qualify for a vocational certificate as a coordinator

Teaching of Home Economics
Adviser: Eunice E. Herald
Prerequisite: Minor in Home Economics

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Teaching of Industrial Education  
*Adviser:* Charles G. Risher  
*Prerequisite:* Minor in Industrial Education

Teaching of English  
*Adviser:* Ralph Miller  
*Prerequisite:* Minor in English

Teaching of Music  
*Adviser:* James Hause  
*Prerequisite:* Major in Music

Teaching of Physical Education  
*Advisers:* Women—Billye A. Cheatum; Men—George G. Dales  
*Prerequisite:* Minor in Physical Education

Teaching of Science  
*Adviser:* Edwin B. Steen  
*Prerequisite:* Minor in one department of the science division

Teaching of Mathematics  
*Adviser:* Robert C. Seber  
*Prerequisite:* Minor in Mathematics

Teaching of Social Sciences  
*Adviser:* Myrtle Beinhauer  
*Prerequisite:* Twenty-five hours in combined fields of economics, history, philosophy, political science and sociology

Teaching of Speech Correction  
*Adviser:* Robert J. Erickson  
*Prerequisite:* Nine hours of undergraduate speech correction before or in conjunction with graduate work and consent of adviser

Teaching of General Speech  
*Adviser:* Zack York  
*Prerequisite:* Minor in speech with suitable cognates

**CURRICULA PROVIDED BY THE DEPARTMENT OF SCHOOL SERVICES**

The degree of Master of Arts offered by the Department of School Services is awarded in curricula intended to prepare personnel for positions in educational leadership and services which are largely non-instructional in nature. In view of the fact that many students who complete requirements for this degree will wish to continue to work toward further degrees, students who select such curricula should keep in mind the requirements of the advanced degree in making the selection.
Administration and Supervision

The following curricula are offered in the general category of Administration and Supervision, with advisers as indicated:

Curriculum Development and Coordination
Adviser: Dorothy McCuskey

Elementary School Administration and Supervision
Advisers: James Davenport, Paul Misner

General Administration and Supervision
Advisers: Harold Boles, Roland Strolle

Secondary School Administration and Supervision
Adviser: Donald Weaver

Students in all Administration and Supervision curricula are expected to have at least one year of teaching experience before making application for candidacy for the degree. All curricula have the same general requirements which include a minimum of thirty semester hours of graduate work in the following areas:

1. Nine hours, consisting of three hours in 601 Introduction to Educational Research and six hours chosen from the following courses: 602 Curriculum Principles; 603 Social and Philosophical Foundations of Education; 604 Psychological Foundations of Education; or equivalent as approved by the student’s adviser.

2. Ten hours, to be selected by the student and his adviser, generally from the fields of Anthropology, Business Economics, History, Librarianship, Political Science, Psychology, Sociology and Speech, although exceptions may be made.

3. For students in the three administration curricula, eight hours in the major field which must include Education 660, Principles of Educational Leadership, 3 hours; Education 667, Administration of School Personnel, 2 hours; and three hours in either Education 613, Elementary Administration and Supervision; Education 623, Supervision of Instruction; or Education 624, Secondary Administration and Supervision.

4. For students in Curriculum Development and Coordination, eight hours in the major field chosen from curriculum and leadership courses in education and from curriculum courses in content fields.

5. For students enrolled in General Administration and Supervision who plan to administer community school projects, substitutions may be made for some of the above requirements in consultation with the adviser of that program.

Guidance and Personnel Services
Prerequisite: A minimum of one year of teaching experience (or equivalent) before graduation, if the student intends to serve in an elementary or secondary school.

The curriculum for Guidance and Personnel Services requires the following:

1. Ten hours consisting of 680, The Personnel Worker and His Role; 601, Introduction to Educational Research; and one of the remaining core courses.

2. Minimum of eight hours consisting of two hours in 582, Information Service and Guidance, and a minimum of six hours of Sociology and Psychology.

3. Twelve hours in the major area, consisting of 681, Organization and Administration of Student Personnel Services, 4 hours, or 682, Research in Guidance and Personnel Services, 4 hours; and 683, Theory and Laboratory Practice in Counseling, 4 hours, and 684, Supervised Practicum and Professional Experiences, 4 hours.

CURRICULA PROVIDED BY THE DEPARTMENT OF SPECIAL EDUCATION

The Master of Arts degree is awarded in three programs provided by the Department of Special Education. The programs are designed to prepare graduates to work effectively with certain types of atypical children.

School Psychologist
Advisers: Robert Hawkins, Frank Heger

Prerequisite: Michigan teaching certificate and major or minor in psychology to include courses deemed advisable by the Psychology Department. Two years of teaching experience or equivalent required before graduation.

To satisfy the requirements in this curriculum the student must elect courses from the offerings in education and psychology as follows: Education 534, 585, 601, and 610; Psychology 623, 624, 660, 661, 662, 663, 680, 681, and 682. Substitutions may be made in certain cases with the consent of the graduate adviser.

The psychology courses deemed advisable for a background in their program include Abnormal Psychology, Psychology of Personality, Laboratory in Psychological Testing, Elementary Statistical Methods in Psychology, Mental Testing, Elementary Experimental Psychology, Learning and Memory, or their equivalents. They must be taken either at the undergraduate level or made up with additional graduate courses. A minimum of thirty hours in courses approved by the Psychology Department will qualify a student for a Master's degree in School Psychology.

Upon satisfactory completion of the School Psychologist program and of a 500 hour internship, the student may qualify for approval to work as a school diagnostician under the laws of the state of Michigan.
School Social Worker (Visiting Teacher)

Advisers: Nellie Reid, Frank Heger

The program for the preparation of School Social Workers (Visiting Teachers) is designed to meet the approval requirements in accordance with recently revised rules and regulations of the Michigan Department of Education. Forty credit hours (including at least thirty at the graduate level) in required and recommended courses in Education, Psychology, Sociology, and Social Work are required for full approval. Candidates must possess a valid Michigan teaching certificate or have completed a minimum of ten hours in prescribed education courses and have had professional experience in working with children and families. Temporary approval can be granted under certain conditions upon the recommendation of the program advisers.

Since Western Michigan University presently has no Graduate School of Social Work, candidates must complete approximately twelve to fourteen hours in that subject area at the University of Michigan.

Special Education

Advisers: Emotionally Disturbed, Kristen Juul; Mentally Handicapped, Joseph Eisenbach; Crippled and Homebound, Isadore Turansky

The Master of Arts degree in Special Education is awarded under three different circumstances:

1. Graduate students and teachers who already hold the Bachelor's degree in elementary or secondary education may take the courses required for the certification of teachers of the mentally handicapped, the emotionally disturbed, or the crippled and homebound. These courses may also be applied toward a Master of Arts degree.

2. A Master of Arts degree is granted to teachers who have their undergraduate training in some specific area of special education. The advanced degree is broadly designed to acquaint teachers with a variety of handicaps so that they have a more comprehensive understanding of the children with whom they work in view of the fact that most exceptional children have more than one handicap.

3. A Master of Arts degree in the Education of Emotionally Disturbed and Mentally Handicapped Children is awarded to teachers who have already received their Bachelor's degree and completed an undergraduate major in these fields. The objectives of the courses are to give the students a deeper awareness of the organic, emotional, cultural and other dynamics involved in the behavior and learning problems of handicapped children. Remedial skills and procedures are also stressed.

All students who receive a degree in the field of Special Education must complete the following requirements:

1. A minimum of 30 hours of graduate level work of which 15 must be in Special Education.

2. Three of four core courses in Education required of students who complete degrees in education or their equivalent if approved by the student's adviser.
3. Six hours of work in courses offered by the departments outside the School of Education.

CURRICULA PROVIDED BY THE INSTITUTE OF BLIND REHABILITATION

Western Michigan University, in cooperation with the Social and Rehabilitation Services, Office of Health, Education, and Welfare, is offering the following graduate programs in Blind Rehabilitation:

Orientation and Mobility Specialist
Advisers: Donald Blasch, Stanley Suterko

The purpose of an Orientation and Mobility Specialist is to teach blind persons to move about effectively, efficiently, safely and gracefully in familiar and unfamiliar environments. An essential part of the re-education of the blind is to train them to utilize more effectively their senses that are still intact.

Students will be selected for this program on the basis of demonstrated mature judgment, emotional stability, leadership qualities, and good academic ability. They should have completed their bachelor's degree, preferably with some background in education, sociology and the biological sciences. They must be in good physical health and have normal or correctable vision to approximately 20/20.

The program requires three semesters for completion. The first two semesters are spent in residence at Western Michigan University in academic study, together with elementary and intermediate training in orientation and mobility on an individual basis. The third semester will involve an internship at one of the following: Veterans Administration Hospital, Hines, Illinois; a residential school, public school, or an accredited agency for the blind. Here the trainees receive clinical training and practicum in orientation and mobility. The successful completion of 36 semester hours are required to earn the degree of Master of Arts.

Home Teachers of the Adult Blind
Advisers: Ruth Kaarlela, Donald Blasch

The clinical training of Rehabilitation Teachers prepares students to teach blind adults, in their homes and communities, personal independence, skills in communication, home management and leisure time activities.

The prerequisite for admission is a bachelor's degree from an accredited college or university with a major in the behavioral sciences. Successful completion of 43 semester hours of graduate credit is required for the Master's degree. Thirty-one hours will be earned during two semesters and one session of academic work on the campus. Ten hours will be earned in supervised internship and residency at accredited agencies for the blind. A professional paper is also required.
Earth Science (Dept. of Geology)  Lloyd J. Schmaltz, Adviser

The Master of Arts degree program in Earth Science is designed to increase a student's knowledge in the fields of astronomy, geology, meteorology, and oceanography enabling the student to better teach in secondary schools the comprehensive subject of earth science.

Entrance requirements include admission into the School of Graduate Studies and completion of an undergraduate major in earth science or its equivalent. Deficiencies in undergraduate preparation must be completed before admission to candidacy (see general degree requirements). Students planning to teach in secondary schools should complete certification requirements.

A minimum of 30 hours is required for the degree including:
3. Independent Research.
4. Thirteen hours of electives in earth science with consent of graduate adviser.
5. A final comprehensive examination.

English  Ralph Miller, Adviser

The Master of Arts degree program in English provides at an advanced level a study of the history of literature, the history and characteristics of the genres, literary theory, and literary process in the works of a major author. Those desiring to enter the program should present a 30-hour undergraduate major with a grade-point average of 3.0. At least 20 hours of the major must be in courses in literature; no more than 15 of the 30 should be at the freshman-sophomore level. Students should consult with the adviser at the earliest opportunity concerning their schedule of study, which will include where possible a concentration in some field as well as courses that meet the objectives of the program.

Required courses in the program are English 660, 661, and 668. Other requirements are the presentation of an essay to the English graduate faculty for approval and the oral explication of a text before the members of the faculty.

Geography  Albert Jackman, Adviser

To earn a Master of Arts degree in Geography, a student must satisfy the following departmental requirements:
1. An undergraduate major in Geography or its acceptable equivalent. In the event of deficiencies in the student's undergraduate
program (particularly in the areas of physical and economic geography, and cartographic techniques), he may be required to elect additional non-credit courses in order to satisfy departmental requirements.

2. Thirty hours of graduate credit in Geography and cognate fields with at least twenty hours in Geography.

3. An acceptable thesis or two approved research papers; a field assignment may be substituted for one of the two research papers.

4. Demonstrated competence in:
   a. General physical and cultural patterns
   b. Documentary analysis
   c. Philosophy of Geography
   d. Cartographic presentation of data
   e. Field procedures

5. Completion of required courses: Geography 568, 661, and 664.

6. Completion of at least two courses with a maximum of 10 hours in one of the six following areas of concentration: Regional; Economic; Urban; Cultural-Historical; Political; and Physical Geography.

7. A written examination to be taken during the first semester in which the student is enrolled in the graduate program.

8. Upon completion of an acceptable thesis (or research paper), a final oral examination will be scheduled with particular attention to the candidate’s field of concentration and his research project.

History

Edward O. Elsasser, Graham Hawks, Advisers

To earn the Master of Arts degree in History, a student must satisfy the following requirements:

1. For admission to the department for graduate study, either (a) completion of thirty hours of undergraduate credit in the social sciences and closely related subjects, including at least fifteen hours of history, or (b) possession of other preparation accepted as the equivalent by the departmental committee.

2. Complete History 690 (Historical Method) and History 692 (Studies in Historical Literature).

3. Choose two of the following fields, one of which is designated as the area of concentration, and pass written and oral comprehensive examinations in each. (1) Ancient (2) Medieval (3) Europe, 1500-1815 (4) Europe, 1815 to the present (5) United States to 1877 (6) United States since 1877 (7) Latin America (8) Far East (9) Russia and Eastern Europe.

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

5. Earn 30 hours of graduate credit, of which at least 20 hours must
be in history, and the remainder in a department approved by the
graduate adviser.

6. The Department recommends that students planning to do grad-
uate work in history acquire a reading knowledge of an appropriate
foreign language.

Home Economics

Eunice E. Herald, Adviser

The degree of Master of Arts program in Home Economics is de-
signed for the person with a Bachelor of Science or Arts in Home Eco-
nomics. The Master’s degree work is planned to provide a general
program of studies in the whole area of Home Economics for the person
who may have specialized in Foods and Nutrition, Textiles and Cloth-
ing, and c) Family Relationships. The student may or may not have
graduate level. A general program of studies in three areas of Home
Economics is included: a) Foods and Nutrition, b) Textiles and Cloth-
ing, and c) Family Relationships. The student may or may not have
specialized in one of these areas but will have had the foundation
courses to pursue them at the graduate level and could broaden the
scope and depth of understanding in one of the three areas. The degree
may be used as a foundation for continued graduate work leading to a
Doctor’s degree at another institution.

In addition to the Graduate School admission requirements, the
student must:

1. Choose 8 - 10 hours in a minimum of 3 courses in the basic courses
selected from

   500 Advanced Textiles ........................................... 2 s.h.
   510 Advanced Nutrition ........................................... 3 s.h.
   518 Advanced Foods and Experimental Foods .................. 4 s.h.
   600 Clothing Techniques ........................................... 2 s.h.
   650 Advanced Home Management .................................. 2 s.h.
   652 Family Life Education ........................................... 2 s.h.

2. Complete a total of twenty (20) hours of work in Home Econom-
ics at the Graduate level including a minimum of 2 hours of Seminar
credit;

3. Complete a minimum of ten (10) hours of work at the Graduate
level in allied areas e.g. Sociology, Psychology, Economics, Biology,
Chemistry, Education, Art.

This program is planned for the following students:

1. Dietitians working toward a Master’s degree or who have been
out of the field and membership in the American Dietetics Associa-
tion has been dropped and now are required to take a minimum of five hours of academic work to be reinstated;
2. The Home Economist in Business who may need extra work in specific areas;
3. The Home Economist in Extension;
4. The School Lunch Manager;
5. The Teacher of Home Economics who may have been employed and desires to bring herself up-to-date in Home Economics subject matter for College teaching.

International and Area Studies

Claude S. Phillips, Jr., Adviser

The Master of Arts degree program in International and Area Studies is a Social Science Program on World Affairs. It is designed to acquaint citizens, regardless of vocational objectives, with the majority of mankind who live beyond Europe. A faculty of high competence permits a wide range of courses of both a general and specific nature—on Africa, Asia, Latin America and the Slavic Area. Graduates of the program should have a truly world-wide perspective of man as a social being.

The program is designed to serve the following vocational objectives:
1. Secondary and community college education in the social sciences.
2. Government service, such as Foreign Service, Peace Corps, Department of Defense, Agency for International Development (AID).
3. International private service, such as Red Cross, exchange teacherships, foundations, missionary activity.
4. Work for business and commercial enterprises with foreign sales and branches.

This program consists of 30 hours of course work. Twelve hours should be taken from a list of general courses dealing with the developing world. Another 12 hours deals with specific geographical areas: Africa, Asia, Latin America and Slavic Area. Three hours must consist of a colloquium in international studies. Those planning to teach must also take a seminar on the teaching of social sciences but a substitute may be permitted for those who do not plan to teach.

Modern and Classical Languages

Clifford J. Gallant, Chairman of Advisers

The Master of Arts degree in French, German or Spanish stresses improving the candidate's competence in the subject language and literature. Requirements are:
1. Undergraduate major or 30 hours or equivalent in Foreign Language.
2. Completion of thirty semester hours of graduate study of which twenty to thirty are in one language. Six hours toward the requirement in Language study may be satisfied at the option of the Department by the presentation of an acceptable thesis. Furthermore, a maximum of ten hours of graduate study may be applied in appropriate cognate fields. Selection of cognate courses is made by the adviser after determination of the candidate's specific needs and interest.

3. Oral and written examination over the candidate's area of concentration.

Librarianship

Jean E. Lowrie, Adviser

The Department of Librarianship is accredited by the American Library Association and is a member of the Association of American Library Schools. The Graduate program involves studies in the five major areas of library science: (1) history, philosophy and background of libraries; (2) technical processes; (3) library resources; (4) library clientele; (5) library organization and administration. The program prepares candidates for services in colleges or university, school, public and special libraries. In addition to the general admission requirements, the student must:

1. Give evidence of ability to do graduate work in library science.

2. Present a reading knowledge of at least one modern foreign language. This requirement may be met either by completing one academic year of study at the college level or by passing a proficiency examination.

Specialization is available in school libraries, and special departments in public libraries serving children, the adult reader, and the young adult. Programs are also arranged for candidates who wish to specialize in college, university or special library service such as industrial, art or music.

Candidates preparing for school library service must meet the teacher certification requirements in the state in which they wish to be employed.

The requirements for the degree of Master of Science in Librarianship are as follows:

1. Successfully complete thirty to thirty-four hours of approved graduate courses with a minimum of twenty semester hours in library science at the graduate level.

Candidates without previous training in library science will need to take the Required Courses as specified in the following list plus Elective Courses in the fields of their special interest to total thirty-four semester hours.

Required Courses: Lib. 510, 512, 530 or 531, 600 and 629 or Ed. 601, and colloquium.
Course descriptions and courses to be chosen as electives in Library Science will be found under the listings for the Department of Librarianship.

At the time of application for candidacy, the student must have completed at least two of the following courses: Lib. 510, 512 and 530.

2. Submit a satisfactory research paper required as partial fulfillment of a course requirement or, with the consent of the graduate adviser, complete a thesis for six semester hours of credit.

3. One semester of resident study or the equivalent in summer sessions.

Colloquium. Regular series of lectures, discussions, field trips and film demonstrations by eminent librarians, members of the staff and leaders in fields related to library interests. Required both semesters for full-time graduate students. Part-time graduate students are expected to arrange for attendance at least one semester. (No credit)

NOTE: Students who have an undergraduate minor in Librarianship may elect courses from other departments for a total of six to eight semester hours.

Graduate Program for the Instructional Materials Center Specialist

The Department of Librarianship now offers a graduate curriculum in administration of the Instructional Materials Center. For further description, see Specialist Program in Librarianship.

**Mathematics**

A. Bruce Clarke, Don R. Lick, John W. Petro, Advisers

The Department of Mathematics offers programs leading to the Master of Arts in Mathematics, the Educational Specialist in Mathematics, and the Ph.D.

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

In addition to the general admission and degree requirements, the student in the field of Mathematics must satisfy the following:

1. Have completed, with satisfactory grades, an undergraduate major in mathematics. If the student's undergraduate program in Mathematics does not meet approved standards, he may be required to elect additional courses or otherwise satisfy the requirements of the department.

2. Complete a minimum of 30 hours of approved course work in Mathematics to include 630 Abstract Algebra I, 670 Measure and Integration and 6 hours of credit in a related area.

3. Present credits in at least two mathematics seminars.
4. Pass a final oral examination in his field.

The student interested in Statistics may elect a program leading to a Master of Arts in Mathematics with concentration in Statistics. For a Master of Arts with concentration in Statistics, a student must meet all the requirements for the regular M.A. in Mathematics stated above, including an approved group of courses in the area of probability and statistics.

**Medieval Studies**

John R. Sommerfeldt, Adviser

The curriculum leading to the degree of Master of Arts in Medieval Studies is designed to provide a broad background in medieval history, languages, literatures, philosophy and theology. The program is available to students with undergraduate majors in history, art, philosophy, music, English, German, French, Spanish, Italian, or Latin, or other preparation accepted as the equivalent by the Medieval Institute.

The requirements for the degree are as follows:

1. Before admission to candidacy, the student is expected to present (a) an elementary reading knowledge of Latin and either German or French, (b) a survey course in medieval history, and (c) course work in philosophy or religion.

2. The course work includes a minimum of (a) three courses in medieval history, (b) two courses in medieval philosophy and theology, (c) two courses of medieval literature, and (d) a course in research methods. Courses taken as an undergraduate can be counted toward these area requirements. The student must complete a minimum of 30 semester hours of graduate work.

3. The preparation of an acceptable thesis.

**Music**

James Hause, Adviser

The Master of Music degree program is designed for professional advancement as well as for cultural attainment. This program is an extension of the Bachelor of Music curriculum and is planned to enhance the teaching and performing ability of the student. The degree of Master of Music may be obtained in any one of three areas of concentration: 1) Applied Music, 2) Theory-Composition, or 3) Music Education.

The student must successfully complete 14 semester hours in the major area in which he wishes to concentrate. In addition to a major area, a student will choose two minors from among 1) Music Education, 2) Music Literature, 3) Theory, and 4) Applied Music. The minors will consist of six semester hours each. To complete the necessary 30 semester hours of graduate credit the student will select, in consultation with his adviser, four semester hours outside of the field of music. Every graduate student is required to participate in some large ensemble while in residence.
A comprehensive examination will be administered to the student upon entering the curriculum. The results of this test will be used to give direction to the student's course of study. The areas in which the student will be examined are: 1) music literature and history, 2) theory, 3) applied music, 4) piano proficiency, and 5) conducting. The student's adviser will work closely with him in regard to planning and implementing the curriculum in order that the full value and depth of the program will be realized. The right is reserved to withhold the recommendation of a candidate for a degree if the student has not demonstrated sufficient maturation and musicianship. Students concentrating in Applied Music must meet minimum proficiency levels as described in the Music Supplement. Culminating projects in the form of a recital, composition, thesis, special project, or comprehensive examination are required for completion of the Master of Music degree.

The Master of Music degree curriculum is open to students with the Bachelor of Music degree or its equivalent.

A Master of Arts degree in the Teaching of Music is also available in the field of Education. (See page 29.)

Administration and Supervision of Occupational Therapy

A Master of Arts (M.A.) degree program in Occupational Therapy is designed to prepare students for administrative and supervisory positions in the field. Special emphasis is given to the organization of clinical education. In addition to meeting the general admission requirements of the School of Graduate Studies, the candidate must have completed a Bachelor's degree in Occupational Therapy or in a related field with a certificate in Occupational Therapy. A year of experience between undergraduate and graduate studies is recommended.

In order to qualify for the Master of Arts degree, the student must complete a minimum of thirty semester hours of approved graduate courses according to the following pattern:

1. Fourteen hours from the following courses in Occupational Therapy: 630 Professional Literature, 632 Supervision of Occupational Therapy, 633 Administration of Occupational Therapy, 650 Clinical Training and Scheduling, and 712 Professional Field Experience (experience in organization and administration of occupational therapy offered through the cooperation of the Occupational Therapy Section of the Veterans Administration Hospital, Hines, Illinois).

2. Eight hours selected with the help of the graduate adviser from related fields including Management.

3. Six hours including statistics and Education 601, Research in Education.

4. A paper of significance will be required in 710 Independent Study.
Occupational Therapy

Dean R. Tyndall, Adviser

The purpose of the Master of Occupational Therapy degree (M.O.T.) program is to prepare qualified college graduates for the profession of occupational therapy. In general, the requirements for the degree are:

1. Completion of a minimum of thirty-nine semester hours in basic occupational therapy education at the undergraduate level, or possession of other preparation accepted as equivalent by the department.

2. Completion of twenty-four semester hours including the following professional courses: 510 Kinesiology, 524 Medical and Orthopedic Conditions, 600 Studies in Occupational Therapy, 686 Seminar in Occupational Therapy, and 712 Professional Field Experience (internship of a minimum of six months is required by the accrediting associations).

3. Completion of six hours including Statistics and Research in Education.

Paper Technology

Raymond L. Janes, Adviser

The Master of Science program in Paper Technology is designed to provide theoretical, laboratory, and pilot-plant experiences which are basic to the development of professional competence in pulp and paper science and engineering.

Persons eligible for the program include: (a) Graduates of Paper Technology with a B.S. degree from Western Michigan University or from similar programs in the U.S., or (b) B.S. degree graduates in engineering, chemistry, or physics. Science or engineering majors who are accepted by the School of Graduate Studies but lack background in pulp and paper may be required to complete background studies as determined by the Department.

The academic program consists of a minimum of thirty semester hours of graduate credit which must include:


2. Satisfactory completion of a Master's Thesis (6 credit hours) based on either an experimental or theoretical topic, under the guidance of a Committee selected by the department.

3. A minimum of nine additional hours of graduate courses from the chemistry, physics, or mathematic departments, selected with the consent of the graduate adviser. Suggested courses include: Chemistry 520, 560, 610, 630, and 660; Physics 552, 560, 563; Mathematics 500, 506.
Physics

George Bradley, Adviser

The program for the Master of Arts degree in Physics consists of a minimum of thirty semester hours of graduate credit which must include:

1. The following courses which make up twelve hours of physics open only to graduate students, namely: 622 Quantum Mechanics, 624 Statistical Mechanics, 630 Classical Mechanics, and 662 Electricity and Magnetism.
2. Twelve additional hours from the physics, mathematics, or other departments chosen with the consent of the physics graduate adviser. Only courses numbered 500 or above carry graduate credit.
3. Satisfactory completion of a Master's thesis (6 credit hours) based on either an experimental or theoretical problem, under the guidance of a committee of the graduate faculty in physics. The committee may require an oral defense of the thesis before approving it for submission to the Graduate School.

The Graduate Colloquium is a weekly program for graduate students and Physics staff members, presented by members of the WMU Physics staff and visitors from other institutions, on topics related to their research specialties. Graduate students are also expected to attend the Physics Seminars. A series of talks given bi-weekly, usually by visitors, on topics of general interest in Physics and related fields.

Political Science

Jack C. Plano, Adviser

In addition to meeting the general admission requirements of the Graduate School, a student must have completed at least 24 hours of work in the Social Sciences with a 3.0 record (on a 4.0 scale) or have equivalent preparation acceptable to the Department. The Department may require the student to make up deficiencies in undergraduate preparation and/or require the Graduate Record Examination.

In order to qualify for the Master of Arts degree in Political Science the student must

1. Complete thirty hours of work: a minimum of 24 hours in Political Science, including six hours for the Thesis, with at least three hours in each of the three fields listed below, in addition to which he may take up to six hours in appropriate cognates.
   a. American Institutions
      (National, State, or Local Government, Politics, Public Administration, Public Law)
   b. International and Area Studies
      (International Relations, Comparative Government)
   c. Political Theory and Methodology
2. A thesis shall be required for the M.A. degree in Political Science
except upon formal application for waiver approved by the Committee on Graduate Admissions.

3. Before being recommended for the degree of Master of Arts in Political Science, the student will be required to pass an oral examination. The student will be examined by his Thesis Committee or, if the thesis requirement is waived, by an examining committee appointed by the departmental graduate adviser. The examination will cover the thesis and the adequacy of the student's preparation in the general field of Political Science.

Psychology

A candidate for a Master of Arts degree in psychology must meet standards set by the Department of Psychology in addition to the admissions standards set by the Graduate School. Each student should correspond with the department for information in experimental, clinical or industrial psychology. Requirements for the degree include the following:

1. Completion of a major or broad minor in Psychology at the undergraduate level with satisfactory grades.
2. Completion of six hours of electives in one or more fields which are related to psychology.
3. Satisfactory completion of a thesis for six hours of credit in courses specified by the graduate adviser.
4. Further requirements are determined by the area of specialization elected by a student. In general a program of studies will be specified by the graduate adviser and the major professor to produce appropriate competence in the given area. Specialization requirements include:

   a. Experimental Psychology — eighteen or more credit hours with at least twelve hours in courses in basic behavioral processes and statistical analysis and at least nine hours of electives in courses in experimental problems, systems, history or data analysis techniques. This program is designed to prepare a student for doctoral training in experimental psychology.

   b. Clinical Psychology — forty-eight or more credit hours with at least twenty-four hours in courses in the theoretical and experimental analysis of human behavior and the practical modification and prediction of abnormal human behavior, at least three hours in statistical analyses, and at least nine hours of electives in courses in basic processes or experimental problems. The clinical program may be designed to accommodate either student's who plan to engage in professional work at a master's degree level of proficiency of those interested in continuing graduate studies for a doctorate in the clinical area.

   c. Industrial Psychology — at least fifteen hours in basic courses in the application of psychological techniques to industrial problems and in statistical techniques and at least three hours of
electives in courses in experimental problems which are relevant to industrial psychology.

**Sociology**

Milton J. Brawer and Lewis Walker, Advisers

The Master of Arts degree program in Sociology is designed to (1) give students a mature understanding of the significant factors and processes of contemporary society, (2) advance the preparation of those planning to teach in the social-science field, (3) lay the foundation for more advanced graduate work in Sociology, and (4) provide professional training for a variety of occupational opportunities in government, industry, research organizations, welfare agencies and correctional systems.

**Eligibility for Admission**

1. Students should have completed a minimum of 24 semester hours in undergraduate work in the Social Sciences, of which 15 semester hours should be in Sociology.
2. Students should have a grade-point average of 3.0 or better in their undergraduate sociology courses.
3. If these requirements have not been met on the undergraduate level, the student may be admitted with additional course work, without graduate credit, as specified by the department as a condition of admission.

**Degree Requirements**

1. Complete at least thirty hours course credits, selected in consultation with the master's adviser. Twenty to twenty-four hours in Sociology courses with a 3.0 average. Six to ten must be in approved cognate areas.
2. Sociology courses 504, 580 and 582, or their equivalents, are required. Entering students who have not completed any of these courses as undergraduates may be required to complete additional hours beyond the thirty-hour minimum.
3. Full-time students must enroll in Sociology 683, Supervised Research in their first semester.
4. Complete an original thesis or essay, using approved methods for investigation of a sociological topic. The thesis is required for students planning, and considered qualified, for doctoral studies. The thesis provides six hours of course credit, the essay two hours of credit toward the Sociology course credit requirements.
5. Must pass an oral examination on the thesis or the essay. The examination will deal with the relationship of the thesis or essay to the field of Sociology.

**Financial Support**

A number of departmental, university and governmental assistantships, fellowships, and associateships are available to qualified students.
Training opportunities and part-time employment are also available through the facilities of the Center for Sociological Research. The Center has conducted studies of mental illness, martial roles, race relations, group dynamics, deviant behavior and numerous other topics. Graduate students frequently participate in these studies. Additional information and application forms may be obtained from the Departmental Graduate Standards Committee.

Speech Pathology and Audiology

Robert Erickson, Adviser

The Master of Arts degree program in Speech Pathology and Audiology is designed to provide academic and practicum experiences basic to the development of increased clinical competence in the profession of speech and hearing therapy. The academic program consists of a minimum of 35 credit hours planned in accord with the guidelines indicated below. Supervised clinical practice is required during every term of registration and includes observation of Demonstration Therapy, participation in the Out-Patient Diagnostic Clinic, and assignment to an off-campus practicum facility for one term, in addition to regular case work responsibilities in the Speech and Hearing Clinic.

Two options are available with respect to the academic degree program. The student who elects to complete a thesis must complete 29 hours of course work plus the thesis. The student who elects the non-thesis option must complete 35 hours of course work. In either event, at least 24 hours of the course work must be completed in the Department of Speech Pathology and Audiology. Additional requirements for the master's degree are described below.

1. The student must fulfill the following academic requirements.

(a) Completion of an undergraduate major or minor in Speech Pathology, Psychology, Sociology, Education, or other curriculum accepted by the department.

(b) Accumulation, during the final two years of undergraduate work, of a point-hour ratio of at least a “B” in all speech pathology and audiology registrations.

(c) The undergraduate preparation must include 18 semester hours in courses that provide fundamental information applicable to the normal development and use of speech, hearing and language. Among these 18 hours should be at least one course in phonetics, one course in anatomy and physiology of the speech and hearing mechanisms, one course in speech and language development, and one course dealing with the science of speech and hearing.

(d) The undergraduate preparation also must include a minimum of 12 semester hours in courses which provide basic information regarding the diagnosis and treatment of voice problems, articulation disorders, stuttering, impaired hearing, and organic speech disorders in children.
(e) Undergraduate deficiencies may be removed during the time that graduate courses are being completed, but a point-hour ratio of at least a "B" must be accumulated in these courses. These deficiencies must be removed prior to the student's admission to candidacy.

(f) Completion of a core of required graduate speech pathology courses specified by the department.

(g) Completion of at least four hours of credit in graduate seminar registrations.

(h) Completion of at least one graduate level course in audiology.

2. The student must have completed satisfactorily a total of at least 275 hours of supervised clinical practicum experience (including those hours, if any, accumulated as an undergraduate). This experience must include: work with pre-school, school age, and adult cases; group as well as individual therapy; diagnostic work; work with a variety of disorders, including hearing as well as speech.

3. The student must manifest emotional and behavioral characteristics which, in the judgment of the departmental staff, will not jeopardize his professional competence.

4. Before being admitted to candidacy the student is required to demonstrate, by means of a written examination, satisfactory mastery and synthesis of basic information related to normal and disordered speech and hearing.

A thesis or one or more independent research registrations may be applied toward degree requirements by students who demonstrate research aptitude and interest. Students who anticipate further study toward a doctoral degree are expected to evidence the ability to formulate and conduct a research paper.

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

Technology

George E. Kohrman, Chairman of Advisers

The Master of Science degree program in Technology is designed to (1) prepare industrial technology teaching personnel for community colleges, (2) provide an opportunity for industrial employees to upgrade themselves in advanced technical skills and information, and (3) provide advanced technical course work for those who are preparing to teach in secondary schools and technical institutions.

The Master's Degree in Technology is sponsored by the School of Applied Arts and Sciences. A student must satisfy the following requirements to earn the degree:

1. Possess a baccalaureate degree with a major in a technical or related field.
2. Show evidence of a mathematics and science background consisting of a minimum of two semesters of college mathematics (eight hours) and a minimum of one year of college physics, and/or chemistry (eight hours).

3. Complete the basic course, *Introduction to Technology*.

4. Complete, with the approval of his adviser, twelve to fifteen hours of study in a major field of study representing his specialty in either electrical, industrial, or mechanical technology.

5. Complete, with the approval of his adviser, five to eight hours of study in a related technical area from either electrical, industrial, or mechanical technology.

6. Complete seven hours of cognate areas from the following: chemistry, economics, education, industrial management, mathematics, physics, psychology, sociology, vocational education, or business.

7. Show evidence of practical work experience in his major field of pursuit. Those who do not have this experience would be expected to spend a minimum of one session (two to three hours credit) of supervised internship in industry involving his field of specialty.
SECTION III

Specialist and Doctoral Degree Programs

PROGRAMS LEADING TO A SPECIALIST DEGREE

Specialist in Education

Sixth-year programs leading to the degree Specialist in Education are offered in the nine areas of General School Administration, Elementary School Administration, Secondary School Administration, School Personnel Administration, School Business Management, Director of Curriculum, Guidance and Personnel Services, Special Education, and School Psychological Examiner.

The Specialist in Education Degree program is designed to produce educational leaders who are competent persons, broadly and deeply educated, and well-versed in the professional qualifications required of their respective educational tasks. With this in mind and considering the individual plans of each applicant, a flexible curriculum has been designed to meet the personal needs of the students. It is anticipated that most candidates for the Specialist in Education will have already earned Master's degrees. To be accepted a student must have completed 20 hours of graduate level work. The program, however, is conceived as a well-articulated fifth- and sixth-year program, covering a minimum of two years, or 60 hours, of graduate work. For students entering with only 20 hours, the Master's degree may be awarded on completion of a minimum of ten additional hours if all other institutional requirements for that degree are met. The degree of Specialist in Education is awarded upon successful completion of the entire program.

The student in Specialist in Education programs must in addition to the general requirements listed in Section I of this Bulletin:

1. Have completed at least 20 hours of graduate study prior to admission.
2. Present evidence of leadership potential at the time of his admission interview. (Not applicable to the School Psychological Examiner program.)
3. Complete at least one year of successful teaching or acceptable equivalent in certain non-Administrative curricula.
4. Notify his adviser of the residence option he selects at the time of registration for the first term of residence.
SPECIALIST IN EDUCATION CURRICULA OFFERED
BY THE DEPARTMENT OF SCHOOL SERVICES

Specialist in Education degree programs are offered by this department in seven areas. Applications for candidacy in each of these curricula will be assigned a committee of three faculty members who will work with the student in program planning, internship supervision and field project, and recommending the degree. The specific requirement for each program follows:

1. Twenty hours in core and related education courses.
2. At least twenty hours in the major area, to include six hours in a field project or internship.
3. Twenty hours in cognate fields such as Anthropology, Business, Economics, History, Librarianship, Political Science, Psychology, Sociology and Speech.
4. Evidence of leadership potential to be presented at the time of the admission interview.

Specialist in Education curricula and graduate advisers include:

**Director of Curricula**
*Adviser:* Dorothy McCuskey

**Elementary School Administration**
*Advisers:* James Davenport, Paul Misner

**General Administration**
*Advisers:* Harold W. Boles, Paul Misner, Maurice Seay, Roland Strolle

**Guidance and Personnel Services**
*Advisers:* Robert Betz, William A. Carlson, Kenneth B. Engle, L. Dale Faunce, Gilbert Mazer

**School Business Management**
*Adviser:* Roland S. Strolle

**Personnel Administration**
*Adviser:* William P. Viall

**Secondary School Administration**
*Adviser:* Donald C. Weaver

SPECIALIST IN EDUCATION CURRICULA OFFERED
BY THE DEPARTMENT OF SPECIAL EDUCATION

Specialist in Education programs are offered by this department in two areas. The general requirements for admission, academic achievement, candidacy and resident work for the Specialist Program in this department are the same as those outlined in the general program description above.
Special Education

Advisers: Morvin A. Wirtz, Kristen D. Juul, Joseph J. Eisenbach

1. Twenty hours in core and related Education Courses

2. At least twenty hours in Special Education to include four to six hours in a field project or internship.

3. Twenty hours in related fields outside the School of Education such as Psychology, Anthropology, Sociology or similar disciplines.

4. Evidence of leadership potential to be presented at the time of the admission interview.

School Psychological Examiner

Adviser: Frank Heger

This program provides for the training of persons preparing for the position of School Diagnostician or School Psychological Examiner, as well as basic pre-doctoral study in School Psychology. Successful completion of this program is a requirement for certification as a School Psychological Examiner in the State of Michigan.

The program is designed to prepare the student in the use of the principles and techniques of psychology in the school setting. The training includes work in testing, interviewing, and psychological counseling. The student will be expected to acquire a knowledge of the deviant and exceptional child and of the basic techniques used in psychological research.

In addition to the general requirements for Specialist Programs stated above, the student must give evidence of the following:

Admission requirements include the following:

1. Nine to fifteen hours of undergraduate psychology courses including Elementary Statistics and Experimental Psychology or their equivalents. Additional work to remedy deficiencies may be taken prior to application for candidacy.

2. Completion of either the Bachelor's or Master's degree.

3. Successful completion of a qualifying examination before admission to candidacy. This examination will be administered by the graduate committee.

In order to qualify for the Specialist degree in this field, the student must elect courses from the following areas in consultation with his adviser:

I. 12 to 17 hours from the field of General Psychology.

II. 18 to 22 hours from the Clinical and School Psychology courses.

III. 15 to 16 hours from courses in Special Education.

IV. 12 to 18 hours of internship to include 500 or more clock hours of supervised practice.
Specialist Programs in Areas Other Than Education

In addition to the Specialist in Education programs the School of Graduate Studies offers a number of Specialist degree programs in other areas. With the exception of the Specialist in Librarianship, these programs have been planned to prepare community college teachers. Each requires sixty hours of graduate level preparation. Students entering with a Master's degree may be allowed up to thirty hours toward their sixty hours requirement provided the work taken previously meets the objectives of the Specialist degree and is sufficiently up-to-date. Students entering the program in Librarianship must have a Master's degree in Librarianship from a library school accredited by the American Library Association.

The basic plan for each program except Librarianship will include a minimum of forty hours of course work in the discipline involved, ten hours of professional preparation and the remaining ten hours in a related supportive area or areas. All Educational Specialist students must complete one semester or two consecutive sessions in residence on the campus.

The professional preparation will include courses in:

1. The Community College.
2. Characteristics of the College Student.
4. A research course either in the student's major field or in Education.

Students may enter each of these programs except Librarianship either upon completion of a Bachelor's or Master's degree. Those entering without graduate work must have achieved a grade point average of 2.6 for the last two years of undergraduate study. Those entering with graduate preparation must have a 3.25 average for all work completed at the graduate level.

All students entering a Specialist program must attain an acceptable score on the English entrance examination and the Verbal and Quantitative sections of the Graduate Record Examination. Students entering the program in Business must also take the Admission Test for Graduate Study in Business.

Some students entering a Specialist degree program may be expected to secure a favorable recommendation of an interviewing committee. The student must also be accepted by the department or unit in which he wishes to study.

Each student is expected to satisfy the requirements of his discipline with reference to a paper or project and to pass a final examination if one is required in his program.

The specific requirements of each program follow:
Specialist in Business Education  Darrell G. Jones, Adviser

The Educational Specialist in Business program is designed to prepare community college teachers of business subjects. Each student must select for concentration a field of business ordinarily taught in community colleges but will be expected to complete work in some other area of study offered by the School of Business in addition to some work in economics or in the behavioral sciences. The exact division of course work will be determined by the student in consultation with his adviser. Generally the adviser will be from the student’s field of concentration.

Specialist in English  Ralph Miller, Adviser

The Educational Specialist in English program is designed primarily to prepare community college teachers of English. It is intended to give students opportunities for study and training in:

- English and American literary history
- Linguistics
- Literary research

The student will concentrate a portion of his work in one field such as a period of English or American literary history, a major author or a genre. He will also write an historical or critical essay and pass an oral examination in literary history given by the Department of English.

Specialist in History  Graham Hawks, Adviser

The Specialist in History program is designed to prepare community college teachers of History and to strengthen the historical preparation of teachers of History in the secondary schools.

The specific requirements for the degree include:

Each student is expected to select three fields of concentration in History and one field of concentration in a related department approved by the graduate adviser. The fields in History are to be selected from the following: (1) Ancient, (2) Medieval, (3) Europe 1500-1815, (4) Europe 1815 to present, (5) United States to 1877, (6) United States since 1877, (7) Latin America, (8) Far East, (9) Russia and Eastern Europe. One of the three fields should be designated as a major field of concentration.

Although no specific number of hours is required in each field of concentration, the student will be expected to pass a written or oral examination in two fields of concentration during the semester in which he completes thirty hours of graduate work and in the other two fields during the final semester or session. Students must complete History 692, Studies in Historical Literature, History 690, Historical Method, and the professional work required by the School of Graduate Studies.
Specialist in Librarianship

The Specialist in Librarianship program is designed to prepare librarians for administering instructional materials centers for either the individual school or school system, for administering libraries in community colleges or for leadership in public library services. The program will require at least thirty hours of graduate study beyond a Master's degree in Librarianship from an American Library Association accredited library school.

Curriculum:

*Administration of the Instructional Materials Center* — The curriculum will be planned to provide that balance of the individual student's background in the professional library areas which is necessary to equip him to serve K-12 programs through instructional material centers.

The student's program for the two years of librarianship training beyond the Bachelor's degree must include courses in educational supervision and the curriculum, management and systems analysis, educational media and communications, computers and data processing, library research methods as well as the usual training expected of a librarian. Students in this curriculum must have completed one year of successful school library experience before completing this degree.

*Public Library Service* — The curriculum will be planned to provide the necessary professional background for public library administration at the systems level. There will be additional work in such fields as management and systems analysis, mass media and communication, computers and data processing, political science and sociology. A course in research methods at the post baccalaureate level and participation in individual research and professional experience will be required. One year of acceptable experience is required before completion of the degree.

*Administration of Community College Libraries* — The curriculum is planned to enhance one's competencies in the various areas touching on the administration of the community college library. These will include work in such fields as communications, education, management, and media as well as the areas falling specifically in the realm of librarianship. A course in research methods at the post baccalaureate level and participation in individual research and professional experience will be required. One year of acceptable experience is required before completion of the degree.

Specialist in Mathematics

The Specialist in Mathematics program is designed to prepare community college teachers of mathematics. Students entering the program must have completed the equivalent of an undergraduate major in mathematics. In addition to satisfying the general requirements listed...
below, each student completing the degree will include the following in his program:

1. Six hours of credit in graduate seminars.
2. The Journal Seminar in Mathematics.
3. At least thirty hours of work open only to graduate students.

Each student's initial program will be planned in consultation with the adviser in charge of the Specialist in Mathematics program. A committee composed of the student's thesis advisor, two other members of the Mathematics Department and one member of the School of Education will be named to guide his study, conduct the final examination and advise him on thesis preparation.

Specialist in Science Education

The Specialist in Science Education program is designed to prepare community college teachers of science. Since community college teachers of science are frequently required to teach such combinations of courses as: Biology and Life Science, Chemistry and Physical Science, Geology and Earth Science, and Physics and Physical Science, each student's program will be designed to prepare him for one of these combinations.

Each student's program will be planned in consultation with an adviser selected from the Science Education faculty of the student's major field of study. The student will be required to take work from more than one Science area and also in Mathematics where necessary. The maximum credit given within the program from Mathematics may not exceed 12 hours. The student will normally take a minimum of 20-30 graduate hours of work including his Specialist paper or dissertation in his major science area or in Science Education. He will then be expected to take from 14 to 20 hours in a second area. Students must present at least an undergraduate major in one Science area in order to be admitted. They must also meet all the general requirements stated above.

PROGRAMS LEADING TO A DOCTORAL DEGREE

Western Michigan University's School of Graduate Studies offers doctoral programs in five areas. Four of these, Chemistry, Mathematics, Sociology, and Science Education will lead to the Doctor of Philosophy degree and the fifth, Educational Leadership, will involve study toward a Doctor of Education degree. Each of these programs will involve approximately three years of study of which at least one complete year must be spent in full-time study on the campus.
Each student's program will be planned by a committee selected in consultation between the student and the graduate adviser of the program in which he wishes to study. All students will be expected to register for at least 90 hours of graduate level work while completing their programs. The exact distribution of that 90 hours among courses, seminars and research will depend upon the program and will vary from one student to another. Each program, however, will contain a significant amount of research and each student will be required to prepare a dissertation for which he will be given fifteen hours of graduate credit.

Students will be expected to select two appropriate research tools of which one will normally be a foreign language for those studying for the Ph.D. degree. The second research tool may include proficiency in one of the following: computer programming, statistics, some other skill approved by the Graduate Studies Council or a second foreign language. Appropriate competency in each of these research tools will be established by the Graduate Studies Council and tested by a committee named by the Council for that purpose.

Students will be allowed a period of seven years from the date of admission to complete all the requirements for the degree. Under extenuating circumstances, additional time may be allowed by the School of Graduate Studies.

All students will be expected to pass those examinations established by the units under which they study. In all cases these examinations will include comprehensive examinations of the subject matter areas included in the student’s program of study and a final oral examination.

Chemistry

The Ph.D. program in Chemistry at Western Michigan University is a flexible one which may be tailored to the needs of the individual. Of the total program of 90 semester hours, a 32 semester hour minimum in course work is required, with the remainder of the program set up by the student and his doctoral advisory committee. Some students may take a relatively large number of courses, and others, relatively few. All will be expected to participate in seminars and colloquia to assure that the attainment of knowledge and sophistication in chemistry is achieved. A thorough and substantial piece of original laboratory research will constitute the basis for the dissertation.

All students admitted to the Ph.D. program in Chemistry must pass three qualifying examinations, one in each of the fields of analytical, organic and physical chemistry.

Proficiency in two languages will be required of candidates for a Ph.D. in Chemistry. They will ordinarily be selected from German, Russian, and French. All chemistry students at the undergraduate level are expected to complete Mathematics IV and many students, particularly those in physical chemistry, will take more advanced mathematics courses. These may not be designated as “research tools” and will not
be accepted as a substitute for one language, but instead will be considered cognate work.

During the first calendar year a student will be expected to complete the following courses or their equivalents: (a) Seminar, one hour (b) Chemical Literature, two hours (c) six first-year courses [Two of the six courses must be from the division (analytical, biochemistry, inorganic, organic or physical chemistry) of his research and dissertation. Two of the six courses must be from a second division of chemistry] (d) Instrumental analysis and a 600 level Physical course if not included in (c), and (e) electives in courses, special problems or research.

After admission to the Ph.D. program in Chemistry on completion of the program listed above, the student will prepare a plan of study in consultation with his major adviser and other members of his doctoral advisory committee. This plan of study shall include seminars and research and shall insure reasonable breadth for maturity as a Ph.D. candidate. Ordinarily this will include as a minimum a third and fourth three-hour course in the area of the research.

Educational Leadership

Harold Boles, Chairman of Advisers

The School of Education offers, through the Department of School Services and with the cooperation of several other departments, a doctorate in Educational Leadership which has some unique features. This Doctor of Educational degree is designed to prepare educators of personal and professional stature who are knowledgeable and competent to exercise leadership in education. A variety of projects and other educational experiences are arranged to educate qualified students in the technical, conceptual and human skills required of all educational leaders and administrators, without regard for their particular assignments. In this program, educational leadership is conceived not as merely “running a school or school system,” but rather as a highly cognitive professional activity which demands an appropriate knowledge of the leadership process in school and society, and a high degree of competence in handling human relations.

The doctoral program is an integrated program of courses, seminars, internship experience and dissertation production designed to meet the developing needs and goals of each student. There are three rather distinct yet unified components to the program 1) the Educational Leadership Core, designed as an interdisciplinary study for all leaders in education; 2) the Special Interest Area, with courses in Education and related fields; and 3) the Internship-Research-Dissertation Phase.

Each component will occupy about one-third of the student’s program and will represent the equivalent of one calendar year of activity. It should be noted, however, that the implementation of the components may extend over part or all of the three-year span or its equivalent. These components are:
1. Educational Leadership Core 28–30 hrs.
   a. Administrative Concepts and Skills 8 hrs.
   b. Human Relations and Behavior 8–9 hrs.
   c. Social and Philosophical Foundations 7–8 hrs.
   d. General Research Tools and Skills 5 hrs.

2. Special Interest Area 30–32 hrs.
   a. Area of Specialization 14–16 hrs.
      The student is expected to select an area of specialization from
      one of the four general fields of educational leadership, namely:

      1) General administration, including "line positions" such as
         superintendent, assistant superintendent, secondary principal,
         and elementary principal.

      2) Staff administration, including directors or coordinators
         of instruction, curriculum, business affairs, and staff per-
         sonnel.

      3) Educational program administration, including directors
         of primarily non-school educational programs in business,
         industry, trade unions, government, armed forces, and pro-
         fessional associations.
      Courses are selected from offerings of appropriate depart-
         ments, primarily School Services, Teacher Education, and
         Management to fulfill the specialization requirements.

      4) Student Personnel Services, including preparation for
         positions of: directors or coordinators of guidance and
         counseling services in the elementary and secondary schools
         or institutions of higher education: directors of counselor
         education, guidance counselors, dean of men or women in
         institutions of higher education.

   b. Related Fields 14–16 hrs.
      Chosen from offerings in the departments of Economics,
      Management, Political Science, Psychology, Sociology and
      Anthropology, Speech, Teacher Education and others, in re-
      lation to development of the human, conceptual and technical
      skills required of educational leaders and in consonance with
      the professional goals of each student.

3. Internship, Research and Dissertation Phase 30 hrs.
   The equivalent of one calendar year of work (in virtually all cases,
   the year of residence) is to be spent in a coordinated program of
   internship, individual research, and dissertation preparation, with
   appropriate segments of college credit assigned in proportion to time
   and work spent in each aspect of the program.
Mathematics

The Ph.D. Program in Mathematics is designed to give the student a broad but intensive background in a variety of fields of mathematics, with special emphasis on some selected area in which the student will be prepared for, and participate in, creative mathematical research.

A student may enter this program with a Master's degree or directly upon completion of a Bachelor's program. In addition to satisfying the general admissions requirements of the School of Graduate Studies, the student must have acquired a sufficient level of mathematical training with satisfactory grades as determined by the Departmental Doctoral Committee. Upon entrance to the program the student is assigned an adviser who assists him in planning his program until he reaches the stage of having a Dissertation Adviser appointed.

As early as possible in his program the student must complete the graduate analysis sequence Mathematics 670, 671 and the graduate algebra sequence Mathematics 630, 631. In addition, each student must complete at least twelve credit hours of approved course work distributed over three of the following four areas: complex analysis; topology; applied mathematics; probability and statistics. The balance of his program consists of advanced courses, seminars, and research, leading ultimately to a dissertation constituting a significant contribution to some field of mathematics.

Within one year of admission to the program (two years for students entering with only a Bachelor's degree), the student is required to take a Qualifying Examination. This consists of two parts, and tests the student's knowledge in the basic areas of linear and abstract algebra, real analysis and integration theory. Any student who fails the Qualifying Examination twice will be dismissed from the program.

When the student nears the end of his formal course work, he must take a Candidacy Examination. This is an examination in depth in three approved areas of mathematics. After successfully completing this Examination the student is assigned a Dissertation Adviser and a Dissertation Committee who supervise his final research and dissertation.

In accordance with the requirements of the Graduate School, each student is required to attain competency in two research tools. Normally these will consist of two foreign languages selected from French, German, and Russian.

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

The Department of Mathematics offers substantial opportunities for financial support of graduate students through Graduate Assistantships, University Fellowships and Associateships, and other fellowships. Individuals desiring further information about such opportunities, or about the program as a whole, should consult the Program Adviser.
Sociology

Jerome G. Manis and Stanley S. Robin, Advisers

The Ph.D. program in Sociology is designed to prepare students for careers in sociological research and teaching. The program provides broad training in Sociology through a wide variety of courses and research experiences. A basic feature is the core training in General Sociology, Theory, Research Methods and Social Psychology. Specialization in two areas of Sociology will be chosen from Social Problems, Comparative Social Organization and Sociology of Education.

Eligibility for Admission with Bachelor's Degree

1. Applicants must have a grade-point average of 3.25 in fifteen or more semester hours of sociology courses.
2. Applicants must have an overall grade-point average of 3.00.

Degree Requirements for those Admitted with Bachelor's Degree

1. Complete approximately ninety hours of graduate course, thesis and dissertation credits.
2. Complete all requirements for the master's degree including a thesis.
3. Sociology courses, 524, 601, 604, 630, 681, 682, and 684, or their equivalents are required.
4. Demonstrate competence in one language other than English and one additional research tool (statistics, computer programming, or a second language).
5. Pass Ph.D. Core and Area, Cognate and Dissertation examinations.

Eligibility for Admission with Master's Degree

1. Applicants must have a grade-point average of 3.25 for all course work taken for graduate credit.
2. Applicants should have, or be completing, a master's degree in Sociology.
3. Applicants who hold a master's degree in a related field may be admitted to the program but will be required to make up deficiencies without credit.

Degree Requirements for those Admitted with Master's Degree

1. Complete approximately sixty hours of course and dissertation credits, beyond master's work selected in consultation with the doctoral advisor.
2. Sociology courses, 524, 601, 604, 630, 681, 682, and 684, or their equivalents are required.
3. Demonstrate competence in one language other than English and one additional research tool (statistics, computer programming, or a second language).
4. Pass Ph.D. Core and Area, Cognate and Dissertation examinations.
Financial Support

A number of departmental, university, and governmental assistantships, fellowships, and associateships are available to qualified students. Training opportunities and part-time employment are also available through the facilities of the Center for Sociological Research. The Center has conducted studies of mental illness, marital roles, race relations, group dynamics, deviant behavior and numerous other topics. Graduate students frequently participate in these studies. Additional information and application forms may be obtained from the Departmental Graduate Standards Committee.

Science Education

Paul Holkeboer, Adviser

The Ph.D. program in Science Education is designed to prepare (1) science supervisors, directors of science instruction, or heads of science departments in large school systems or in state departments of education, (2) college instructors who are likely to teach science methods courses, science courses in National Science Foundation Institutes designed for science teachers who have less-than-adequate training and courses in research methodology, or (3) college teachers of science methods courses offered by departments or schools of education and supervisors of student teachers of science.

All students will be expected to meet the regular requirements for admission, residence, and comprehensive examinations established by the School of Graduate Studies. The two research tools required for the completion of this degree are: (1) reading knowledge of a foreign language, and (2) competence in either statistics or computer programming. Admission to take work toward the doctoral degree in science education will require an undergraduate major in one area of science, and ordinarily an undergraduate minor in a second. Students entering with less than these requirements will be expected to complete them at the undergraduate level. To be admitted to candidacy for the doctoral degree, the student will be expected to have completed two years of successful experience in teaching at the elementary or secondary level.
SECTION IV

Description of Graduate Courses

Two types of courses are offered in the School of Graduate Studies: (1) Those numbered 600 and above open only to graduate students, and (2) those numbered 500 through 599 open to both upperclassmen and graduate students. In all courses open to both upperclassmen and graduates, a distinction is made between the work expected from graduate students and that from undergraduates. The work expected from graduates may be of higher quality or greater quantity or both. This applies to courses offered in extension as well as in residence. The student should consult the Schedule of Classes for hours, days of week and place of meeting for all classes.

School of

Applied Arts and Sciences

GEORGE E. KOHRMAN,
Dean

Graduate Offerings:
Applied Science
Agriculture
Distributive Education
Engineering and Technology
Home Economics
Industrial Education
Occupational Therapy
Paper Technology
School of Applied Arts and Sciences

The School of Applied Arts and Sciences includes the following departments: Agriculture, Distributive Education, Engineering and Technology, Home Economics, Industrial Education, Military Science, Occupational Therapy, Paper Technology and Transportation Technology.

The School of Applied Arts and Sciences offers a graduate program in Engineering Technology, Home Economics, Occupational Therapy and Paper Technology, and cooperates with the School of Education in providing teacher-education programs in Teaching of Distributive Education, Teaching of Home Economics and Teaching of Industrial Education (See Education, Section II of this bulletin for these programs).

APPLIED SCIENCE

Kohrman, Dean; Associate Professor, Johnson

Open to Graduates and Upperclassmen

520 Principles of Practical Arts and Vocational Education 3 hrs.

The place and function of the practical arts and vocational education in the modern school; fundamental principles upon which this work is based. For teachers of agriculture, business, home economics, industrial subjects and administrators.

Open to Graduates Only

600 Introduction to Technology 3 hrs.

A study of the development of the technical education movement and the function, philosophy, trends, and types of technical education programs.

605 Studies in Technology 1-4 hrs.

A course designed to take advantage of certain opportunities offered through industry in the form of technical workshops, seminars, short courses, or field research offered on campus or at industry itself. If field research is utilized as a source of study, emphasis will be placed on performing a given industrial task supervised by a staff member. Prerequisite: Consent of instructor and Dean's Office prior to registration.

622 Occupational Laboratory Experience 2-3 hrs.

A supervised industrial experience program involving full-time employment for at least one semester. Students will study and participate in experiences in a specific occupational area. Prerequisite: Consent of instructor and Dean's Office prior to registration.

625 Administration and Supervision of Practical Arts and Vocational Education 2 hrs.

The functions of administration and supervision; problems involved in the organization and operation of practical arts and vocational educa-
tion programs. For administrators, supervisors of vocational education and those wishing to prepare for such positions.

626 Trends in Technology and Employment 2 hrs.
Major occupational shifts resulting from recent advances in science and technology. The changing nature of the labor force, economic and sociological implications of automation and atomic power. Attention will be given to educational programs needed to meet technical and skilled manpower requirements.

628 Seminar in Vocational Education 2 hrs.
An intensive study of problems related to vocational education. For teachers, coordinators and administrators who have completed at least fifteen hours of graduate credit.

Agriculture

Open to Graduates and Upperclassmen

520 Soil Science 2 hrs.
Treats soil as an organic resource. Soil formation, composition and classification are related to various physical, chemical and biological factors in the environment. Consideration is given to soil fertility, water retention and runoff, plant growth and land use as they are affected by these factors.

Distributive Education

Open to Graduates and Upperclassmen

500 Seminar in Distributive Education 2-4 hrs.
An intensive study of problems related to distribution and education for distribution. This seminar is especially recommended for seniors and graduates in the distributive education department.

570 Organization and Operation of Distributive Education 2 hrs.
Deals with the organization and operation of distributive education in relation to the total education program. It is concerned with preparatory, cooperative and adult programs. Consideration is given to advisory committees and local, state and federal relationships.

571 Job Supervisory Training 2 hrs.
Provides for mastery of the techniques and skills used in supervision of employees. It deals with conference leading, how to train, how to develop the skills of leadership and the corrective interview. This training is useful for vocational teachers and those preparing for supervisory positions.
572 Teaching Techniques for Cooperative Education 2 hrs.
Deals with the methods and techniques used in teaching the related subjects to students on cooperative work-study programs. Special emphasis will be given to group and individual methods of instruction.

573 Coordination Techniques in Cooperative Education 2 hrs.
A study of the duties and responsibilities of the coordinator. Includes the organization of training programs, supervision of trainees on the job and the development of working relationships among the school, business and home.

598 Readings in Distributive Education 1-3 hrs.
Directed, individual study of topics and areas of interest which are not otherwise treated in departmental courses. Consent of Department Head.

Engineering and Technology
Giacchino, Head; Professors Boukeme, Nantz, Scott, Wilcox; Associate Professors Day, Groulx, Hesselberth, King, S. Johnson, Rayl, Weeks; Assistant Professors Haynes, Gill

ELECTRICAL ENGINEERING TECHNOLOGY
Open to Graduates and Upperclassmen

541 Electrical Fields 3 hrs.
A course in advanced circuit analysis covering both steady-state and transient responses, writing and solving integro-differential equations by classical methods and by Laplace transforms, network theorems, Fourier series analysis, complex frequency, poles and zeroes. Prerequisites: Math 123, ET 240, or consent of instructor.

542 Advanced Circuits 3 hrs.
A course in electrostatics covering such topics as Goulomb's Law, Gauss' Law, Maxwell's Equations, Laplace's and Poisson's Equations, Faraday's Law, Stoke's Theorem, Ampere's Law. Use is made of Vector calculus in rectangular, cylindrical and spherical coordinates. Prerequisite: Math 223 or consent of instructor.

545 Electrical Power Systems 3 hrs.
Economic and engineering considerations concerning power plants, generating equipment, transmission and distribution systems, switch gear and industrial power distribution. Prerequisite: Consent of instructor.

Open to Graduates Only

640 Electricity - Electronics Seminar 2-3 hrs.
Consideration of specific problems associated with the various aspects of electricity and electronics. Students will select individual topics for
research and seminar presentation. Prerequisite: Consent of the instructor.

612 Network Synthesis 3 hrs.
Synthesis of passive networks in the frequency and time domain; Foster and Lauer forms of 2-terminal LC, RC, and RL networks; Brune's method of RLC synthesis, Ladder networks, and approximation. Laboratory work included. Prerequisite: Consent of instructor.

614 Microwave Techniques 3 hrs.
Co-axial lines, wave guides, oscillators, mixers, amplifiers, test equipment, and measurements. Prerequisite: Consent of instructor.

616 Pulse Circuits 3 hrs.
Analysis and synthesis of switching, waveshaping, and control circuits. Prerequisite: ET 340 or equivalent.

INDUSTRIAL SUPERVISION

Open to Graduates and Upperclassmen

500 Labor Management Relations 4 hrs.
A course dealing with existing relationships between government agencies, labor organizations, and management. Particular emphasis is placed on collective bargaining procedures.

502 Industrial Supervision 3 hrs.
A study of the supervisory duties and responsibilities of the foreman, engineers, and technicians in industry.

504 Industrial Safety 2 hrs.
A course dealing with the importance of safety in industry. The cost of accidents, fundamentals of accident prevention, the elements of an effective safety program, accident investigation, and first aid are all aspects to be studied.

506 Work Simplification 3 hrs.
A course devoted to the fundamentals of motion economy and work simplification. The techniques of taking 16 mm. motion pictures of manufacturing operations and consequent analysis of the operations will be stressed. Students will practice the techniques studied in industrial situations. Prerequisite: ET 304 or equivalent.

508 Advanced Quality Control 3 hrs.
Analysis and application of new concepts in the fields of quality control. Tests of significance, probability studies and other use of statistics as applied to quality control will be stressed. Prerequisite: ET 308 or equivalent.
Open to Graduates Only

602 Industrial Project Engineering 3 hrs.
A study of the functions and responsibilities of the project engineer relative to the redesign or renovation of existing or addition of new plant facilities. Determination of project scope by feasibility study is discussed. Aspects stressed include: preparation of plans and specifications, engineering progress reports, analysis of bids, shop testing and inspection, equipment installation, and acceptance testing. Prerequisite: ET 404 or equivalent.

603 Supervision of Industrial Training 3 hrs.
A course emphasizing the philosophy and responsibilities of the Industrial Training Director. Techniques and methods of evaluating training in industry will be reviewed. Administrative procedures to develop training programs in apprenticeship, presupervisory training, supervisory training, on-the-job training and other concepts of industrial training will be studied.

604 Linear Programming for Engineers 3 hrs.
Instruction deals with the formulation of linear mathematical models as applied to engineering problems in structural design, equipment and manufacturing facilities, and communication network design. Solutions to linear programming problems are obtained by using appropriate algorithms. Sensitivity analysis techniques are presented and the significance of changes in the model are studied. Prerequisite: Math 123.

MECHANICAL ENGINEERING TECHNOLOGY

Open to Graduates and Upperclassmen

550 Product Engineering 3 hrs.
An analysis and evaluation of the engineering elements involved in the designing, testing, production, and economics of a product. Prerequisite: ET 230, ET 353.

551 Welding Design Analysis 3 hrs.
Modern techniques of electron beam welding, inertia welding, application of the laser for welding, use of various protective enclosures, plasma arc welding, automated electronic welding and weld testing are studied. Problems in design and production methods are analyzed.

552 Technical Illustrations 3 hrs.
A course involving the techniques of illustrating for technical publications such as engineering reports, technical and service manuals, parts catalogs, etc.

553 Industrial Drafting Practices 2 hrs.
A course dealing with the organization, administration, and procedures and methods involving personnel, planning, equipping and systematizing an industrial drafting department. Prerequisite: ET 331 or equivalent.
554 Product Design and Development 3 hrs.
A course in the design and development of a product for eventual manufacturing and sale. A complete working model or prototype, produced in the applicable laboratories must be included with product proposal, engineering documentation and engineering analysis of the student's design.

556 Engineering Analysis 3 hrs.
Application of vector analysis and differential equations to the solution of complex engineering problems. Prerequisite: Math 223 or equivalent.

558 Mechanical Vibrations 3 hrs.
A study of the oscillatory motion of physical systems with emphasis on the effects of vibrations on the performance and safety of mechanical systems. Prerequisites: Dynamics 355 and Math 223 or equivalent.

572 X-Ray Diffraction 3 hrs.
Application of x-ray methods to the study of crystal structure determination, non-destructive testing, cold working, age hardening and phase changes in metal alloys. Prerequisites: Math 123, Physics 210, Chemistry 102 or ET 252.

573 Physical Metallurgy III 3 hrs.
Classification and selection of metal alloys and heat treatments for engineering applications. Special emphasis on cost, corrosion, and the metallurgical factors that govern the mechanical and fabrication properties of engineering alloys are analyzed. Prerequisite: ET 373.

Open to Graduates Only

651 Advanced Strength of Materials 3 hrs.
An advanced course that continues the concepts presented in "Strength of Materials," with emphasis on use of higher mathematics to solve fatigue and stress problems.

652 Advanced Testing of Materials 3 hrs.
The elements of simple linear elasticity theory including the analysis of stresses and strain at a point, stress-strain relationships, equations of equilibrium and simple theories of failure will be covered in this course. The measurement of strains and the accompanying stress analysis will be covered in the laboratory. Prerequisite: Math 223 or consent of instructor.

653 Advanced Heat Transfer 3 hrs.
A study of advanced topics in conduction, convection, and radiation heat transfer with emphasis on industrial applications. Prerequisites: ET 556, ET 451.

656 Advanced Fluid Dynamics 3 hrs.
This course provides a broad coverage of modern development in the
field of fluid dynamics both in the areas of compressible and incompressible fluid flow. Topics include: Kinematics of fluid motion, laminar and turbulent flow in pipes, fluid machinery, and supersonic flow. Prerequisites: ET 356, Math 223.

670 Advanced Physical Metallurgy 3 hrs.

Classification and selection of metal alloy systems and heat treatments for engineering applications. Special emphasis on cost, corrosion and the metallurgical factors that govern the mechanical and fabricating properties of engineering alloys.

Home Economics

Herald, Head; Professor Taylor; Associate Professors Bessom, Savage, Rowe

Open to Graduates and Upperclassmen

500 Advanced Textiles 2 hrs.

The study of the composition, construction, finishing, and care of textiles. Prerequisite: 100.

502 Textile Clinic 2 hrs.

A workshop type program. Specialists and visual aids will present the newest information on textiles. To be followed by a study of methods implementing the new learnings.

504 The Socio-Psychological Aspects of Clothing 2 hrs.

A study of the social and psychological implication of clothing for the individual and the family. Clothing has many sociological and psychological implications, for the person as an individual and as a member of society. This course would bring together some of the pertinent findings of these two fields as they relate to the total area of clothing, ranging from the individual's selection of clothing as an expression of personality and social status to the impact of the clothing and fashion industries on the national economy.

506 History of Costume 3 hrs.

A study of the history and development of Western dress from the time of the Egyptians to the present day. In each period costume is investigated as an expression of many interacting forces including social structure, political thought, religious beliefs, cross-cultural interaction and outstanding persons of the day.

510 Advanced Nutrition 3 hrs.

Study of recent developments in nutrition through readings and experiences. Prerequisite: Nutrition and Meal Planning.

512 Institutional Management 3 hrs.

Study of institutional administration, job analysis, labor policies, personnel problems and cost control in different types of food-service institutions. Prerequisite: Meal Planning.
514 Food Technology
Food preparation with special emphasis on individual problems related to school food teaching units. Study of commercial food preparation.

518 Advanced and Experimental Foods

520 Equipment and Demonstration Techniques
A study of principles of equipment and demonstration as applied to the areas of home economics. Prerequisites: 210, 200 or consent.

552 The Homemaking Center and the Equipment
Consideration of fundamentals in planning laboratory and living area in terms of needs with special emphasis on built-ins, furnishings and equipment. Selected problems to be chosen by the individual.

598 Readings in Home Economics
Graduate students who have completed an undergraduate degree in Home Economics or related fields may enroll with permission of the head of the department to do supplementary work in a specific area to meet requirements for graduate courses. Open to Graduates Only

600 Clothing Techniques
Planned to meet the needs of the advanced student in clothing construction techniques.

602 Tailoring Techniques
Specialized tailoring techniques in coats and suits. Problems in the use and performance of new textiles in clothing included.

604 Studies in Clothing and Textiles
A concentrated study of specifics within these fields dependent on the interests of the students.

606 Seminar in Home Management
Utilization of case studies and research findings for the purpose of analyzing and understanding home management. Through analysis of case studies, students gain insight into the principles of management and their application.

608 Seminar in Textiles and Clothing
A study and discussion of the background, current research and findings. Each student in the M.A. program in Home Economics would be required to take a minimum of 2 hours credit in seminar.

610 Studies in Foods and Nutrition
A concentrated study of specifics within these fields dependent on the interests of the students.
612 Seminar in Foods and Nutrition  2 hrs.
A study and discussion of the background, current research and findings. Each student in the M.A. program in Home Economics would be required to take a minimum of 2 hours credit in seminar.

616 Consumer Buying  2 hrs.
Study of marketing problems and consumer credit. Students work on individual problems which concern the techniques of buying a specific type of consumer goods.

618 Teaching of Specific Subjects in Home Economics  2 or 3 hrs.
An intensive study of problems in the specialized areas of Home Economics such as: Foods and Nutrition, Home Furnishings, Textiles and Clothing, Methods, etc. May be enrolled in more than once. Maximum credit not to exceed 4 hours.

636 Teaching for Independent Living  3 hrs.
Designed to provide a practical background and a basic understanding of problems found in the homes and communities of the home bound. This course will be concerned with general home problems related to management, personal adjustment and care of the family members.

640 Supervision of Home Economics  2 hrs.
New developments in the teaching of home economics and the supervision of student teaching will be studied. Problems of the student will receive major consideration.

642 Occupational Education  2 hrs.
Planning for Home Economics wage earning programs at the secondary and adult levels.

644 Curriculum Planning and Evaluation in Home Economics  3 hrs.
Emphasis on family and social changes and developmental needs of students as a basis for curriculum study and evaluation techniques in secondary Home Economics programs.

648 Adult Education in Homemaking  2 hrs.
A study of the developmental needs of adults and changes in society affecting families as a basis for developing adult programs in homemaking education.

650 Advanced Study of Home Management  2 hrs.
Emphasis on the philosophy, current concepts and methods of home management. Attention will be given to the newer aspects of time and motion study with special projects in work simplification. Analysis of the use of resources for achieving goals in stages of family life cycle.

652 Family Life Education  2 hrs.
Designed to develop ways of implementing newer methods and techniques used in an effective homemaking program.
654 Housing 2 hrs.
A study of economic and social aspects of housing. Single, duplex and multiple housing problems are considered. Prerequisite: Housing and Home Furnishings.

660 Studies in Family Relations 2 hrs.
A concentrated study of the specifics within these fields dependent on the interests of the students.

662 Seminar in Family Relations 2 hrs.
A study and discussion of the background, current research and findings. Each student in the M.A. program in Home Economics would be required to take a minimum of 2 hours credit in seminar.

664 Seminar in Home Economics Education 2 hrs.
A study and discussion of the background, current research and findings. Each student in the M.A. program in Home Economics would be required to take a minimum of 2 hours credit in seminar.

666 Studies in Home Economics Education 2-6 hrs.
An investigation of certain areas in Home Economics Education selected to meet individual needs of the students. May be taken more than once if subject matter is different.

Industrial Education
Feier, Head; Professors Bendix, Lindbeck and Risher; Associate Professor Stegman; Assistant Professors Bruce and Rayford

Open to Graduates and Upperclassmen

500 Furniture Production 2 hrs.
Design and production of furniture, including the development of all phases of tooling and jig and fixture design necessary for the mass production of a piece of furniture. Special emphasis on matching veneers and plywood production using industrial methods and equipment. Students will have an opportunity to gain experience on the veneer clipper, veneer joiner, veneer splicer, glue spreader, and laminating press. Prerequisites: General Woodworking 100 and Principles of Wood Processing 200.

501 Cabinetmaking 3 hrs.
This course is designed to include finishing carpentry such as kitchen and built-in cabinets, millwork (including trim and finish flooring), floor covering, relationship of electrical work, plumbing and heating to the building trades. Prerequisites: General Woodworking 100 and Principles of Wood Processing 200.

502 Wood Technology 2 hrs.
Experience in and study of the technical aspects of cellulose materials and their use in construction and manufacture. Included will be a
study of the characteristics of lumber and man-made wood products, applied research done by the Forest Products Laboratory, and testing of materials. Prerequisites: General Woodworking 100 and Principles of Wood Processing 200.

520 Architectural Graphics 4 hrs.
A graphical study of architectural details and methods of construction relative to frame and masonry veneer residential dwellings. Emphasis is placed on residential planning and design principles, calculating safe loads, FHA minimum property standards, and local codes. Each student is required to design a single family dwelling, including preliminary studies, floor plans, elevations, all necessary details, plot plan, and specifications. Methods of estimating, heat loss and gain calculation, and financing are included. Drawings will be reproduced on white print equipment. Prerequisite: 226.

522 Laboratory Practices in Drafting 2 hrs.
A course in the methods and problems of teaching drafting and graphics on the secondary and post secondary level. In addition, emphasis is placed on a review of secondary and collegiate texts, resource materials, problem design and checking of drawings. Prerequisite: 18 hrs. in drafting.

538 Problems in Metalworking 2 hrs.
Practical laboratory experiences in forging, foundry, heat treating, machine shop, and arc and acetylene welding. Course will emphasize methods of selecting and developing course materials for junior and senior high school students. Course content will be adapted to meet the needs of individual students. Prerequisites: 130 and 234.

548 History and Philosophy of Industrial Education 2 hrs.
Industrial Education in America, with special attention to European influences, experiments, industrial developments and theories. Emphasizes developments leading to modern practices in industrial arts, vocational-industrial and technical education.

560 Electricity-Electronics for Teachers 2 hrs.
Designed for junior and senior high school shop and laboratory teachers of electricity and electronics. Emphasis will be placed on new methods and materials. Laboratory practice will be provided in applying new techniques and development of teaching projects in electricity and electronics. Industrial Arts and science teachers should find this workshop quite valuable in the light of our increasing technological development.

570 Arts and Crafts Techniques 2 hrs.
Advanced laboratory experiences in the fields of internal plastic carving, leather work, model work, archery, photography and related crafts in conjunction with a study of current technical literature in these areas. Written reports will be required. Course content will be adapted to individual needs.
573 Mechanics and Conditioning of Equipment

A study of the principles of machining wood, metal, and synthetic materials. Practice in installation, adjustment, preventive maintenance and conditioning of power equipment will be included. Particular emphasis will be given the relationship between proper installation and condition to efficient machine operation.

582 Applied Fluid Power

Advanced study of typical hydro-electric and pneumo-electric transmission and control systems. Emphasis is on industrial applications of fluid power systems. Laboratory experience includes the design and application of a fluid power or control system to a manually powered or controlled machine.

588 Power Laboratory Techniques

An advanced course for laboratory teachers dealing with recent developments in energy and power applications. Planning and organizing laboratory facilities, tools, equipment, safety requirements, instructional materials, textbook selection and instructional devices for providing power mechanics and/or automotive instruction are included. Prerequisite: 180 or consent of instructor.

590 Industrial Arts for the Elementary School

This course is concerned with the problems of organizing, correlating, and teaching constructional activities in the elementary grades. Course materials, techniques, and materials in the industrial and craft areas will be stressed, through the construction of a teaching unit.

592 Aviation for Classroom Teachers

A course dealing with the educational, social, economic, and political implications of aviation in the modern world. A study will be made of basic aviation materials and activities that are appropriate for different grade levels. Consideration will be given to aviation literature and visual aids suitable for youngsters. Opportunities will be provided for participation in a variety of aviation experiences. This course is open to elementary and secondary education students.

593 Arts and Crafts for Special Education Teachers

This course will cover craft techniques in areas of sketching, leather, wood, art metal, plastics, and other related experiences. Emphasis will be placed on teaching procedures, methods, and materials.

594 Home Mechanics for the Blind

A course to fulfill the needs for general knowledge and basic skills in home mechanics in the areas of woodworking, electricity, plumbing, and general maintenance.

598 Special Problems in Industrial Education

Designed for qualified graduate students wishing to pursue special problems of individual need or interest under the direction of a member of the graduate faculty. May be elected in the Industrial Education
Department or in an associated department, with the approval of the Industrial Education Department Head and the faculty member under whom the student desires to work. Applications must be submitted and approved prior to the election of the course. Students may register more than once for this course.

Open to Graduates Only

605 Problems in Woodworking 2 hrs.
Advanced laboratory experiences in the area of woodworking. Content selection, project building and new techniques will be covered. Written reports based on current literature will be required. The areas to be covered will be dependent on individual needs.

620 Advanced Drafting Practice 2 hrs.
Advanced laboratory experiences in mechanical, architectural and machine drawing in conjunction with a study of current technical literature. Written reports are required. Advanced instruction in engineering drawing and descriptive geometry will be included.

Study and analysis of current practices in technical representation. Course content is based on current industrial practices and techniques, plus the development of skill to teach this material at the high school and junior college level.

630 Research in Machine Shop Practices 2 hrs.
For teachers who wish to study and develop advanced techniques in the area of machine technology.

641 Trends in Industrial Education 2 hrs.
A study of current literature in the field. Research studies will be reviewed. Commercial and industrial publications will be studied to determine their place in the school shop program.

643 Measurement in Industrial Education 2 hrs.
A study of the techniques involved in the preparation and use of teacher-constructed written and practical tests. Attention will be given to the interpretation of test results and the evaluation of student achievement.

644 Project Planning and Designing 2 hrs.
A study of the principles of design and their application to shop projects. Special attention will be given to planning and designing new projects which will enrich the school shop program.

645 Shop Planning 2 hrs.
Planning of the shop and selecting the equipment and supplies for an industrial education laboratory. A study of the basic principles of planning and equipment selection to reflect modern industrial education philosophy.

76
646 Teaching Problems in Industrial Education 2 hrs.

Special attention will be given to teaching methods and the techniques useful to experienced industrial education teachers. Emphasis will be placed on problem solving in industrial education, pupil planning and the demonstration technique. Each student will be required to work out a program of teaching methods useful in his particular school.


This in-service course for industrial teachers will provide opportunities to learn the latest in technological practices in industry. Whenever possible, cooperation of an industrial group such as the American Foundrymen's Society will be utilized in planning and organizing the course. This course will be offered for two semester hours per unit and may be elected for a total of four semester hours.


(Description same as Industrial Education 647.)

650 Advanced Problems in Graphic Arts 2 hrs.

Opportunity is provided for the individual student to undertake advanced study of technical problems in the field of graphic arts. Advanced instruction in imposition, presswork and linotype composition will be available.

661 Electricity for Teachers 2 hrs.

For teachers planning an electrical area in their general shop or planning to teach on a unit shop basis. Special attention will be given the development of suitable instructional activities and technical information related to them. Prerequisites: 160, 560.

670 Problems in General Shop 2 hrs.

Practical experiences in drawing and planning, woodworking, metalworking, electricity, and craftwork will be required. Course will include selection, development and preparation of materials and instructional media for instruction at the junior and senior high school levels.

671 Industrial Education Materials 2 hrs.

A study of basic materials and processes of industry with emphasis on new materials and processes. Written reports will be based on a review of government studies, handbooks, industrial publications and scientific reports. Each material and process studied will be evaluated as to its working characteristics and possible application to school shop instruction.

672 Studies in General Shop Content and Practice 2 hrs.

Study of current general shop content with emphasis on new instructional areas, science applications in industry, multiple-activity in-
structional practices, and the selection of purchasing of equipment, tools, and supplies. The adaptation of experiments and exercises to general shop instruction will be included.

Occupational Therapy

Kiss, Head; Associate Professors Tyndall and Lewis

Open to Graduates and Upperclassmen

510 Arts and Crafts for Home Teachers of the Blind 2 hrs.
Methods and techniques for teaching needlework, ceramics, and leatherwork to visually handicapped adults.

520 Kinesiology 3 hrs.
Investigation and analysis of human motion. Includes a study of body mechanics, principles of muscle contraction, surface anatomy, range of motion and muscle testing, and activity analysis. This study is accompanied by a review of basic functions of the musculo-skeletal and nervous system.

524 Medical and Orthopedic Conditions 4 hrs.
A series of lectures concerned with medical and orthopedic conditions which are treated by the occupational therapist. Prerequisite: Consent of Department Head.

Open to Graduates Only

600 Studies in Occupational Therapy 2-4 hrs.
Designed to cover current developments in occupational therapy. Prerequisite: OTR. Offered as needed.

630 Professional Literature 2 hrs.
Analysis and appraisal of current professional literature. Consideration will be given to trends, philosophy, and practice in occupational therapy.

632 Supervision of Occupational Therapy 2 hrs.
Place and function of supervision in Occupational Therapy. Practical problems in the supervision of staff therapists, students and volunteer groups. Techniques of effective leadership will be discussed and emphasis will be placed on the relationship of these techniques to the achievement of departmental, hospital and community goals.

633 Administration of Occupational Therapy 2 hrs.
A study of problems confronting the administrator of occupational therapy such as functional organization, personnel policy, planning of physical facilities, finance, legal aspects and hospital-community relationship.
650 Clinical Training and Scheduling  2 hrs.
Objectives and management of clinical training from the viewpoint of the school and the affiliating center. Mechanics of the student-training schedule and the student-rating program.

686 Seminar in Occupational Therapy  3 hrs.
This course is designed to provide examination in depth of selected occupational therapy treatment techniques as they relate to specific areas of dysfunction. May be taken more than once. Prerequisite: Consent of Graduate Adviser.

Paper Technology  Janes, Head; Professor Diehm; Associate Professor Kukolich; Assistant Professor Kline
Open to Graduates and Upperclassmen

530 Polymer Chemistry  2 hrs.
A study of the molecular structure and polymerization reactions of high molecular weight compounds in relation to mechanical and theoretical behavior and chemical properties. Methods for characterization of bulk and solution properties of polymers are considered in detail. Prerequisite: Chemistry 361.

550 Paper Industry Processes  3 hrs.
Offered primarily for students in graphic arts and printing management programs in order to provide a basic understanding of the major aspects of the science and technology of pulping, papermaking, coating, and evaluation of materials, especially as they relate to printing.

560 Advanced Topics in Pulp and Paper Engineering  3 hrs.
This course will stress the concepts of momentum transfer applied to fluid flow, heat transfer, and mass transfer. Mathematical consideration of filtration, extraction, mixing, and kinetics will be included.

590, 591 Instrumentation and Process Control  6 hrs.
A detailed consideration of the theory and practice of electronic and pneumatic sensing instruments and process control. Simulation of process dynamics and computer application will be emphasized.

Open to Graduates Only

600 Surface and Colloid Chemistry  3 hrs.
Intermolecular forces are considered in detail to build a sound background for consideration of surface and colloidal behavior of matter. The thermodynamics of interfaces and surfaces is covered in detail, considering the topics of absorption, surface films, wetting, capillary penetration, and diffusion. Colloidal topics covered include areas such as ionic boundary layers, electrokinetic potential, swelling and shrinkage of gels, ion exchange, surface active agents, detergency, and retention of particles.
620  Paper, Printing, and Ink 3 hrs.

A detailed analysis of the interrelationships of paper and the printing process. Printing problems and quality are considered as they are influenced by paper, coating, ink, and press conditions and operations.

640  Coating Rheology and Film Formation 3 hrs.

Theory and practice of pigment dispersion, coating and ink formulation, and characterization of non-Newtonian flow behavior. The relation of rheology to application, drying of films, and film properties will be discussed.

660  Mechanics and Optics of Paper and Fibers 3 hrs.

The mechanics and optics of individual fibers and fiber networks will be considered from both theoretical and measurement standpoints. Stress-strain-analysis, theory of elasticity and flow, statics, reflection, absorption, transmission, and light scattering of these systems will be covered.

680  High Polymer Topics 3 hrs.

The physical chemistry, engineering properties, and behavior of synthetic and natural polymers and their solutions is presented. Methods of characterization and significance of molecular parameters is included.
School of Business

ARNOLD E. SCHNEIDER,
Dean

Graduate Offerings:
Accounting
Business Education
General Business — Finance
Management
Marketing
School of Business

The School of Business includes the departments of Accounting, Business Education, General Business, Management and Marketing. The function of the School of Business is to prepare students for positions in business, industry and government. A program leading to the degree of Master of Business Administration is designed to prepare graduate students to function effectively in administered positions. In addition, the degrees of Master of Science in Accountancy and Specialist in Business Education are offered.

The student is challenged to develop the judgment, discriminating capacity, knowledge and understanding which will permit him to work efficiently in administrative and other leadership roles. Under the guidance of the graduate staff of the School of Business, personal programming for the participant is provided as an alternative to a set schedule of required courses.

The School of Business cooperates with the School of Education in offering the curriculum, The Teaching of Business Education.

Accounting

Burke, Head; Professors Everett, Neubig, Wetnight; Associate Professor Welke; Assistant Professors Mitchell, Morris, Schaeberle and Zelechowski

Open to Graduates and Upperclassmen

510 Advanced Financial Accounting 3 hrs.
An intensive study of asset valuation, liabilities, corporate capital, and their relationship to income. Prerequisites: Accounting 211 or 519, and graduate standing.

511 Advanced Accounting 3 hrs.
Accounting for problems in special sales, consolidations and equities. Prerequisite: 511 or 510.

512 Cost Accounting 3 hrs.
The relation of cost accounting to management for control; general principles involved in constructing a cost system; distribution of cost materials, labor and burden; cost records; operating reports; standard costs and budgetary control. Prerequisite: Accounting 211 or 519.

513 Accounting Systems 3 hrs.
An examination of the accounting system as an element of the management information system in various types of businesses. Prerequisites: Accounting 311 and 512, or consent of instructor.

514 Income Tax Accounting 3 hrs.
Federal income tax laws for individuals, partnerships and corporations. Prerequisite: Accounting 211 or 519, or consent of instructor.
516 Auditing 3 hrs.
The theory and practice of making audits of business enterprises and government agencies. Prerequisite: Sr. Accounting major or consent of instructor.

517 Cost Accounting—Theory and Practice 3 hrs.
The development and application of cost accounting principles to industrial situations. The course includes the application of costs to operations and to products. The preparation and analysis of detailed cost information, as well as methods and procedures for solving complex cost problems encountered in industry, are included as a major part of the course. Prerequisite: 512.

518 Accounting Theory and Problems 3 hrs.
Theoretical consideration of accounting problems. The analysis of the type of problems that are found in C.P.A. examinations or are encountered by business management. Prerequisite: Sr. Accounting major or consent of instructor.

519 Administrative Accounting 3 hrs.
Basic topics are the accumulation of financial data and the preparation of financial statements. Included are accounting topics related to business assets and entities and an introduction to the analysis and interpretation of financial statements. Designed especially for graduate students entering the MBA program who have not previously completed the equivalent at the undergraduate level. Prerequisite: Graduate standing. Not open to students with credit in accounting.

521 Studies in International Accounting 3 hrs.
Studies of the differences in the Principles of Accounting Auditing Standards and Auditing Procedures in selected countries of the world. Emphasis will be placed on those countries which are important in world commerce. Prerequisite: Consent of instructor.

598 Readings in Accounting 1-4 hrs.
Directed individual study of bodies of knowledge not otherwise treated in department courses. Open to Graduates Only

601 Research Methods in Accounting 3 hrs.
This course is designed to familiarize the student with the methods and procedures for planning, conducting, and reporting individual research projects in accounting.

610 Seminar in Accounting 3 hrs.
Intensive examination and study of the underlying postulates, concepts, and principles of accounting. Income determination, asset valuation, and equities are emphasized in succeeding seminars. Course may be repeated under different topics. Prerequisite: Consent of instructor.
611 Advanced Accounting Theory 3 hrs.
A study of the underlying concepts and principles of corporate accounting.

612 Advanced Cost Accounting Concepts 3 hrs.
A study of the more mature methods of cost measurement and control. Includes standard cost, budgetary control, profit-volume analysis, direct cost and return on employed capital.

614 Business Tax Planning 3 hrs.
An advanced course in business taxation involving the identification and analysis of tax problems. Income tax strategy is studied involving the timing of income, types of business organizations, and the various alternative tax treatments. Tax problems of corporate reorganizations, liquidations, estates and trusts, partnerships, and capital gains will also be included. Case studied will be used and research in taxation will be emphasized.

616 Seminars in Controls 3 hrs.
The function of controls in the organization. The controller's relationship to the construction, control, and interpretation of accounts for the internal and external administration of the organization is emphasized. Prerequisite: Accounting 512 or equivalent.

Business Education

Open to Graduates and Upperclassmen

584 Improvement of Instruction in Shorthand and Secretarial Subjects 2 hrs.
A study of the latest research findings, materials, teaching procedures, tests and measurements, and possible future development in shorthand.

586 Improvement of Instruction in Typewriting 2 hrs.
A study of the latest research findings, materials, teaching procedures, tests and measurements, and possible future development in typewriting.

588 Improvement of Instruction in Bookkeeping and General Business Subjects 2 hrs.
A study of the latest research findings, materials, teaching procedures, tests and measurements, and possible future developments in the business subject-matter of this field.

589 Organization and Teaching of Office Practice 2 hrs.
A consideration of aims and content of office-practice course in the secondary school, with plans and techniques for organizing and teaching the subject-matter of the course and its laboratory material.
598 Readings in Business Education 1-4 hrs.
A series of directed readings in the area of business education. Prerequisite: Consent of department head.

Open to Graduates Only

600 Seminar in Business Education 3 hrs.
Intensive problem solving in areas of business education. May be repeated.

680 Principles of Business Education 3 hrs.

682 Guidance in Business Vocations 2 hrs.
The challenges of business education for a changing world of work. Problems and objectives of business education to meet vocational choices of students in today's automated, free-enterprise, democratic society. Particular emphasis is given to the counseling of the business educator.

683 Supervision and Administration of Business Education 2 hrs.
Principles, practices, and problems involved in the administration and supervision of business education in schools and colleges. Emphasis is placed on the work of the department head, city supervisor, and state supervisor of business education.

684 Comparative Shorthand Theory 3 hrs.
Analysis of the similarities and differences in psychological approach, theory, memory load and methodology employed by various modern shorthand systems.

685 Research in Business Education 3 hrs.
The examination and analysis of selected recent doctoral theses and other current research in business education with emphasis on utilization of findings in the upgrading of instruction in secondary school and collegiate business courses. Areas, tools and methodology are examined.

687 Post-Secondary Business Education 2 hrs.
The consideration of objectives, materials, and methods of teaching business subjects in junior colleges, community colleges, universities, vocational institutes, and proprietary business schools. Consent of Department Head.
Open to Graduates and Upperclassmen

504 International Business Seminar 1-6 hrs.
A foreign study seminar designed for qualified and capable undergraduate students, graduate students, teachers, and business executives. The seminar introduces participants to a first-hand knowledge of business operations abroad through on-site inspection of foreign manufacturing, marketing, financial, and governmental organizations, supplemented by coordinated faculty lectures and assigned readings. Undergraduate or graduate credit of six hours, in one of the following departments upon consent of department head: Accounting, Business Education, General Business, Management or Marketing.

520 Security Analysis 3 hrs.
A sophisticated analysis of investment securities from the viewpoint of establishing meaningful valuation techniques. The course is designed for students anticipating careers in investment management in industrial firms and/or financial institutions. Prerequisite: 326 Investments.

526 Advanced Life and Health Insurance 4 hrs.
By means of problems and cases this course analyzes in detail the following areas: group life and health insurance, business life and health insurance, insured pension plans and estate and tax planning. Prerequisite: 422 Life and Health Insurance.

528 Problems in Multiple-Line Insurance 4 hrs.
The topics studied by means of cases and problems in this course include multiple-line insurance operations, special problems in functional areas of industry operations and personal and commercial risk surveys and analysis. Prerequisite: 424 Property and Liability Insurance.

540 Advanced Statistics 3 hrs.
An intensive study of probability theory and statistical inference. Topics covered include theoretical probability distributions, hypergeometric binomial, normal, normal approximation of binomial, poisson and the t-distribution. Also included are point and interval estimation, tests of hypothesis, type I and type II errors, the power of a test, sequential sampling, correlation and regression analysis, and some Bayesian Statistics. Prerequisite: 244 Business Statistics.

541 Law of Personal Property 3 hrs.
The study of law including sales, bailments and transportation.

542 Law of Real Property 3 hrs.
The study of the law of Real Property including Property Rights, Mortgages, Leases and Land Contracts.
544 Law of Business Organizations 3 hrs.

The study of the law of Business Organizations including Partnership, Corporations and Trust Organizations.

598 Readings in General Business 1-4 hrs.

Directed individual study of bodies of knowledge in business administration which will enhance the student's areas of interest and competence.

Open to Graduates Only

600 Seminar in Business 3 hrs.

Intensive problem solving in the primary business fields. Consent of instructor required. May be re-elected.

620 The Capital Market 3 hrs.

Study of the sources and flow of demand and supply of credit. The business application of monetary theory to financial institutions and their operational problems. Prerequisite: 520 Security Analysis or permission of the instructor.

622 Corporate Financial Problems 3 hrs.

A study of the financial problems, policies, and procedures employed in diversification, expansion, merger and other forms of corporate change.

624 Financial Statement Analysis 3 hrs.

Intensive financial analysis to establish trends and fiscal controls in business operations. Structural investigation of financial statement relationships utilizing ratios, capitalization of earnings, and other analysis media fundamental of management decision and action.

626 Insurance and Government 3 hrs.

This course covers the historical development, legal background, and methods of governmental supervision of the insurance industry. Principal emphasis will be placed upon state supervision of insurance, but the role of the federal government in present and future regulation is also considered. Prerequisite: Consent of instructor.

627 Financial Management 3 hrs.

Case study of the principles and problems underlying the management of capital in the business firm. Stresses the financial officer's responsibilities. Skills developed in the marshalling and interpreting of figure data in such activities as making and implementing capital expenditure policies, solving short-term and long-term financing problems, establishing dividend policies, effecting mergers and consolidations, and adapting to trends in financial markets. Demonstrates financial management's role in the total management effort. Prerequisite: 320 Business Finance or equivalent.

628 Risk Management in Business 3 hrs.

This course includes the functions of risk management; responsibilities of risk managers and their staff; sources of risk information; analy-
sis of business risks; alternative methods of handling risks; selection of proper insurance coverages; and selection of carriers and intermediaries. Case analysis is used. Prerequisite: Consent of instructor.

640 Legal Controls of the Business Enterprise 3 hrs.
An analysis of the current legal problems as they apply to the control and regulation of various types of business enterprises.

642 Statistical Interpretation 3 hrs.
A survey of the advanced statistical techniques as applied to business problems. Includes probability theory; estimation of proportion, means and variances; test of hypothesis, simple and multiple regressions. Also include topics selected from the following fields: sequential analysis; nonparametric methods; elements of experimental design; analysis of variance and introduction to statistical decision theory. Prerequisite: A course in statistics or consent of instructor.

Management

Open to Graduates and Upperclassmen

550 Management Problems 3 hrs.
An opportunity to approach business from the case-study method by working solutions to actual management problems.

552 Management Report Writing 3 hrs.
A study of the techniques in and applications of management reports and management-report writing. Actual management reports in the various fields will be studied. The development and practice of technical report writing will be stressed.

553 Planning and Analysis for Production 4 hrs.
An examination of modern methods of analysis, their relation to the production process and their utilization in management planning. Cases and problems will be utilized. Prerequisite: Principles of Economics, Statistics 244.

554 Introduction to Management Science 4 hrs.
Modern scientific techniques used in business and industry for controlling operations, maximizing profits and minimizing costs. Allocation of men, money, and machines among alternative uses. Other strategies and control methods applicable to management, marketing, the finance. Prerequisite: Statistics 244.

555 Electronic Data Processing 4 hrs.
Examination of current literature in electronic data processing with special emphasis on systems analysis, applications of computers to busi-
ness problems and feasibility studies. Programming computers in PI/1
and COBOL languages.

556 Office Management 4 hrs.
Areas of office services from the managerial viewpoint. A brief
overview of the problems of organizing, constructing, installing and
maintaining office systems.

557 Inventory Management 3 hrs.
The practical application of modern management techniques in the
definition and solving of problems in inventory systems. Prerequisite:
Statistics 244 or equivalent.

562 Administrative Dynamics 4 hrs.
The development of a model to integrate management principles,
administrative behavior, small group research and individual psychologi-
cal theory. Both static and dynamic models are analyzed.

564 Industrial Dynamics 4 hrs.
Development of a model for the integration of the functional areas
of business to create more successful management policies and organi-
zational structures. Prerequisite: Statistics 244 or equivalent.

598 Readings in Management 1-4 hours
Directed individual study of bodies of knowledge not otherwise
treated in departmental courses. May be repeated for credit by per-
mission of Department Head.

Open to Graduates Only

600 Seminar in Management 3 hrs.
Intensive problem solving in advanced management topics under
simulated conditions of a business conference, including the preparation
of a major staff report. Consent of instructor required. May be repeated
for credit by permission of Department Head.

650 Managerial Aspects of Labor Law 3 hrs.
Background and consequences for business policy of law governing
collective relationships between employers, employees, and their repre-
sentatives with special emphasis on interpretation and evaluation of
current legislation.

651 Analysis of Administrative Behavior 3 hrs.
Analysis of the contributions of management theory and of the
behavioral sciences to modern administrative practices; group and in-
dividual behavior as related to and affected by the administrative process,
lectures, cases, conferences. (Not open to students having received credit
for Management 451, Administrative Behavior.)

652 Business Policy 3 hrs.
Integration of background acquired by the student from such varied
fields of instruction as accounting, finance, industrial management, law,
personnel administration and marketing. Top management problems emphasized. Discussion of actual business cases.

654 Problems of Personnel and Industrial Relations 3 hrs.
A critical examination of current practices and trends in personnel administration and industrial relations in the light of recent research and findings in the field of human relations in industry. A review of personnel and labor relation functions in the enterprise, with attention to the application of theory and principles, the conduct of personnel research activity, and the relation of the industrial relations function to the goals of the enterprise as a whole.

655 Organization Theory 3 hrs.
An interdisciplinary approach towards the analysis of the variables affecting the modern business organization with emphasis on the relationship of the role of the social sciences to the behavior of the segments of the firm. Prerequisite: Management Principles or consent of instructor.

658 Advanced Management Practices 3 hrs.
Current trends and advanced problems in the organization and management of business enterprises. Prerequisite: Consent of instructor. May be repeated for credit by permission of Department Head.

Marketing

Trader, Head; Associate Professors Gilbert, Hardin, Otteson; Assistant Professors Orr and Japinga

Open to Graduates and Upperclassmen

558 Purchasing Problems 3 hrs.
Value analysis and the evaluation of purchasing department performance. Problems involve organization, materials management, operation, vendors relations, and make or buy decisions. Prerequisite: Purchasing 358 or permission of instructor.

570 Advertising Media and Campaigns 3 hrs.
A frame of reference for the evaluation of media and advertising through communications research. Course includes both theory and practice of media research, use of Audit Bureau of Circulation data, broadcast ratings, copy testing, development of media plans and scheduling as required for advertising campaigns. Prerequisite: Advertising 374 or permission of instructor.

572 Advertising Copy and Layout 3 hrs.
Study of the theory and practice in the writing, preparation and typographical composition of advertising including the writing of radio, television and newspaper copy. Prerequisite: Advertising 374 of permission of instructor.
573 Retail Merchandising 3 hrs.
A study in the development of an optimum blend of product, place, promotions, and price in the final consumer market. Includes study of buying policies, terms, negotiations; resource selection and development; merchandise information, expense control systems and budgets; sales and customer analysis; pricing; government regulations. Prerequisite: Principles of Retailing or permission of instructor.

574 Marketing Problems 3 hrs.
Analysis of current marketing problems utilizing the case method of study. Prerequisite: Marketing 240 or permission of instructor.

575 Marketing Projects 1-4 hrs. Var.
Concentrated study of specific areas of Marketing which seem to warrant current attention and in which the student indicates a strong interest. Prerequisite: Consent of instructor.

576 Marketing Research 3 hrs.
Designed to include an introduction to market research, the procedures and applications of research, and the accomplishment of a research project. Term project includes selection of a problem, preparation of questionnaire, data collection, analysis of data, and final report. Prerequisite: 240, Jr. or Sr. status, or approval of instructor.

577 Advertising Strategies 3 hrs.
Involves the analyses and preparation of advertising as a communicative tool. Utilizes case studies, discussions, extensive readings in the areas of consumer markets, media selection, budgeting, product promotion, and retail advertising coordination. Capstone course for advertising students. Three one hour weekly sessions plus field work and individual consultations. Prerequisite: Advertising 374 or permission of instructor.

578 Marketing Logistics 3 hrs.
An analysis of problems relating to the movement, handling and storage of industrial products. Attention will also be given to changing market conditions and industrial structure as they affect the physical distribution of industrial goods. Prerequisite: Marketing 240 or permission of instructor.

579 International Marketing 3 hrs.
An examination of the theories and principles of international marketing. Attention directed to related commercial policies, trade practices and procedures, and marketing research tools and techniques needed to locate and evaluate foreign markets. Prerequisite: Marketing 240 or permission of instructor.

598 Readings in Marketing 1-4 hrs.
Directed individual study of bodies of knowledge not otherwise treated in departmental offerings. Prerequisite: Consent of instructor.
Open to Graduates Only

600 Seminar in Marketing 3 hrs.
Intensive problem solving in the primary business fields. Consent of instructor required.

670 Marketing Analysis 3 hrs.
A comprehensive analysis of marketing theory and procedures. Designed for those students who have not had the undergraduate course in Marketing. Prerequisite: Consent of instructor.

672 Marketing Management 3 hrs.
Analysis of marketing activities from the management point of view. Includes study and decision making relative to competition, demand analysis, cost analysis, product design, promotion, pricing and channels of distribution.

673 Market Measurement and Behavior 3 hrs.
Designed to acquaint graduate students with the growing body of tools available in the behavioral sciences and mathematics as adapted to the solution of marketing problems. Includes material in the areas of psychology, sociology, traditional statistics, Bayesian statistics, and decision theory. Consent of instructor required.

674 Market Programming 3 hrs.
Designed for special emphasis toward developing a total marketing strategy within an organization. Practical application of the marketing tools and techniques to a current problem originating in a business organization. Prerequisite: Consent of instructor.
School of Education

JAMES H. GRIGGS,
Dean

MYRON L. COULTER,
Associate Dean

Graduate Offerings:
Teacher Education
School Services
Special Education
Physical Education for Men and Women
Institute for Blind Rehabilitation

School of Education

The School of Education includes the following departments and units: Teacher Education, School Services, Special Education, Physical Education for Men, Physical Education for Women, Directed Teaching, Campus School, the Psycho-Educational Clinic, and the Educational Resources Center, and Institute for Blind Rehabilitation.

Its purpose is to prepare carefully selected students through well defined curricula for administrative, supervisory and instructional positions in the public schools and community colleges.
Teacher Education

Ulry, Head; Travers, Distinguished University Professor; Professors Buelke, Chiara, Gavatos, Moore, Sebaly, Swickard; Associate Professors Adams, Curl, Erickson, Johnson, Kanzler, Klingenberg, Lambe, Lloyd, Martin, McGinnis, Middleton, Snow, Stroud; Assistant Professors Boone, Bodine, Bosco, Brail, Cain, Coleman, Dickey, Frank, Hessler, Inselberg, Miller, Schlack, Schten and Walker

CORE COURSES

Each graduate student in Education, regardless of specialization, is expected to show competence in at least three professional areas: research, curriculum, and foundations. These are considered minimal requirements for career positions as teachers, administrators, guidance personnel, or curriculum specialists. Such competence will normally be provided through 12 semester hours of course work in the following courses: 601, 602, 603, and 604. In certain curricula, such as Guidance and Secondary Teaching, modifications of this requirement are permitted to provide for needed flexibility.

Open to Graduates Only

601 Introduction to Research in Education 3 hrs.

This course is intended to develop an understanding of the major types of educational research and application of research findings to educational problems. Emphasis is placed upon familiarity with sources of research, competence in the interpretation of research reports and abstracts, understanding of the techniques of conducting discriminating search of the literature, and the development of skills in research writing.

602 School Curriculum 3 hrs.

This course, designed for teachers and administrators at all levels, attempts to analyze the decision factors stemming from societal forces, needs and perceptions of learners, and internal structures of the disciplines as guidelines for a curriculum emerging from and serving a democratic society.

603 Social and Philosophical Foundations 3 hrs.

A cultural approach to the development of American educational policy and practice in its broad social setting. Consideration is given to historical, economic, social and philosophical factors which influence educational thought and practice. The need for historical perspective and sound analysis of conflicting points of view are emphasized in the interpretation of current educational issues and the alternative solutions of present educational problems.

604 Psychological Foundations of Education 3 hrs.

An overview of the psychological forces that influence the learner in his educational setting; with special emphasis on the nature and significance of human variability, development of self, measurement and
evaluation, and a consideration and application of principles of learning
to classroom situations.

CURRICULUM AND INSTRUCTION

Open to Graduates and Upperclassmen

502 Curriculum Workshop 2 hrs.

Opportunity is provided for teachers, supervisors and administrators
in selected school systems to develop programs of curriculum improve-
ment. A wide variety of resources is used for instructional purposes,
including several specialists, library and laboratory facilities, field trips,
audio-visual materials and the like.

508 Parent Education 2 hrs.

Places major emphasis on home problems which have educational
implications for the child. Parent-teacher relationships, council pro-
grams and cooperative efforts for improvement of education in home
and in school are studied.

510 The Elementary Curriculum 2 hrs.

A consideration of content and procedures to adapt experiences of
pupils in elementary schools to modern conditions and to child needs and
interests. Individual or committee reports concerning the improvement
of various aspects of the elementary school curriculum will be prepared.

514 Nursery-Kindergarten Education 2 hrs.

This course will acquaint students with the history and present-day
status of Nursery School and Kindergarten education. Research will be
utilized as a basis for determining the organization, equipment, curricu-

535 Problems in Teaching the Disadvantaged 3 hrs.

Designed for teachers and administrators who are presently work-
ing with disadvantaged children and youth. Class meetings are centered
around problems arising from practical situations, particularly with
respect to affective factors of environment and their relation to teach-
ing and learning. Extensive use is made of consultants from social,
governmental and educational agencies working with the disadvantaged.

542 Administration and Methodology of Driver Education 2 hrs.

Emphasis on organization and administration of high school Driver
Education programs. Laboratory work in dual control cars and driving
range programs. Education, 21 years of age, and valid driver's license.

544 Psychology of Driver and Traffic Safety Education 2 hrs.

Psychological and perceptual aspects of the driver and traffic safety,
including the role of the teacher in influencing driver behavior; empha-
sizes research in traffic safety. Prerequisites: Administration and Meth-
odology of Driver Education.
548 Fundamentals of Audiovisual Media 2 hrs.

A survey of audiovisual media as effective means for achieving educational objectives. Emphasizes selection and classroom use of both commercially available and simple, locally produced instructional materials. Students preview and evaluate films, filmstrips, recordings, etc. and are expected to show proficiency in the operation of projectors, tape recorders and other equipment during correlated laboratory sessions which require several hours outside of class during the semester. In addition to text materials, students must provide supplies averaging about $5.00 per student. Limited to 30 students.

549 Basic Production of Audiovisual Materials 3 hrs.

A laboratory course in the preparation and effective use of teacher-made visual materials. Covers basic processes of mounting, laminating and reproducing pictures; designing and creating posters and displays; construction of presentation boards; design and production of transparencies for over-head projection, and fundamentals of photography. In addition to text materials, students must provide supplies averaging about $15.00 per student and must have the use of a simple camera. Limited to 20 students. Prerequisite: TEED 548 taken previously or concurrently.

555 Alcohol Education 2 hrs.

Deals with problems of alcohol education in the school and community, with special emphasis on teaching methods and procedures, relationships with governmental and social agencies, and administration of program.

560 Practicum: Sociological and Psychological Foundations of Teaching the Disadvantaged 2-6 hrs.

The initial course required of all students in this program. Designed to develop awareness of family situations, community conditions, behavior, value systems, and characteristics of the disadvantaged, as well as to develop positive attitudes toward these children and their problems. Consists of readings, lecture-discussions, and field experiences with the disadvantaged, including home visits, visits to social and governmental agencies, and school experiences including supervised teaching. Generous use is made of consultants from all agencies dealing with the problems of the disadvantaged.

586 Clinical Studies in Reading 2 hrs.

This course is intended to provide the basic information needed in the examination of persons with reading disorders. Interviewing techniques and examination procedures will be the basic content of the course. Emphasis will be placed on the physical, psychological and sociological factor affecting reading performance.

587 Educational Therapy in Reading 2 hrs.

The psychological, sociological and physiological factors affecting children's reading ability, together with laboratory application of such
knowledge in the prevention, diagnosis and treatment of reading problems. Open only to experienced teachers by permission of the instructor.

597 Reading and Related Language Experiences 2 hrs.
A study of the current research in the many aspects of language which are involved in the process of effective reading.

598 Selected Reading in Education 1-3 hrs.
Designed for teachers preparing to work with disadvantaged children. Students will be expected to read widely in the literature and research findings related to the education of the disadvantaged under the guidance of a professor.

Open to Graduates Only

608 Interdisciplinary Seminar 3 hrs.
This seminar is taught by a team of faculty members chosen from such areas as sociology, economics, psychology, philosophy and education. It is designed to provide breadth and depth in the understanding. May be taken more than once.

610 Guiding Child Development in the Elementary School 2 hrs.
Designed to help nursery, kindergarten and elementary school teachers gain an understanding of the manner in which skills, information, attitudes and behavior patterns are acquired and modified. The contributions of each curricular area, such as: language, arts, arithmetic, science, social studies, health, etc., are stressed with emphasis on suitability of experience for different stages of growth, instructional practices and appropriate procedures of evaluation.

615 Seminar in the Teaching of Reading 2 hrs.
Designed to acquaint teachers, reading specialists and administrators with the current literature, research, methods and materials used in teaching children how to read. Special emphasis is placed on reading in relation to other aspects of language and on reading in the content fields.

621 The Secondary School Curriculum 2 hrs.
Covers modern practices and recent emphasis and trends in subject areas of the secondary school curriculum. Prerequisites: 502 The School Curriculum or equivalent.

622 Junior High School Curriculum and Instruction 2 hrs.
A detailed study of the junior high school including: development and purposes; psychological and philosophical foundations; curriculum patterns; student activities programs; and administrative, guidance, and evaluation procedures. Special attention given to the objectives and content of general education, and the basic concepts, methods, and materials that are significant in an instructional program designed to achieve integration of learning through the problem-solving approach.
633  Education of Gifted and Talented Children and Youth  2 hrs.

This course is designed to develop a student's understandings of and appreciation for the abilities, interests, talents, and problems of gifted children and youth. Attention will be given to methods and criteria used in identifying gifted, talented and creative individuals. Through the use of available research data, students will be required to complete a critical evaluation of educational provisions including segregation, acceleration, and enrichment. Personal, social and cultural factors which directly or indirectly influence the growth and development of these individuals will be considered.

641  Selection and Utilization of Audiovisual Media  2 hrs.

Applied basic concepts of communications research to the selection and utilization of media and materials to meet specified educational objectives. Emphasizes the integration of appropriate media into instructional systems and the operational evaluation of such systems within various learning environments. Students are expected to preview and evaluate materials outside of class time. Prerequisite: TEED 548 or equivalent.

642  Photographic Communication  3 hrs.

Explores uses of photography in the communication of ideas. Considers techniques of composition, lighting, equipment operation and basic photographic processes as means toward achieving an effective visual statement. Following preliminary assignments, students plan and produce a picture story or photo essay suitable for publication and a set of color slides or a filmstrip accompanied by recorded narration or audio effects. Considerable laboratory time is required outside of class. In addition to text materials, students must provide supplies averaging about $25.00 per student and each student must have the use of a camera with adjustable focus, aperture and shutter speeds. Limited to 15 students. Prerequisites: TEED 548, 549 or equivalent.

643  Practicum in Clinical Studies in Reading  2 to 4 hrs.

A laboratory course providing experiences in integrating facts provided in the child's history with facts resulting from the administration of objective measures. Practice is given in identifying relevant data and explaining casual factors and their interrelationship. Experience is provided in the diagnosis of reading problems in the Psycho-Education Clinic. Prerequisites: Education 586 and 587.

644  Educational Television  2 hrs.

Considers closed-circuit, locally broadcast and network telecasting as educational media, relating research findings to practical learning situations. Examines in detail the roles of television teachers, classroom teachers, media specialists and administrators in planning for the production, effective utilization and evaluation of instruction by television. Limited to 20 students.
645 Advanced Production of Audiovisual Materials 3 hrs.

A laboratory course in which principles of graphic communication are applied to the design and production of audiovisual materials suitable for reproduction by printing, photography or television. Provides an opportunity for the graduate student to pursue selected techniques in depth and to become acquainted with processes which will relate directly to his job as an educational media specialist. In addition to text materials, students must provide supplies averaging $25.00 per student. Limited to 15 students. Prerequisites: TEED 548 and 549 or equivalent experience.

647 Organization and Administration of Audiovisual Programs 3 hrs.

Considers problems of developing and administering an audiovisual program in a school or school system; surveying available materials and facilities and making recommendations for expansion and improvement and obtaining financial support; selecting, organizing, cataloging, distributing and maintaining materials and equipment; providing in-service education in audiovisual methods for teachers; and interpreting the educational media program to administrators, staff and the community. Prerequisite: TEED 548 or equivalent.

648 Instructional Media Seminar 3 hrs.

An analysis of applied communication. Emphasizes findings of audiovisual research as applied to message design and the structuring of learning systems. Relates communications theory to the technological solution of practical instructional and logistical problems of education. Limited to 15 students. Prerequisites: TEED 548, 549, 647 or equivalent.

649 Problems of College and Adult Reading 2 hrs.

An advanced laboratory course covering philosophy, principles, and practices of a developmental program in reading for college students and adults. Lectures, discussions, and demonstrations will center around teaching techniques in common practice.

650 The Characteristics of the College Student 2 hrs.

This course is intended for students who are preparing to teach at the senior college or the community college level. Its focal point is an understanding of the capabilities, behaviors, attitudes and motivations of the college student. Among the topics to be considered will be academic adjustment, separation from home and family, use or abuse of newly-acquired autonomy, economic stability, campus social life and interpersonal relations as they effect academic achievement.

651 Philosophy of Education 2 hrs.

For graduate students and teachers of experience. Analyzes basic ideas, concepts and value-systems affecting educational practices; stresses a comparison of philosophical schools, historical and contemporary.

652 Comparative Education 3 hrs.

Provides an analysis of selected educational systems throughout the world. The goals, organizational structure, curricula, and methods of
education are examined in relation to the salient features of each culture, and in comparison to the American educational system.

653 Practicum in Reading Therapy 2 to 4 hrs.
An instructional internship for working with individual pupils who have problems in reading and related areas. The course provides, through the service of the Psycho-Educational Clinic, supervised therapy experiences with a variety of reading problems. Emphasis will be placed upon the study, application and evaluation of therapeutic procedures. Prerequisites: Education 586 and 587.

654 Practicum in Reading Supervision 2 to 4 hrs.
Principles and practices of organization and administration of reading programs for elementary, secondary, college, and adult students. Deals with the role of the reading consultant and the problems associated with providing effective reading instruction. Includes participation in classrooms and conferences with teachers concerning instructional goals, materials and procedural approaches.

655 Seminar in Learning 2 or 3 hrs.
Open to selected graduate students with the consent of the instructor. Analyzes research in the field of learning, including effective factors, input and retention of information, and concept formation.

656 Organization and Administration of Reading Programs 2 hrs.
A study of the process and procedures which may be employed in organizing and administering reading programs at the elementary and secondary levels. Emphasis is placed on the examination of existing programs and practices with a view toward improving in-service education for all teachers.

659 Seminar: Problems of Teaching the Disadvantaged 3 hrs.
This seminar deals with problems inherent in educational programs for underprivileged and youth. Emphasis is placed on developing a depth of understanding and resolutions to such problems as: curriculum development, methodology, school organizational innovations and audio-visual adaptation of existing materials to the teaching of disadvantaged children. Students are encouraged to enroll for the seminar as a culminating activity for the degree, and to bring to the meetings actual problems faced in their own teaching situations.

669 Supervision of Student Teaching 2 hrs.
Deals with the significance of student teaching in the pre-service education of teachers, the role of the supervising teacher, and the problems associated with providing high quality student teaching experiences. Many types of student teaching programs and their components of planning, evaluation, supervisory conferences and follow-up are analyzed. Prerequisite: teaching experience or consent of instructor.
687 Improvement of Reading in Secondary Schools 2 hrs.
Designed to aid teachers in developing the reading abilities and skills for their students at the secondary level. Emphasis is on aims, materials and procedures.

688 Evaluation in Education 2 hrs.
Designed to develop skills, techniques, attitudes and understandings involved in the measurement and evaluation of individual learning and development as well as in the appraisal of the total school program. Emphasis is placed on the construction, use and interpretation of formal and informal evaluative devices, and upon the development of a philosophy of evaluation as an integral part of learning.

690 The Community College 2 hrs.
Studies the historical development of the junior and community college movement; the function of the community college in the total educational program; the divergent aims and curricular requirements of pre-professional, academic and pre-vocational courses; the problem of guidance and counseling as an integral part of the program; and methods and materials of instruction at the college level.
School Services

Boles, Head; Professors Bryan, Faunce, Manske, McCuskey, Misner, Seay, Strolle, Viall, and Weaver; Associate Professors Betz, Carlson, Davenport, Engle, and Lamper; Assistant Professors Coats, and Mazer

EDUCATIONAL LEADERSHIP

Open to Graduates and Upperclassmen

598 Readings in Educational Administration 1-4 hrs.

An advanced student with a good academic record may elect to pursue independently the study of some topic having special interest to him. Topic chosen must be approved by and arrangements made with consent of the instructor to be involved. May be elected more than once.

Open to Graduates Only

605 The Process of Curriculum Development 2 hrs.

This course, designed for instructional leaders, will deal with forces causing and inhibiting curricular change, techniques of organizing and supporting curriculum improvement, perceptions of individuals and groups in relation to change, and communication with professional and lay groups involved. Prerequisite: TEED 602 or consent of instructor.

607 The American Educational Scene 2 hrs.

A study of the total impact of education in the United States with reference not only to school programs, kindergarten through college, but also to educational programs in business, industry, government and other non-school agencies. This course is a prerequisite to the internship in non-school educational agencies required of all doctoral candidates in administration.

613 Elementary School Administration and Supervision 3 hrs.

A study of theoretical and practical problems of elementary school administration and supervision including organization of the school program, parent and community relationships, personnel problems and leadership in instructional improvements. Prerequisite: 660.

623 Supervision of Instruction 3 hrs.

The improvement of learning for all those who take part in educational enterprises will be the center of this course. Basic principles will be developed from the practical problems of coordination and stimulation for the planning of improved learning. The psychological and cultural matrix in which supervisory activities take place will be considered.

624 Secondary School Administration and Supervision 3 hrs.

This course is designed for all those interested in educational leadership at the secondary level. Basic principles of both administration and supervision will be developed and the interrelationship between the two carefully studied. Prerequisite: 660.
625 Administration and Supervision of Adult Education 3 hrs.

This course is for students who are or expect to be leaders in institutions and agencies that offer a variety of formal programs in adult education. The scope of adult education in the industrial and business world, in the military, in for-profit educational institutions, and in other agencies offering education beyond the high school will be described and analyzed. Emphasis will be given to research in adult learning, financing adult education activities, organizational and administrative practices, physical facilities, and in coordinating procedures.

630 Studies in Higher Education 2-6 hrs.

Designed for career people in the field of Administration and Student Personnel Services of Higher Education. The workshop approach will be used to introduce students to such areas as Admissions, Registration, Administrative Organization, Financial Aids, Societal and Economic Student Population Levels, Foreign Student Programs and other areas of Higher Education Services.

653 Principles of Community School Organization 2 hrs.

The history and philosophy of the community school as a special instrument; its program, and organizational problems related to the staff, plant, and community.

657 Community School Administration 2 hrs.

Principles of administration relating directly to the community school program. Emphasis on the task, the personnel, and the dynamic community setting.

660 Principles of Educational Leadership 3 hrs.

A study of the philosophy and principles of sound educational administration at all levels. Problems of school organization are considered in the light of research findings in human relations, and leadership theory. Stress is placed upon the nature of the administrative process and upon the opportunities and challenges of educational leadership. A prerequisite for most other administration courses.

661 School Public Relations 2 hrs.

Deals with education of the community with respect to the schools' program. Considers the principles of interpretation and their application in every phase of the system. Recommended for all teachers and administrators. No prerequisite.

662 Seminar in Administration and Education (Flint) 4 hrs.

Only for students who are resident in Flint in the Mott Internship. All interns enrolled in all seven of the participating Michigan universities meet for two half-days per week with speakers on topics from the fields of education and administration. Most of these speakers are from the participating universities, although not all are. The general format is about 1 1/2 hrs. of lecture presentation of a selected topic, followed by a
student participation period. Extensive readings are required. Permission of instructor required.

663 Seminar in Educational Administration 2-3 hrs.

This course is designed for experienced administrators to allow them to examine in depth selected problems of school administration, including the compilation and review of research in the field. Admission by permission of instructor. May be taken more than once.

664 Development of Educational Facilities 3 hrs.

Identifies the tasks to be done in planning, constructing, furnishing, occupying and evaluating a single building project; and in planning for the specifics of health, safety, comfort, future use, function, aesthetics and economy. Discusses the participants and their roles, and the principles involved in determining needs. Includes field trips to new facilities. Prerequisite: 660.

665 School Finance and Business Management 4 hrs.

Treats such topics as origins, status, organization and principles of business management; programming, expending, and securing funds; sources of funds; preparing, presenting, administering and evaluating the budget; administration of personnel, materials, plant, pupil services, and funds. Includes securing, handling and accounting for general, capital outlay and internal funds. Prerequisite: 660.

666 Cooperative Inter-Institutional Seminar 4 hrs.*

For students from the field as well as interns resident in Flint. Restricted enrollment, subject to approval of instructor. A program designed for sixth-year or post sixth-year students who are practicing administrators. Makes use of the Flint, Michigan, public schools, in cooperation with other Michigan universities.

Resident interns meet for one two-hour session per week, except for participation in once-a-month activity which includes students from the field with professors from the participating universities. Format is lecture followed by student participation period. Professors are generally non-education (Sociology, Economics, Psychology, etc.) and credit is non-Education. Year's program designed around a central theme. Extensive reading required.

667 Administration of School Personnel 2 hrs.

Discusses policies and procedures relating to the selection, assignment, and supervision of certified and classified school personnel. Contracts, salary, schedules, working conditions and termination policies are studied. Recommended for all teachers and administrators. No prerequisite.

*Enrollment is for the Fall and Winter semesters, but participation is for the full public school year, with four hours credit for the year. May be taken only once.
668 School Law

Focusses attention on basic legal principles, on the interpretation of school legislation, and on the legal responsibilities facing the administrator, the teachers, the school board, and the parent. Recommended for all teachers and administrators. No prerequisite.

669 Theory of Educational Administration

A critical study of the philosophy of the administrative process in relation to the solution of practical problems. Concepts, generalizations, and theories of educational administration are developed and evaluated in light of recent research in the behavioral sciences and in management.

671 Internship and Seminar (Flint)

Each person is serving an internship, consisting of actual field experience with each of several persons and divisions of the Flint Public Schools, in which he observes and works a minimum of 20 hours per week. In addition, the interns spend one-day day per week in seminar with their university representative, discussing their experiences and the problems they have encountered. Readings and a log of daily experience are required.

676 Statistics and Computer Science

A basic course in statistical concepts and procedures, offered primarily for those students interested in carrying on research for advanced programs. An introduction to computer science and its application to the solution of selected educational problems. Prerequisite: Teacher Education 601 or permission of instructor.

677 Methods in Educational Research

Designed for students interested in pursuing their own research projects in education. Examines various research methods appropriate to the study of different kinds of educational problems. Prerequisite: Sch. S. 676 or equivalent.

725 Research Seminar in Educational Administration

Required of all doctoral candidates in the field. Review of research in selected aspects of administration, followed by individual presentation and analysis in the seminar. Prerequisite: Sch. S. 676 or equivalent.

GUIDANCE AND PERSONNEL SERVICES

Open to Graduates and Upperclassmen

580 Principles and Philosophy of Guidance

(Service course for non-counseling majors)

An introductory course for elementary and secondary teachers. A thorough investigation of the democratic philosophical concepts underlying guidance service programs; a survey of the history and principles of guidance; an overview of guidance services.
581 Interpretation and Use of Tests on Guidance 2 hrs.
(Service course for non-counseling majors)

Designed to familiarize students with various psychological tests and scales that may be used in school guidance programs. Tests are taken and scored by students, and the results are interpreted and evaluated.

582 Information Service and Guidance 2 hrs.
(For counseling and non-counseling majors)

Discussion of theories of occupational and educational choice stressing knowledge of sources, use, evaluation and techniques of imparting occupational and educational information including college choice, loans, fellowships, scholarships and grants in education.

583 Guidance Workshop 2 hrs.
(For counseling and non-counseling majors)

The Guidance Workshop is designed for counselors who wish to study particular guidance problems and procedures in relation to their local guidance program. Group procedures will be demonstrated and experienced by the counselors with a view toward developing understandings of the group processes as perceived by students. Class membership limited to counselors, social agency personnel, and Hines Hospital personnel.

584 Elementary School Guidance 2 hrs.
(Required for elementary school counselors, and a service course for non-counseling majors)

Designed to give teachers, administrators and guidance workers an understanding of principles and techniques of guidance programs in elementary schools.

598 Readings in Guidance 1-4 hrs.

An advanced student with a good academic record may elect to pursue independently the study of some topic having special interest to him. Topic chosen must be approved by and arrangements made with consent of the instructor to be involved. May be elected more than once.

Open to Graduates Only

680 The Personnel Worker and His Role 4 hrs.
(For counseling majors)

A basic introductory unit encompassing a thorough investigation of philosophic concepts undergirding guidance and personnel programs, and a survey of the history and principles of such services. In addition, the student is involved in group counseling which may afford an opportunity for him to progress in self-understanding and self-evaluation. Admission only to those enrolled in the Guidance curriculum.
681 Organization and Administration of Pupil Personnel Services 4 hrs.
(For counseling majors)

A unit emphasizing the organization and administration of pupil personnel services at the local, state and national level. Competencies are developed in the use of questionnaires, school records, evaluations, autobiographies, anecdotal records, sociometrics, rating scales, case studies and conferences, and parent-teacher conferences. Students are expected to study various psychological tests and scales used in guidance and personnel services programs and to administer, score and interpret these devices. Prerequisite: Education 680.

682 Research in Guidance and Personnel Services 4 hrs.
(For counseling majors)

This course may be substituted for Education 681 if the student is not planning to become an elementary or secondary school counselor. The unit is designed to encourage independent study and research in the area of guidance and personnel services. The student will formulate, design and submit a research project to the Guidance staff member who is responsible for guiding the total experience. Prerequisites: Education 680, Education 601 and consent of adviser.

683 Theory and Laboratory Practice in Counseling 4 hrs.
(For counseling majors)

An advanced unit designed to synthesize counseling theory and counseling laboratory experiences. Learning activities, such as tape recordings, video tapes, role playing and actual counseling sessions, are provided to help make theoretical constructs concrete and practical. The laboratory experience involves counseling contacts which expose the candidate to various aspects of the counseling relationship. Prerequisites: Education 680, and 681 or 682.

684 Supervised Practicum and Professional Experience 4 hrs.
(For counseling majors)

A unit designed to continue and enlarge upon the laboratory experiences initiated in Education 683. In addition, there is a supervised professional experience which can be effected at Western Michigan University Counseling Bureau, a public school setting, or governmental and social agency settings (e.g., Juvenile Court) which is designed to provide the student with supervised practical experience in his major vocational area of interest. Prerequisites: Education 680, 681, and 683.

685 Field Practicum in Counseling 2-4 hrs.

This course is designed for practicing counselors holding the M.A. degree in counseling and guidance. Supervision of counseling tapes will be emphasized together with a long-term counseling case. Recent research findings in counseling, and current issues in student personnel services will be discussed.
686 Seminar in Guidance and Personnel Services 2 hrs.
A critical review of the research literature relating to guidance and allied fields. Emphasis is placed upon the practical application of these findings in the respective schools and agencies of the participants.

687 Group Procedures in Education 2 hrs.
An analysis of the role and function of group procedures in education with special emphasis on the elements of group process and interaction. Attention is given to relevant research in group procedures. Limited experience for selected students may be provided in group counseling, guidance, instruction and dynamics.

691 Counseling Supervision 2-4 hrs.
Designed for advanced graduate students who plan to assume leadership responsibilities in the continuing education of counselors. Includes didactic discussions of the elements of counseling supervision, and practical experience in counselor education.

695 Student Personnel Services in Higher Education 2 hrs.
History of growth and administration of student personnel services in community colleges, four-year colleges and universities. Recognition is given to needs of students and to basic objectives of specific student personnel services including selection and admission of students, orientation, housing, counseling, vocational choice, health, religion, student financial aid, foreign students, extracurricular, student government and discipline. Opportunity to visit and evaluate college personnel programs will be provided.

SCHOOL SERVICES
Open to Graduates Only

710 Independent Research 2 hrs.
See “School of Graduate Studies” heading in this Bulletin for description.

711 Independent Research 2 hrs.
See “School of Graduate Studies” heading in this Bulletin for description.

712 Professional Field Experience 2-6 hrs.
See “School of Graduate Studies” heading in this Bulletin for description. To be used by Ed.D. candidates in registering for internship experience. The full semester of internship is to be for 6 hrs. credit; the Spring or Summer session for 3 hrs. credit.

720 Specialist Project 2-6 hrs.
See “School of Graduate Studies” heading in this Bulletin for description. To be used by Ed.S. candidates, and may be registered for in 2 hr. blocks; credit to be “incomplete” until the full 6 hrs. are satis-
factorily completed and the written report accepted by the School of Graduate Studies.

725 Doctoral Research Seminar

See “School of Graduate Studies” heading in this Bulletin. To be used by Ed.D. candidates when developing the dissertation. May be registered for in 2 hr. blocks; credit to be “incomplete” until the full 6 hrs. are satisfactorily completed. Prerequisite: Concurrent registration in 730 in any semester when registered in this seminar.

730 Doctoral Dissertation

See “School of Graduate Studies” heading in this Bulletin. To be used by Ed.D. candidates when developing the dissertation. May be registered for in 3 hr. blocks; credit to be “incomplete” until the full 15 hrs. are satisfactorily completed and the dissertation approved by the School of Graduate Studies.

Special Education

Wirtz, Head; Professors Eisenbach, Juul; Associate Professor Heger; Assistant Professors Burleson, Turansky, Westley; Instructor Laufer

Open to Graduates and Upperclassmen

512 Workshop in Special Education

Designed for teachers, counselors, psychologists, social workers and others interested in studying selected aspects of special education at appropriate locations, such as state hospitals and special schools. A variety of instructional experiences are provided, including conferences.

521 Practicum in Special Education

This course consists of supervised tutoring of exceptional children with learning problems, such as the mentally retarded, perceptually handicapped and emotionally disturbed. Educational evaluation, teaching materials and techniques, and management of emotional and social aspects of the learning process are included in the course content. Regular clinical case conferences directed by the instructor and members of the institutional staff will be held.

528-29 Interdisciplinary Education and Rehabilitation Techniques

4 hrs. (2 per sem.)

This course is intended to develop a thorough understanding of the roles of the various disciplines involved in the diagnosis, education, and rehabilitation of exceptional children and youth. Lectures, taped and filmed interviews, and live demonstrations are utilized. Class meets during the fall and winter terms on Mondays, from 4-15 to 6:00 for full four hours credit. The course will be applicable to students of speech correction, reading therapy, occupational therapy, psychology and special education as well as to those in general education.
530 Education of Exceptional Children 3 hrs.

This course is primarily concerned with children and youth who are visually, auditorily, orthopedically and/or emotionally atypical. Emphasis will be placed on developing an understanding of the psychological, sociological, educational and philosophical aspects of each type of exceptionality. Present programs and services are described and evaluated. Field trips are made to public and private schools, institutions and agencies.

532 Mental Deficiency 4 hrs.

A course especially intended for teachers of mentally handicapped children. Also recommended for school counselors, psychologists, social workers and other ancillary personnel. Course objectives include an understanding the causes, diagnoses, classification and interpretation of mental deficits. Prerequisite: Education 530 or equivalent.

534 Education of the Mentally Handicapped 4 hrs.

The course includes a critical evaluation of methods and materials utilized in teaching the mentally handicapped. Special attention will be given to problems of organizing special classes, developing curriculums and understanding expectations of educational programs for mentally handicapped children and youth. Prerequisite: Education 532 or equivalent.

543 Education and Therapeutic Care of Crippled Children 4 hrs.

Study of educational, psychological, and therapeutic needs of crippled children and the role of allied disciplines in meeting these needs. Prerequisite: Education of Exceptional Children 530 or consent of instructor.

585 Mental Hygiene of Childhood and Adolescence 3 hrs.

Deals with the problems of emotional adjustment and maladjustment in childhood and adolescence. Stresses the development of sound principles and practices basic to mental health.

588 Psychopathology of Childhood 2 hrs.

A comprehensive study of the causes, manifestations, treatment and prognoses of psychiatric conditions in children suffering from neuroses, psychoses, schizophrenia, behavior disturbances, psychopathic personality disorders, organic malfunctioning, sexual deviations, etc. The learning difficulties and educational problems presented by emotionally disturbed children. Terminology and concepts needed for an understanding of mental illness and for effective communication with members of related psychiatric professionals.

589 Education of Emotionally Disturbed Children 4 hrs.

Taken concurrently with directed teaching in this field, this course provides group and individual guidance regarding problems encountered in teaching the emotionally disturbed. Methods of teaching, evaluation, cooperation with other agencies and professions, staff diagnostic confer-
ences, and inter-disciplinary teamwork are among the areas covered. Resource persons include psychiatrists, psychologists, social workers, etc.

Open to Graduates Only

630 Clinical Study of Exceptional Children 2 hrs.
This course is intended to illustrate methods of diagnosing and treating problems of exceptional children. Students make observations and interpretations of the children and carry on remedial work with them. The contributions of other professions will be incorporated.

632 Problems in Education of the Mentally Handicapped 2 hrs.
Problems in education of mentally handicapped children including educability; philosophy of education of the mentally handicapped; organization of programs; and functions of institutions.

634 Theory and Practice in the Education of Perceptually Handicapped Children 4 hrs.
This course explores the biological, psychological, and educational problems of children who exhibit specific characteristics associated with brain injury and perceptual disturbances. The underlying theoretical principles of perceptual and conceptual learning are presented. Educational procedures are discussed and various methodologies are examined. Children with perceptual handicaps are studied, and the students learn to prepare appropriate teaching devices.

635 Counseling Parents of Exceptional Children 3 hrs.
This course explores the dynamics of parental reactions to their handicapped children. Techniques of dealing with stress situations in the home, in the school, and in the community are developed. The students are given opportunities of working with parents of exceptional children and helping them in coping with the problems they face.

636 Seminar in Special Education 2 hrs.
This course is designed for experienced teachers to examine in depth selected social, emotional, and educational problems of the children with whom they work and the multiple approaches utilized in meeting their needs.

637 Current Research in Special Education 2 hrs.
This course explores recent researches in various areas of special education. The studies are examined with regard to their validity, significance, and their implications for the education of exceptional children.

638 The Application of Behavior Theory to Classroom Teaching 3 hrs.
Emphasizes the implications of the principles of behavior theory for classroom teaching techniques, particularly with exceptional children. Introduction to general and specific methods for generating, strengthening and maintaining desirable behavior, and methods for weakening undesirable behavior. Both academic skills and non-academic behaviors will be included. Normal and abnormal behaviors will be discussed. Direct
experiences in modifying the behavior of a school-age child will be arranged. Prerequisite: Consent of instructor.

640 Organization and Administration of Special Classes and Services for Exceptional Children

Principles and practices of organization and administration of special programs at state, county, and local levels will be considered, including legal aspects of state aid.

674 Directed Teaching, Special Education

This course is a requisite for graduate students who are preparing to teach in special education. The course is preferably taken after directed teaching has been completed in a regular classroom.

Blind Rehabilitation

Blasch, D., Director; Assistant Professors Kaarlela, Lennon, Suterko; Instructors Crummel, LaDuke, Widerberg

Open to Graduates and Upperclassmen

590 Physiology and Function of the Eye

The anatomy, structure and function of the eye. Various eye diseases and malfunctions are stressed. The student is given an opportunity to observe all types of eye conditions, eye prostheses and low visual aids.

591 Braille and Other Communication Methods

Acquaints the student with the basic rudiments of Braille reading and writing. Familiarization with other means of communication used by the blind.

592 Education of the Blind and Partially Sighted

An overview of the education of visually handicapped children. An introduction to the literature, history, principles, practices and problems in the field, including curricular and methodological adaptations of various educational programs.

593 Methods and Techniques of Teaching Braille and Other Areas of Communication

Provides students with the ability to teach areas of communication essential to the blind adult, such as: social communication, use of Braille, typing, script writing, electronic devices and other media. Opportunity for supervised practical application of methods will be afforded to the student.

594 Principles of Orientation and Mobility

An examination, and application, of the fundamental principles underlying the acquisition of sensory information by severely visually impaired individuals.
595  Introduction to Methods of Independent Mobility for the Blind  2 hrs.

Techniques are acquired under conditions which enable the student to gain an insight into the experiences of blind individuals, as related to travel skills. Emphasis is placed on the utilization of the remaining senses and their relevancy to interpretation of environmental information.

596  Practicum in Orientation and Mobility  4 hrs.

Orientation and mobility techniques and the proper methods of incorporating them into a person’s method of travel. Guided observation and practice with blinded individuals ranging in age from the pre-kindergarten through the aged in various environments, such as the school, residence, community, and work situations.

597  Development of Services to the Blind  3 hrs.

This introductory course is designed to acquaint the student with the development, scope, and present-day status of various types of services offered to blind people.

Open to Graduates Only

690  Teaching the Adult Blind  4 hrs.

Teaching and learning as they are affected by blindness. Emphasis is placed on the skills and techniques required in teaching independent living to the blind adult. Opportunity for individual practical application of methods is afforded the students.

692  The Dynamics of Blindness and Rehabilitation  2 hrs.

The development of the status of the blind and their integration into a sighted society. The relationship of the emotional and social correlates of blindness to the development of the blind individual as a contributing member of society.

693  Counseling of the Blind (Hines V. A. Hospital)  2 hrs.

Acquaints the intern with techniques and procedures used in testing and counseling blind individuals.

696  Internship in Orientation and Mobility  8 hrs.

The intern, under close supervision of a Master Therapist, instructs blinded children and adults in all phases of orientation and mobility. The intern is afforded the opportunity to work with all levels of students in various environments. He also aids the Master Orienter in working with multi-handicapped blind individuals.
Physical Education for Men and Women

Men's Department Head, Hoy; Women's Department Head, Cheatum; Professors Dales, Large, Maher, Roell; Associate Professors Doolittle, Gill, Hetherington, Means, Ray, Slaughter; Assistant Professors Brown, H., Chambers, Davis, Jevert, Jones

Open to Graduates and Upperclassmen

514 Methods and Materials in Health Education 2 hrs.
Lectures and demonstrations with emphasis on effective health supervision of school children, principles and practices of health teaching in the various grades, and interrelation of this teaching with that of other subjects in the curriculum. Prerequisite: 342, 343 or consent of instructor.

515 Dance History and Philosophy 2 hrs.
A study of the history and philosophy of dance from primitive man to modern man. Emphasis upon contemporary thought and its effect upon man's expression through dance.

516 Issues in Health Education 1-4 hrs.
Issues vary or occasionally repeat depending on the timeliness of the issue. Following are currently recommended themes: (a) Sex Education, (b) Smoking Education, (c) Drugs and Narcotics, (d) Safety Education, (e) Environmental Pollution, (f) Health Education and the Culturally Deprived, (g) Mental Health, (h) Venereal Disease. Student may register for 516 more than once but may not repeat the same issue.

544 Methods in Physical Education 2 hrs.
Fundamental principles underlying the selection of subject matter and the technique of teaching elementary and secondary school physical education.

561 Problems in Interscholastic and Intercollegiate Athletics (Men Only) 2 hrs.
Relationship of athletics to education is considered. Problems in the organization of an athletic program including eligibility, finance, liability, transportation, safety, facilities, and equipment will be discussed.

562 Administration and Organization of Physical Education 2 hrs.
Discusses administrative procedures and problems connected with physical educational programs, including scheduling, facilities, personnel problems, and public relations.

Open to Graduates Only

630 Advanced Coaching 1, 2, or 3 hrs.
Problems in the coaching of fundamentals, organization, rules, regulations, strategy, techniques of selected sports in public schools and colleges. Actual participation in activities where possible. Either coaching experience or completion of an undergraduate major or minor in the
field of physical education is a prerequisite. Each course carries separate credit, although all are listed under 630.

**Baseball**—Public relations, practice organization, conditioning techniques and game preparations.

**Basketball**—Practice organization, defensive and offensive strategy, scouting techniques.

**Football**—Organization of practices, defensive and offensive strategy, scouting techniques. (Men Only)

**Golf**—Meets, tournaments, purchase and care of equipment.

**Gymnastics**—Cinematic analysis and spotting of advanced skills, judging of meets.

**Swimming**—Conduct of meets, pool programming, sanitation and operation, beach and camp programs.

**Tennis**—Training and conditioning, drills for indoor instruction, and officiating techniques.

**Track**—Training and conditioning for individual events, planning and conduct of meets.

**Wrestling**—Administration of dual meets and tournaments, relations with community and school personnel, introduction to collegiate and olympic moves and counters. (Men Only)

**631 Prevention and Treatment of Athletic Injuries** 2 hrs.

The prevention, etiology, symptoms, pathology, and prognosis of those injuries occurring most frequently will be studied. Treatment techniques and rehabilitation procedures will be demonstrated. Medical specialists will lecture in their special areas related to athletic injuries.

**640 Rhythms in Elementary Education** 2 hrs.

A study of the rhythmic movement needs of the elementary school child, including: suggested methods of teaching through which children are stimulated to create their own responses in rhythmic play; folk and social dancing as outgrowths of movement fundamentals; and teaching examples, sample less plans, and up-to-date reference sources. Lecture and activity periods.

**641 Physical Education for the Elementary Teacher** 2 hrs.

A study of the developmental needs of the child in terms of physical activity; the role of physical education in childhood education; the responsibility of the classroom teacher in this area; demonstrations and practice in teaching activities.

**650 Evaluation in Health, Physical Education, and Recreation** 2 hrs.

Acquaints students with the theory, selection, construction, administration, and interpretation of appropriate tests in the field. Class
activity will include study and discussion of selected tests, application, scoring, interpretation, and construction of tests.

651 Research Procedures in Health, Physical Education, and Recreation 2 hrs.

Introductory principles of scientific inquiry, research methods applicable to these fields, evaluation of published research, and procedures for developing a research design.

652 Historical and Philosophical Foundations of Physical Education 2 hrs.

Designed to examine the role of physical education in ancient and modern times. Stress is given to significant concepts, events, and people which have influenced this discipline. Special attention will be paid to developments resulting from the work of international professional organizations interested in H.P.E.R.

660 Current Studies in the Administration of Physical Education 2 hrs.

For administrative officers as well as for teachers and directors of physical education. Includes a study of representative programs of physical education and a discussion of standards for evaluating such programs.


Deals with modern trends and with instructional and supervisory problems involved in conducting an effective program of physical education. Critical appraisal of present practices.


A course in the development of a practical, progressive physical education program for the elementary and secondary schools. A review of children's characteristics, particularly those concerned with physical education, will be used as a basis for thorough analysis of the development of fundamental and basic skills at the various age levels.

663 Supervision in Health, Physical Education, and Recreation 2 hrs.

Applicable to men and women physical education specialists who have the responsibility of supervising physical education teachers. Concerned with studying the role of the supervisor and appropriate and effective techniques unique to physical education and their application to the teacher-pupil learning the situations. Discussions of the supervisory responsibility and function in city, county, and state school systems.

670 Community Recreation 2 hrs.

Problems in community recreation. The essential elements pertaining to leadership, areas, facilities, programs, activities, and methods of
organization and administration are considered. A study is made of outstanding programs in operation. Recreation material is surveyed.

671 Camping Administration 2 hrs.

The organization and administration of camps and their program requirements and standards. Consideration is given to philosophy and objectives, personal skills in camp activities and methods of teaching them. Visits to camps are made and out-of-door activities are experienced.

672 Methods and Materials in Recreation 2 hrs.

Best methods and materials for the teaching and organization of recreation activities. Activities used in recreation will be presented. Opportunities for organization and actual participation and leadership will be given. This course is open to all graduate students.

680 Advanced Studies in Health, Physical Education or Recreation (HPER) 1, 2 or 3 hrs.

Selected professional offerings which acquaint students with the teaching, organization, and essential elements in the field. Topics will vary from one semester to another. May be taken more than once.
School of
Graduate Studies

GEORGE G. MALLINSON,
Dean
LEO C. STINE,
Associate Dean
SID DYKSTRA,
Assistant Dean

Departments:
Librarianship
Graduate Studies
Graduate Studies

Open to Graduates Only

700 Thesis 6 hrs.
Candidates for the Master of Arts degree may elect to write a thesis in their field of specialization under the supervision of one or more faculty advisers.
A student may elect this course in units of from two to six hours. The election should not be made in more than two units and must be made within a calendar year. Application forms must be submitted at the time of election of the thesis.

710 Independent Research 2-6 hrs.
Designed for highly qualified advanced graduate students, or small groups, who wish to pursue individual studies or projects under the direction of a member of the graduate faculty. It may be elected in any department or division with permission of the Dean of the School of Graduate Studies, the student's graduate adviser and the faculty member under whom the student desires to work. Applications must be submitted prior to the election of the course.

712 Professional Field Experience 2-6 hrs.
Designed for superior graduate students who wish to pursue internships or apprenticeships in off-campus activities in industries or institutions. May be elected in any department or division with permission of the student’s graduate adviser, a faculty sponsor and the Coordinator of Professional Field Experiences. Prerequisite: An outline of the purposes of the student's internship or apprenticeship. Application forms and information about established programs may be obtained at the Graduate Office and must be submitted prior to the election of the course.

715 Seminar in College Teaching 4 hrs.
Designed for students who are interested in preparation for college teaching. The student is expected to work with a member of the faculty of his major department or unit in a classroom situation for a semester and to attend eight scheduled discussions arranged for all students in the Seminar. These discussions will emphasize important topics related to college teaching.

720 Specialist Project 4 to 6 hrs.
Designed for those units offering the Specialist degree. The nature of the study, project or paper will vary from one program to another. After receiving unit approval, project reports or papers must be prepared for binding and submitted to the School of Graduate Studies for acceptance after which the original and five copies are to be bound at the student's expense.

725 Doctoral Research Seminar 2-6 hrs.
Units offering doctoral programs may use this number to designate
their research seminars. Such seminars may be taken more than once by the student.

730 Doctoral Dissertation  

The doctoral dissertation must reflect a creative effort on the part of the student in using the skills of inquiry appropriate for his discipline. The format of the dissertation must conform to that approved by the Graduate Studies Council. The acceptance of the dissertation requires unanimous approval of the dissertation review committee and acceptance by the School of Graduate Studies. The original copy after acceptance will be used for microfilming by University Microfilm, Inc. at the student’s expense. The student will retain the rights for further publication.

735 Graduate Research  

Doctoral level students

Librarianship

Lowrie, Head; Associate Professor Grotzinger

Open to Graduates and Upperclassmen

506 Introduction to Computer I  

1 hr.

Historical background. Flow charts and concepts of programming, including use of an Automatic Programming System with application to selected problems to be run on the IBM 1620. Prerequisite: 1½ years of high school algebra or Math 100.

510 Selection of Books and Related Materials  

3 hrs.


512 Reference Service  

3 hrs.

Study and evaluation of basic reference and bibliographic sources. Critical examination of the publications of governmental agencies, societies and institutions especially as reference sources. Attention given to organization and method of reference services in the library.

516 Elementary School Library Materials  

3 hrs.

Problems in the evaluation, selection and utilization of print and non-print materials with special emphasis on the content areas in the elementary school curriculum. Prerequisite: Children’s Literature. Open to students outside the department.

520 Field Assignment  

2 hrs.

A work assignment in selected cooperating libraries for the purpose of giving the student experience in the organizational and administrative activities of specific types of libraries. Seminars for the discussion of problems are held throughout the term. Additional term project re-
quired of graduate students. (This must precede the undergraduate Directed Teaching program.)

530 Introduction to Classification and Cataloging 4 hrs.
Introduction to the principles of cataloging and classifying the book collection. Includes study and practice in making the dictionary catalog and in classifying according to the Dewey Decimal Classification scheme. Students are taught to use the unit card system and are given practice in adapting Library of Congress and Wilson printed catalog cards, in assigning subject headings and in cataloging non-book materials.

531 Technical Processes: School Media Centers 4 hrs.
An introductory course in classification and cataloging in which emphasis is placed on organizing materials for the school media center. Includes processing of print and non-print materials both for individual schools and for systems with centralized processing. Laboratory experiences.

542 Reading Interests of Young Adults 3 hrs.
Study of the fields of literature suited to the interests of young people. Students are given opportunity through wide reading to develop principles and standards for the selection of the book collection. Includes an introduction to methods of stimulating broader reading interests and of conducting group book discussions with young people. Open to students outside the department.

546 Storytelling 3 hrs.
Underlying principles of the art of storytelling as a means of developing appreciation of literature and stimulating an interest in reading. Includes content and sources of materials, techniques and practice in telling stories before groups of children and planning the story hour program. Open to students outside the department.

598 Readings in Librarianship 1-3 hrs.
Offers a program for the advanced student for independent study in his special area of interest; arranged in consultation with a graduate adviser.

Open to Graduates Only

600 Foundations of Librarianship 3 hrs.
Gives the student professional background through study of the historical development of the library, European and American; the function of the modern library and its contribution to society; current trends in librarianship and current library literature.

602 History of Books and Printing 3 hrs.
Study of the development of the book from the earliest period to modern times. Considers the appraisal of the physical book as well as its relationship to social and cultural developments. Includes history of the alphabet, early writing materials, manuscripts, invention and
spread of printing and evolution of book production. Open to students outside the department.

612 Subject Bibliography: The Humanities and Social Sciences 3 hrs.

A study and evaluation of the bibliographical sources in the social sciences and the humanities. Each student will be expected to compile a bibliography on a topic of his choice. Prerequisite: an introductory course in Reference. 612 need not precede 613.

613 Subject Bibliography: The Sciences 3 hrs.

A study and evaluation of the bibliographical sources in the sciences including the technical fields. Each student will be expected to compile a bibliography on a topic of his choice. Prerequisite: an introductory course in Reference. 612 need not precede 613.

614 Government Publications 3 hrs.

Study of city, state and federal documents and those of selected international agencies such as the United Nations. Problems of acquisition, organization and use of such collections in various types of libraries. Prerequisite: 512 Reference Service or equivalent.

616 Curriculum Enrichment Materials 3 hrs.

Problems in the selection, evaluation, promotion, and utilization of print and non-print materials with emphasis on the content areas in the secondary school curriculum. Students are expected to complete a term project. Open to students outside the department.

617 Reading Guidance for Children 3 hrs.

A study of the development of children's literature from approximately the 8th century in England and the Colonial period in the United States to the present time. Includes principles and techniques in guidance of children's reading interests and evaluation of current literature. Open to students outside the department.

618 Libraries and Multi-Sensory Communication Media 3 hrs.

A study of modern multi-sensory aids employed in communicating ideas and considered in relation to their effect on libraries. Emphasis will be placed on program development through effective use of multi-media materials. Mass communications media and new instructional methods for fulfilling the objectives of public, school and college libraries will be examined.

620 Public Library Service 3 hrs.

Origin and development, purposes and functions of the tax-supported public library (county and regional) in a democracy. Relation to other educational units in the community; distinctive problems and practices in public library organization and administration. Prerequisite: Library Organization and Administration or equivalent.
622 Library Organization and Administration 3 hrs.
Organizational and administrative factors requisite for effective library service. Consideration given to governmental and community relations, to personnel, finance, buildings and equipment. Individual projects, lectures and class discussion supplemented by observation trips.

623 College and University Library Service 3 hrs.
College and university library organization and administration, and the place of the library in academic institutions; effectiveness of library procedures; problems of acquisition, finance, buildings, equipment and the handling of special materials. Prerequisite: 622 Library Organization and administration.

624 Library Services to Children and Youth 3 hrs.
The function and administration of public library service for children and young adults. Emphasis on coordination with school libraries and other community agencies; program development in children's and young adult departments.

625 School Library Administration 3 hrs.
Consideration of the library as the media center of the school at the elementary and secondary levels. Emphasis on the program of services to faculty and students, including the administrative problems of budget planning, personnel requirements, space and equipment needs and library instruction.

627 Administration of the School Media Center 3 hrs.
A seminar approach to contemporary issues including staff utilization, in-service programs for teachers, current trends in education and school media systems development. Prerequisite: 625 or permission of instructor.

628 Special Library Service 3 hrs.
Development and administration of specialized library services to organizations in such fields as science and technology, fine arts, business, etc. Lecturers and field trips.

629 Library Research 3 hrs.
Evaluation of library studies and their influence on library organization, administration and services. Opportunity for investigation and research in current problems in public, college or school libraries. Prerequisite: Consent of instructor.

630 Advanced Classification and Cataloging 3 hrs.
A continuation of Introduction to Classification and Cataloging. Attention is given to comparison of classification systems; to cataloging of special types of materials including audio-visual materials and to methods of organizing centralized cataloging units.
635 Information Storage and Retrieval 3 hrs.
Analyzes theories of bibliographic organization and control; surveys and evaluates methods, conventional and mechanical, for retrieval; considers trends and developments relating to library services. Prerequisites: 530 and 622 or equivalent.

641 Adult Reading Interests 3 hrs.
Evaluation of findings of reading studies and their implications for library service; an understanding of reading habits, abilities and needs of adults. Study of the library as an adult education agency with an introduction to leadership training and adult education techniques.

650 Advanced Seminar in Librarianship 2-4 hrs.
Analysis and study of specific problems in contemporary library practice. Lectures, field trips and resource consultants (offered irregularly).

655 Seminar in Library Education 3 hrs.
Designed for the advanced student interested in teaching in the field. Includes historical development, comparative librarianship, relationship of professional school in higher education, program and course analysis, and areas for research. (Offered irregularly.)
School of Liberal Arts and Sciences

GERALD OSBORN, Dean
CORNELIUS LOEW, Associate Dean
JAMES POWELL, Associate Dean

Graduate Offerings:
Anthropology
Art
Biology
Chemistry
Economics
English
Geography
Geology (Earth Science)
History
Languages, Modern and Classical
Linguistics
Mathematics
Music
Philosophy
Physics
Political Science
Psychology
Religion
Science Division
Social Science Division
Sociology
Speech
Speech Pathology and Audiology
School of Liberal Arts and Sciences

The School of Liberal Arts and Sciences includes the departments of Anthropology, Art, Biology, Chemistry, Economics, English, Geography, Geology, History, Modern and Classical Languages, Linguistics, Mathematics, Music, Philosophy, Religion, Physics, Political Science, Psychology, Sociology, Speech and Speech Pathology.

The School of Liberal Arts and Sciences offers a variety of subjects that familiarize the graduate student with the world of ideas, and deepen his understanding of the cultural heritage. The programs are designed to train the student to think objectively, critically and creatively.

Graduate programs are offered in Anthropology, Art, Biology, Chemistry, Earth Science, Economics, English, Geography, History, International and Area Studies, Languages, Mathematics, Medieval Studies, Music, Philosophy, Physics, Political Science, Psychology, Sociology and Speech Pathology and Audiology.

The School of Liberal Arts and Sciences cooperates with the School of Education in offering the following teacher education programs: Teaching of Art, Teaching of English, Teaching of Mathematics, Teaching of Music, Teaching of Science, Teaching of Social Science, Teaching of Speech Correction and Teaching of General Speech.

Foreign Seminars

Open to Graduates and Upperclassmen

503 Foreign Studies Seminar 1-6 hrs.

Foreign Studies Seminars in the sciences organized and conducted by The School of Liberal Arts and Sciences for exceptionally talented undergraduate or graduate students: Students completing such a seminar may receive credit in the departments of Psychology, Geography, Geology, Biology, Physics or Chemistry if approved by the head of the department prior to registration for the seminar.

504 Foreign Studies Seminar 1-6 hrs.

Seminars in the Social Sciences: Students who complete such a seminar may receive credit in the departments of Economics, Geography, History, Political Science or Sociology if the credit is approved by the head of the department prior to registering for the seminar.

505 Foreign Studies Seminar 1-6 hrs.

Seminars in the Humanities: Students completing such a seminar may receive credit in the departments of Philosophy and Religion, Languages, English, Art, Music or Speech if the credit is approved by the head of the department prior to registering for the seminar.
Anthropology

Maher, Chairman; Associate Professors Baldwin, Garland, Smith; Assistant Professors Lofler, Maples

Open to Graduates and Upperclassmen

531 Cultural Attributes of Personal Character 3 hrs.

The course involves a study of the following: Concepts of personality development that determines rearing and the learning process; range of permissiveness; cultural incongruencies; adult behavior subsequent to prescribed forms of rearing; personality and forms of association. Some attention will be given to potentials for research. The course is intended for students who have not had extensive training in social science. Not open to majors in anthropology or sociology. Prerequisite: one course in anthropology, sociology or psychology.

532 Culture and Personality 3 hrs.

An investigation of the interaction of culture and personality with particular attention to the role of culture as a force in the development of the individual. Prerequisite: 15 hrs. from anthropology, psychology, or sociology.

534 Peasant Societies in Cross-Cultural Perspective 3 hrs.

A cross-cultural study of the development of peasant groups as a cultural type. Theoretical and substantive emphasis is on the cultural antecedents of peasant societies, the conditions promoting change from folk to peasant status, and the relationships between peasant groups and urban, national societies. Prerequisite: 231 and one of 334, 335, 336, 337 or consent of instructor.

535 The Anthropology of Religion 3 hrs.

An examination of anthropological theories and findings relating to the origin, nature, and function of religion as a universal category of culture. A scientific, cross-cultural consideration of religious beliefs and practices and their relation to concepts of the nature of the universe. The role of religion in revitalistic reactions to culture contact. Prerequisite: 231 or consent of instructor.

536 The Dynamics of Culture Change 3 hrs.

An inquiry into the dynamics of culture through a study of the principal theories of cultural change and their application to concrete situations such as the rise of complex civilizations and the reaction of non-western societies to contact the West. Prerequisite: 230 and 231 or consent.

537 Politics in Primitive Societies 3 hrs.

Theoretical and descriptive analysis of the political aspect of primitive societies; the relation of politics to technological development, habitat, and social organization. Prerequisite: 231 or consent of instructor.
538 Law in Primitive Societies

A study of law in primitive societies using the theory and method of comparative legal dynamics. The relation of law to the whole of culture; the function and evolution of law as revealed by the study of primitive societies ranging from simple to complex. Prerequisite: 231 or consent of instructor.

539 Economic Anthropology

A thorough examination of the relationship between economic and anthropological theory with a strong emphasis on its applicability and usefulness for explaining the nature of specific economic relationships existing in selected primitive societies. Prerequisites: 231 and Economics 200 and/or the consent of the instructor.

540 Cultural Ecology

A cross-cultural, comparative inquiry into the general and specific ways in which the interaction of society and environment determines the forms societies take, especially in respect to demography, territoriality, and the organization of kinship, politics, law, religion and economics. Prerequisites: 230 or 231 or consent of instructor.

541 Field Methods in Archeology

Instruction in archeological field methods with particular attention to prehistoric cultural development and ecological relationships as these appear in the process of excavation, compilation of field data sheets and in classification of artifacts. Prerequisite: 230, 341 or consent of instructor.

542 Field Methods in Archeology II

Practical application of the basic skills used in the excavation of archaeological sites, including surveying techniques, methods of excavation, compilation of field data sheets, and classification of artifacts. To be taken concurrently with 541. Prerequisites: 230, 341 or consent of instructor.

544 The Rise of Civilization

The archeological sequence in one or more of the nuclear centers of prehistoric civilization will be considered in some detail. The course may focus intensively upon one area, or it may give equal emphasis to two or more areas in a comparative framework. The specific area or areas to be studied will be announced each semester. May be repeated. Prerequisite: 230.

545 Special Area Studies

An intensive study of the cultures of various world areas such as Japan, Philippines, Caribbean, East Africa or others of similar significance. Area specialization will vary from semester to semester. Students may repeat the course for credit as long as the subject matter is different. The subject for any particular semester will be indicated in the schedule of classes. Prerequisite: 231 or consent of instructor.
547 The Primates 3 hrs.
A study of the Order Primates with emphasis on the similarities and differences in the physical features of man, the apes, the monkeys, and the Lower Primates. Field studies of the behavior and social organizations of monkeys and apes will be reviewed to gain insight into the early behavior and social organization of man. Prerequisite: 230 or consent of instructor.

549 Anthropology of Education 3 hrs.
A study of education as the process which transmits the culture of one generation of a society to the next. Particular attention is given to education in primitive and peasant societies generally lacking formal institutions of education. Prerequisite: Soc. 200 or 600, or Anth. 231.

Open to Graduates only

601 Studies in Ethnology 3-4 hrs.
Intensive study of the principal questions of sociocultural theory. May be elected as a graduate cognate course by students in other disciplines. May be repeated for credit when topics vary. Prerequisite: Graduate standing or consent of instructor.

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

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

Art
Meyer, Head; Professors Hefner, Smutz

Open to Graduates and Upperclassmen

510 Life Drawing 3 hrs.
Continuation of Art 310 with emphasis on the final drawing as a complete and coherent artistic statement. Prerequisites: Basic Group I, and 310.

525 Seminar in Art 1 hr.
A seminar primarily in Art Philosophy and History with opportunity for research and debate.

530 Advanced Ceramics 3 hrs.
Advanced work in Ceramics including glaze calculations and experimentation. Prerequisites: Basic Group I, and 232, 430.
531 Sculpture
Advanced work in Sculpture. Continuation of 331. Emphasis on bronze and aluminum casting and related techniques. Prerequisites: Basic Group I, 310, 331.

534 Textiles
Continuation of 434 with advanced work in textile design. Prerequisites: Basic Group I, and 234, 434.

538 Jewelry
Continuation of 438: advanced work in jewelry processes. Prerequisites: Basic Group I, and 236, 438.

540 Painting IV
Advanced painting. Prerequisites: Basic Group I, and 210, 310, 440.

541 Printmaking
A continuation of printmaking, 441. Prerequisites: Basic Group I, and 210, 310, 242, 510, 441.

542 Watercolor
Continuation of advanced watercolor techniques with emphasis on experimentation. Prerequisites: Basic Group I, and 240, 442.

545 Graphic Design
A survey of visual communication from two dimensional to three dimensional forms. (e.g., editorial design, packaging, point of sale, exhibition design.) Prerequisites: Basic Group I, and 245, 345.

550 Preparation for Art Teaching (Elementary)
Designed to prepare elementary art education majors to realistically meet such responsibilities as working with elementary classroom teachers, selecting, organizing and teaching art activities at each stage of development. Must precede student teaching.

551 Preparation for Art Teaching (Secondary)
Designed to prepare art education majors to understand the problems of the secondary art program. Organizing and teaching, budgeting, and other problems of secondary art education programs. Must precede student teaching.

581 History of Ancient Art
Major developments in art and architecture in ancient Egypt, the ancient Near East, the Aegean proto-Greek, Classical and Hellenistic Greece, Etruria and Rome to the Early Christian period. Prerequisites: Art 220 and 221 for Art majors and Art minors, none for other students.

585 Renaissance Art
The development of art through the early Renaissance to the late Renaissance and Mannerism. Some of the major artists discussed are: Giotto, Donatello, Leonardo da Vinci, Michelangelo, Titian, Jan Van
Eyck, Breughel and Dürer. Prerequisites: Art 220 and 221 for Art majors and Art minors, none for other students.

586 **Baroque Art**

3 hrs.

Art of the late sixteenth, seventeenth and early eighteenth centuries. Major artists and architects discussed are: Caravaggio, the Carracci, Rembrandt, Rubens, Poussin, Velasques, Bernini, Borromini and Neumann. Prerequisites: Art 220 and 221 for Art majors and Art minors, none for other students.

590 **History of Prints**

3 hrs.

Major developments in printmaking, including origins of woodcut and engraving. Renaissance and baroque master etchers and engravers (Dürer and Rembrandt, etc.) Lithography in the nineteenth century (Delacroix, Daumier, Toulouse-Lautrec). Twentieth century printmaking. Prerequisites: Art 220 and 221 for Art majors and Art minors, none for other students.

593 **History of American Art**

3 hrs.

Art and architecture in the United States from the Colonial Period to the present. Topics discussed are: Colonial portraiture, and Copley; the evolution of 19th and 20th century painting, sculpture and architecture with emphasis on the work of Stuart, Cole, Bingham, Homer, Eakins, Ryder, Sullivan, Wright, Marin, Pollock and Smith. Prerequisites: Art 220 and 221 for Art majors and Art minors, none for other students.

Open to Graduates Only

620 **Problems in Art History**

3 hrs.

Advanced work in art history. The student will have an opportunity to deal in depth with research problems. Subject matter will depend upon instructor and students. Prerequisite: Approval of instructor.

625 **Graduate Seminar in Art**

1 hr.

A seminar for graduate students. Students will have an opportunity to present ideas, discuss significant current developments in art and knit together experiences from a wide variety of areas. Repeatable for credit.

631 **Advanced Sculpture**

1-6 hrs.

Graduate level work in sculpture. Prerequisite: Art 531. Repeatable for credit.

634 **Advanced Weaving**

1-6 hrs.

Graduate level work in weaving. Prerequisite: Art 534. Repeatable for credit.

638 **Advanced Jewelry**

1-6 hrs.

Graduate level work in jewelry. Prerequisite: Art 538. Repeatable for credit.
640 Advanced Painting  
Graduate level work in painting. Prerequisite: Art 540. Repeatable for credit.

641 Advanced Printmaking  
Graduate level work in printmaking. Prerequisite: Art 541. Repeatable for credit.

642 Advanced Watercolor  
Graduate level work in watercolor. Prerequisite: Art 542. Repeatable for credit.

645 Advanced Graphic Design  
Graduate level work in graphic design. Prerequisite: Art 545. Repeatable for credit.

650 Workshop in Art for Elementary Teachers  
This course is planned for the elementary classroom teacher who has little or no training in art education. It includes an introduction to the philosophy of art education, and an examination of the stages of development of the child in creative and mental growth, as well as activities designed for each level.

655 Workshop in Art for Secondary Teachers  
A course designed to help the secondary teacher with no professional training in art or art education to better understand the child at this level and to help him in his creative and mental growth through art activities.

656 Seminar in Elementary Art Education  
A seminar oriented to the explicit needs and interests of the student enrolled. It will examine particular issues pertinent to the teaching of art in the elementary school.

657 Seminar in Secondary Art Education  
A seminar oriented to the explicit needs and interests of the students enrolled. It will examine particular issues pertinent to the teaching of art in the secondary school.

658 Art Education Research  
To examine historical and contemporary philosophies in art education in order to familiarize the student with current methods of research in the field. Whenever appropriate, opportunity will be given students to do pilot research in an area of their own needs and interests.

659 Advanced Art Education  
An examination of some of the unique aspects of teaching art in the public schools. New materials, special and general materials sources, bibliographic resources and related references are gathered and explored. Field trips will be developed to expose students to potential
community resources in art, and discussions will examine current literature, trends and techniques in art education. (A lecture-lab)

**660 Related Arts Methods** 3 hrs.

A course that explores the art teacher’s role in contemporary and experimental procedures in the teaching of the arts in the public schools. Some factors to be examined are: team teaching, team learning and planning. Audio-visual/video support, the individual school situation and its personnel.

**Biology**

Goodnight, Head; Professors Bartoo, Hinds, Steen, VanderBeek, Van Deventer; Associate Professors Brewer, Friedman, Holt, Inselberg, Lawrence, Schultz, Sud, and Wood; Assistant Professors Eisenberg, Engemann, Ficsor, Fowler and Pippen

Open to Graduates and Upperclassmen

**500 Selected Experiences in Biology** 3 hrs.

Problems to be studied are selected under the guidance of the instructor. Laboratory work consists of independent studies of living plants, animals and environmental problems. This is done outside of class time, utilizing procedures outlined by the instructor. Primarily for teachers. Prerequisite: Consent of instructor.

**502 Human Ecology** 3 hrs.

A study of the man dominated biotic community of civilization and its interrelationships. Lectures, assigned reading, group and individual field work. Prerequisite: At least a minor in biology.

**505 Advanced Genetics** 3 hrs.

Special problems in genetics, including a study of the genetic systems of populations and the formation of species. Lectures include material on the nature and function of the gene, and its relation to evolution. Prerequisite: Biology 306.

**506 Microbial Genetics** 3 hrs.

A molecular approach to microbial genetics dealing primarily with bacterial and viral systems. Prerequisites: Biology 412 and a knowledge of organic chemistry or biochemistry.

**508 Recent Advances in Biology** 3 hrs.

Recent research findings at the frontiers of biology as reported in periodicals, symposia and biological meetings. Prerequisite: at least 12 hours in biology.

**509 Evolution** 3 hrs.

A consideration of the evidence for and the principles involved in the evolution of plants and animals, including man. Prerequisite: Biology 306 or consent of instructor.
510  Virology  3 hrs.
A study of the structure and physiology of viruses. Relationship to host is stressed. Prerequisite: Biology 412 and a knowledge of organic chemistry or biochemistry.

511  Physiology of Reproduction  3 hrs.
A comparative study of the reproductive physiology of domestic animals, laboratory animals and man. Prerequisites: Biology 317 and a working knowledge of biochemistry or consent of instructor.

512  Health Problems  2 hrs.
A course for students with special interest in the medical and public health areas. The pathology, treatment and control of the major causes of mortality and ill health are presented; broad background in biology and chemistry desirable.

513  Advanced Microbiology  3 hrs.
This course deals with pathogenic microorganisms, infectious diseases, diagnostic tests and principles of immunology. Prerequisite: Biology 412 or equivalent.

514  Bacterial Physiology  3 hrs.
Lectures on bacterial cytology, metabolism, physiology and genetics with emphasis on biochemical aspects. Prerequisites: Biology 412 and biochemistry (may be taken concurrently).

515  Alcohol Problems  2 hrs.
An objective study of a major social problem, examined critically with regard to its physiological, psychological, legal, cultural, and sociological aspects. Prerequisite: at least a minor in biology or sociology, or consent of instructor.

516  Experimental Microbial Physiology  3 hrs.
An experimental approach to metabolism, physiology and genetics with emphasis on biochemical techniques. Prerequisite: Biology 514.

517  Cellular Physiology  3 hrs.
Concerned with the details of structure and functioning of cells, both animal and plant. The current status of major problems in the field is considered. Prerequisite: Biology 317 or consent of instructor.

518  Endocrinology  
A study of the glands of internal secretion, the active principles produced by each, and their role in bodily activities. Prerequisite: Biology 219 or 317 or consent of instructor.

519  Comparative Animal Physiology  3 hrs.
A study of the basic physiological processes as they occur in various groups of animals. Prerequisite: Biology 317 or equivalent.
520 Systematic Botany 3 hrs.
The classification and relationships of vascular plants by field and
laboratory studies. Attention is given to family characteristics, evolu-
tionary trends and geographical distribution. Prerequisite: Biology 301
or consent of instructor.

521 Phycology 3 hrs.
Studies in the classification, structure, physiology, ecology and
economic importance of the fresh-water algae. Prerequisite: Biology 301.

522 Phytogeography 3 hrs.
A study of the geographical distribution of plants based on physical
and ecological factors. Prerequisite: A course in systematic botany or
equivalent.

523 Paleobotany 3 hrs.
A study of the characteristics, historical and evolutionary relation-
ships of plants based upon the fossil record. At least two extended field
trips are taken. Prerequisite: 221 or equivalent.

524 Economic Botany 3 hrs.
A study of plants useful to man for food, flavoring, drugs, clothing
and building. Field trips required.

525 Biological Constituents 3 hrs.
The chemical elements in plants and animals, as well as the
synthesis, characterization, and degradation products of the more impor-
tant compounds. Prerequisites: 12 hours of biology; one year of chem-
istry.

526 Mycology 3 hrs.
Studies in the classification, structure, physiology, development and
economic importance of fungi. Prerequisites: Biology 301 and 306 or
consent of instructor.

527 Plant Physiology 3 hrs.
Advanced investigations into plant functions. Basic principles are
examined more intensively. Advantage is taken of the discoveries and
unifying principles of modern biochemistry. Prerequisite: Biology 317
or consent of instructor.

528 Biology of Non-Vascular Plants 3 hrs.
The study of classification, ecology and reproductive cycles of algae,
fungi and bryophytes. Culture methods of growing these plants for
research occupies a part of laboratory work. Prerequisite: Biology 301
or consent of instructor.

529 Biology of Vascular Plants 3 hrs.
A detailed study of the morphology, life cycles, and evolution of
vascular plants. Individual research required. Prerequisite: Biology 301
or consent of instructor.

141
538 Field Natural History 3 hrs.
A study of biological communities with particular emphasis on those accessible for use by public schools, e.g., school grounds, vacant lots, roadsides, parks and undeveloped areas. Primarily for teachers. Prerequisites: Biology 100 and 102 or consent of instructor.

541 Invertebrate Zoology 3 hrs.
A study of the anatomy, physiology, embryology, and life history of representatives of the major groups of invertebrate animals. Prerequisite: Biology 301 or consent of instructor.

542 Entomology 3 hrs.
A general study of insects, their structure, classification, life histories, ecological relationships and economic importance. Collection and identification of local species is required. Prerequisite: 12 hours of biology.

543 Protozoology 3 hrs.
Field and laboratory studies of both free-living and parasitic protozoans, including taxonomy, morphology, life histories, ecology, heredity, evolutionary development. Prerequisite: Biology 301 or consent of instructor.

544 Developmental Biology 3 hrs.
Theories and phenomena of differentiation, cytodifferentiation and morphogenesis; concepts of inducers, organizers, etc.; experimental studies of embryos of various animals or study of some specific organs during development, including tissues culture techniques. Prerequisite: Biology 343 or consent of instructor.

545 Histology 3 hrs.
A study of the microscopic structure of tissues and organs. Prerequisite: Biology 210 or equivalent.

547 Ornithology 3 hrs.
Populations, life histories, anatomy, social behavior and environmental relationships of the birds of Southwestern Michigan. Shore and marsh birds are given special attention. Individual studies, bird banding, and the preparation of bird skins. Early morning field trips are scheduled. Prerequisite: Consent of instructor.

551 Parasitology 3 hrs.
A study of parasites and host-parasite relationships illustrated by typical representatives of the principal animal groups. Special attention is given to the parasites of man. Prerequisite: At least 12 semester hours of biology.

552 Plant Ecology 3 hrs.
A consideration of the organization of vegetation and causal relationships between vegetation and environment. Prerequisites: Biology 301 and a course in systematic botany or equivalents.
553 Limnology 3 hrs.
Biological, chemical, and physical aspects of lakes and streams. Emphasis is on the ecological relationships of invertebrate animals and lower plants. Prerequisite: Biology 301 or equivalent.

554 Animal Physiology 3 hrs.
A study of cell, tissue and organ functions in the living animal with special emphasis on vertebrates. Prerequisites: Biology 317 and organic chemistry or consent of instructor.

555 Physiological Ecology 3 hrs.
A study of the physiological and behavioral adaptation and responses of organisms to external environmental factors. Prerequisites: Biology 301 and 317 and a year of chemistry or consent of instructor.

559 Radiation Biology 3 hrs.
A study of the fundamentals of radiobiology including isotope technology, radiation measurements, radioactive decay, radiation and interaction in living matter, and health and safety regulations in the laboratory. Prerequisite: A minor in chemistry and consent of instructor.

561 Biology of Lower Vertebrates 3 hrs.
The biology of lower vertebrates with special reference to adaptation, evolution behavior and ecology of major groups. Classification, museum and field methods will be stressed in laboratory. Field trips required. Prerequisite: Biology 301 or equivalent.

562 Biology of Higher Vertebrates 3 hrs.
Continuation of Biology 561.

598 Readings in Biology 1-3 hrs.

599 Independent Studies in Biology 1-4 hrs.
For students who wish to carry on advanced work in special fields. Prerequisite: Consent of instructor.

Open to Graduates Only

601 Special Investigations (various areas) 2-6 hrs.
Critical examination of developments in the various specialties represented by members of the department. The field in which work is offered will be indicated in the student record. May be repeated for credit. Prerequisite: Consent of instructor.

602 Seminar (various areas) 2-6 hrs.
Several seminars in various areas of biology will be offered. The student’s record will indicate the seminars in which he has participated. May be repeated for credit. Prerequisite: Consent of instructor.
Chemistry

Iffland, Chairman; Professor Osborn; Associate Professors Anderson, Berndt, Cooke, Harmon, Holkeboer, Nagler and Stenesh; Assistant Professors Brown, Foote, Houser, Howell, Kanaan and Kanamueller

Open to Graduates and Upperclassmen

505 Chemical Literature 2 hrs.
An introduction to the use of the various types of chemical literature such as journals, handbooks, abstracts, monographs, government and institutional publications and patents. Problems in the course require a search of the literature in the fields of analytical, inorganic, bio, organic and physical chemistry. Prerequisite: 24 hours of chemistry.

510 Inorganic Chemistry 3 hrs.
The course includes descriptive and theoretical inorganic chemistry as well as preparation of different types of inorganic compounds. Prerequisite: 24 hours of chemistry, 550.

520 Instrumental Methods in Chemistry 3 hrs.
An introduction to the theory and application of modern chemical instrumentation is presented. General topics covered are elementary electronics, electrochemistry, spectroscopy and other instrumental techniques. Four hours of laboratory per week. Prerequisite: 531.

530 Physical Chemistry 4 hrs.
Includes studies of gases, liquids, solids, solutions, thermodynamics, molecular structure, thermochemistry, colloids, etc. Prerequisites: 222 Physics 113, and Calculus 222. May not be used as credit on graduate programs in chemistry.

531 Physical Chemistry 4 hrs.
A continuation of course 530. The course includes study of surface chemistry, macromolecules, electrochemistry, homogeneous equilibria, heterogeneous equilibria, quantum theory, etc. Prerequisite: Physical Chemistry 530. May not be used as credit on graduate programs in chemistry.

536 Special Topics in Physical Chemistry 4 hrs.
The fundamentals of thermochemistry, thremodynamics, chemical kinetics, and quantum mechanics (if time permits) are studied. Mathematics are reviewed as necessary. (Not to be used for credit towards the M.A. or Ph.D. program in chemistry.)

540 Food Chemistry 2 hrs.
This is a discussion and laboratory course on the chemistry of foods for such important components as carbohydrates, proteins, fats, minerals, vitamins, and food pigments. Prerequisites: 222, 361 or 363.
551 General Biochemistry 3 hrs.
A basic course in chemistry, properties, and metabolism of carbohydrates, lipids, proteins, and nucleic acids. Prerequisite: 360 or 265.

553 General Biochemistry 5 hrs.
The course consists of 551 plus a laboratory which includes basic experiments with the main groups of biochemical compounds. Prerequisites: 360 or 265; 222.

554 General Biochemistry 3 hrs.
Enzymes, vitamins, and hormones; electron transport; respiration and electrolyte balance; photosynthesis; selected application of physical chemistry, etc. Prerequisite: 551.

560 Qualitative Organic Analysis 3 hrs.
A course in the methods of identification of organic compounds in the pure state and in mixtures which has as secondary goals the familiarization with many organic reactions and the development of deductive reasoning in the field of organic chemistry. Prerequisites: 361 or 363, and 24 hours of chemistry.

562 Advanced Organic Chemistry 3 hrs.
Covers the topics: organometallic compounds, heterocyclic compounds, dyes, introduction to photochemistry, organo-silicon compounds, etc. Prerequisite: Chemistry 361.

564 Organic Preparations 2 hrs.
A course in the application of principles and techniques of handling aliphatic and aromatic compounds on a preparative scale. Typical standard procedures are assigned. Emphasis is placed on good yields as well as quality of product. Eight hours of laboratory each week. Consult instructor before enrolling. Prerequisite: 361, and consent of Head of Department.

580 History of Chemical Theory 2 hrs.
The history of chemical theory in which the evidence for the theories is critically presented. Prerequisite: 24 hours of college chemistry, or consent of Head of Department.

590 Special Problems in Chemistry 2 hrs.
Advanced students who have completed certain basic work in chemistry may select a special problem in the fields of analytical, organic, bio, or physical chemistry. Prerequisite: 24 hours of chemistry and consent of Head of Department. Given on request.

591 Special Problems in Chemistry 2 hrs.
A continuation of special problem work started under 500. Given on request.
Open to Graduates Only

601 Graduate Seminar 1 hr.

Graduate seminar in Chemistry. Required of all candidates for advanced degrees in chemistry. (Two semesters; 1 hr. credit)

605 Advanced Chemistry Laboratory 2 hrs.

Methods of working under controlled atmospheres and conditions, manipulations of low boiling point substances, and unstable or reactive substances, and other procedures not generally covered in the elementary laboratory courses. These will be applied to problems in preparation and separation of compounds, determination of equilibria, rates of reactions, and measurements of physical properties.

610 Advanced Inorganic Chemistry 3 hrs.

Covers the principles of inorganic chemistry and the chemical elements. Such topics as extranuclear structure of the atoms, periodic classification of the elements, valency and the chemical bond, complex ions and coordination compounds, acids and bases, and nonaqueous solvents are included in the study of chemical principles. The remainder of the course concerns the chemical elements and their compounds. Prerequisite: Chemistry 510.

611 Advanced Inorganic Chemistry 3 hrs.

The chemistry of the transition elements. Consideration of the electronic and magnetic states of the transition metals and their compounds; the symmetry, stability, and reaction mechanisms of coordination compounds; application of bonding theories; systematic chemistry of the transition and inner transition elements. Prerequisite: 510.

612 Topics in Inorganic 3 hrs.

A cooperative investigation of one or more topics of major consequence contemporary inorganic chemistry. Aspects of the topic will be developed from primary sources and presented by the students. Prerequisite: 610.

613 Current Developments in Chemistry 2 hrs.

Five or six new developments selected from significant advances in chemistry will be considered. Course content will vary from year to year with growth of the science. Prerequisite: 16 hours in chemistry.

622 Theory of Analytical Chemistry 3 hrs.

A course in the fundamental principles underlying chemical methods of analysis. Special emphasis is placed on equilibria, kinetics, and mechanisms of the important types of chemical reactions (acid-base, precipitation, complex formation and redox) involved in chemical analysis; on methods of separation (precipitation, electrodeposition and distillation techniques); and on the application of statistical methods of sampling, experiment design and interpretation of results. Prerequisite: 531.
624 Analytical Spectroscopy

A comprehensive treatment of those instrumental techniques which are based upon either the emission or absorption of energy by matter. Emission spectroscopy; Raman spectroscopy; mass spectrometry; ultra-violet, visible, and infrared absorption spectroscopy; fluorimetry; and other selected topics. Lectures and laboratory. Prerequisite: 520. Two hours lecture and 4 hours lab per week.

625 Electroanalytical Chemistry

The theory and application of electrochemical measurements are discussed with particular emphasis on the theoretical aspects of polarography, potentiometry, amperometry, conductometric titrations, and other selected topics. Prerequisite: 520.

626 Chemical Instrumentation

Discussion of the principles and characteristics of construction and design of chemical and optical instruments. Prerequisite: 520. One hour lecture and six hours lab per week.

629 Special Topics in Analytical Chemistry

Subject for a given semester will be determined by student needs and interests. Among the subjects anticipated are: (1) Functional Group Analysis; (2) Complexation in Analytical Chemistry; (3) Analytical Separations Techniques; (4) Non-aqueous Solvents in Analytical Chemistry. Prerequisite: 3 hours of 600 level analytical courses.

630 Advanced Physical Chemistry

Introductory quantum mechanics with particular emphasis on its use in spectral studies and the understanding of chemical bonding. The Boltzman distribution law and its applications to kinetic molecular theory and statistical mechanics. Prerequisite: 531.

633 Chemical Thermodynamics

Includes a review of the three laws of thermodynamics, state functions, activities, partial molal quantities, thermodynamics of solutions, equilibrium and statistical thermodynamics. Prerequisite: 531.

635 Chemical Kinetics

Measurement of reaction rates, reaction rate theory, mechanisms of elementary processes, reactions in solution and on surfaces, complex reactions, application of kinetics to mechanisms, and photochemistry. Prerequisite: 531.

636 Spectroscopy and Molecular Structure

Concepts of atomic and molecular spectroscopy; the use of spectral data to determine the structure and physical constants of molecules; quantum mechanical interpretation of the electronic, vibrational and rotational spectra of diatomic and simple polyatomic molecules; fundamentals and applications of nuclear magnetic resonance, electron spin
resonance and Mossbauer effect to chemical structural problems. Prerequisite: 630.

639 Topics in Advanced Physical Chemistry 3 hrs.
This a lecture course the content of which may vary from year to year depending on the lecturer. Anticipated topics are: (a) high temperature chemistry, (b) electrochemistry, (c) colloids and surface chemistry.

650 Proteins and Nuclear Acids 3 hrs.
An advanced course in macromolecules dealing mainly with proteins and secondarily with nucleic acids. Topics covered include physical techniques for studying macromolecules such as ultracentrifugations, diffusion and viscosity; isolation and verification of protein; structure and properties of proteins and nucleic acids; protein biosynthesis; properties of enzymes and the kinetics of enzyme reactions. Prerequisite: 551.

651 Advanced Biochemistry Laboratory 3 hrs.
This course consists of two four-hour labs and one hour lecture. It is designed to acquaint the student with current techniques in research such as chromatography, electrophoresis, counter current separation, spectrophotometry, radioactive isotopes, etc. Prerequisite: 551.

652 Lipids 3 hrs.
The chemistry, metabolism and methods of isolation and analysis of the major classes of lipids are discussed. Specific topics include fatty acids, fats, phospholipids, glycolipids and chromatography. Prerequisite: 551 or 553.

659 Topics in Biochemistry 3 hrs.
Content of the course will vary depending upon student interest and availability of staff. Contemplated topics include advanced intermediary metabolism, viruses, cancer biochemistry, physical techniques, etc. Prerequisite: 551 or 553.

661 Organic Reactions 3 hrs.
An intensive survey of organic reactions with emphasis on preparative scope and utility organized about type of reaction. The following types are considered: aliphatic substitution, oxidation, reduction, condensation, etc. Prerequisite: 361 or 363.

662 Stereochemistry and Introduction to Organic Mechanism 3 hrs.
A consideration of shapes of molecules and the isometric consequences. Atomic and molecular orbital interpretation of molecular shape, resonance relation of stereochemistry to substitution and alkene addition reactions will be considered. Prerequisite: 361 or 363.

663 Mechanism in Organic Chemistry 3 hrs.
A continuation of 662. Free radical, ionic and multicenter reaction types are considered. Prerequisite: 662.
669 Topics in Organic Chemistry 3 hrs.

The course content will vary with needs of students and special competency of instructor. It may be used for a visiting professor. Prerequisite: 661 or 662 or consent of instructor.

Economics

Bowers, Head; Professors Carlson, Copps and Ross; Associate Professors Beinhauer, Bradley, Gardner, Ho, Junker, Sichel, Wend and Zelder; Assistant Professor Saylor

Open to Graduates and Upperclassmen


An examination of the Marxian system of thought including historical materialism, productive forces, theories of value, income distribution, social reproduction and an evaluation of the role of the Marxian economics in the contemporary socialist economies.

502 Studies on Quantitative Economics 3 hrs.

The course deals with statistical and mathematical techniques and concepts useful in economic analysis and their application to various areas in economics. Subject matter of the course will vary from semester to semester and may be chosen from such diverse topics as: Linear programming, game theory, input-output analysis, statistics, welfare economics, utility theory and business cycles. Prerequisite: Math 122 or consent of instructor.

503 Price Theory 4 hrs.

A basic course in economic theory with emphasis on production and income distribution theory. Prerequisite: Principles of Economics.

505 History of Economic Thought 4 hrs.

A survey of the origin and development of economic thought from early times to the present. After a brief consideration of early mercantilism and the evolution of the philosophy of natural liberties special emphasis will be placed on the contributions of significant economic thinkers and the influence of erroneous schools of economic thought on national policy and economic development. Prerequisite: 200.

506 Economic Methodology 4 hrs.

A study of the methodological underpinnings of extant economic theory. Special emphasis will be paid to the ways in which such concepts as causality, probability, deduction, induction, prediction, and proof enter into the logic discovery and the logic of confirmation. Prerequisite: 200 or consent of instructor.

507 Monetary Theory and Policy 3 hrs.

This course would concentrate on the main elements of monetary theory and policy having to do with such problems as promoting economic growth, maintaining full employment and price stability, influ-
encing the flow of capital into the various economic sectors with different possible social goals in mind, and stabilizing international trade and financial relationships. This course would stress American experience, but would give considerable attention to the monetary problems and policies of other important nations. Prerequisite: 320.

508 Institutional Economics 4 hrs.
An intensive examination of heterodox economic theory, conceived in terms of the basic social concepts of institutions and technology, and utilizing developments in modern social science for the resolution of persistent economic problems. Prerequisite: Principles of Economics.

509 Econometrics 3 hrs.
An introductory course in analytical and quantitative methods in economics. Applied economic problems like linear programming, input-output analysis will be considered. Simple regression models and their uses in economics are also included. Prerequisites: 200, Math 122, or consent of instructor.

510 Labor Problems 3 hrs.
An analysis of the nature and underlying causes of the problems facing the worker in modern society. Includes an examination of unions, collective bargaining, labor legislation, wages, unemployment and economic security. Prerequisite: Principles of Economics.

512 Collective Bargaining 3 hrs.
An analysis of the major problems in present-day collective bargaining including the negotiation of collective agreements, the practical aspects and the economic implications. Prerequisite: Labor Problems 510 or consent of instructor.

513 Economic Security 3 hrs.
An analysis of the problems of the individual worker and the efforts of the government to aid in the solution of these problems. It deals with unemployment, old age, benefits and medical care.

514 Labor and Government 3 hrs.
Deals with the government's role in the problems arising from labor-management relations and from labor's search for security. It covers the court's attitude toward labor organization from the rule of conspiracy through Taft-Hartley. It also includes protective legislation and the development of security legislation.

524 Federal Government Finance 3 hrs.
Practices, effects, and policy issues in federal government budgeting, spending, taxation, borrowing and debt, with particular attention to individual and corporate income taxation. Prerequisite: 200.

525 State and Local Government Finance 3 hrs.
Practices, effects, and issues in state and local expenditure, taxation, and borrowing, with particular attention to property and sales taxation,
to the financing of education and highways, and to intergovernmental
fiscal relations. Prerequisite: 200.

536 Advanced Consumer Economics 3 hrs.
A study of the place of the consumer in the economic system. The
relationships of personal income to price levels, and of consumer liquid
assets and availability of consumer credit to total consumer demand
will be analyzed. Special consideration will be given to the role of the
consumer in determining the amount of national income and the stability
of the economic system. Prerequisite: Principles of Economics or Eco-
nomics of Consumption.

512 Business and Government 4 hrs.
A study of the regulatory policies of government and their impact
on private enterprise. The course seeks to explain the need for regula-
tion, and to provide an analysis and evaluation of the various laws from
the viewpoint of encouragement, subsidization and control. Special at-
tention will be directed to certain aspects of concentration of economic
power, public ownership and nationalization programs. Prerequisite:
Principles of Economics. Work in political science may be substituted
in special cases by permission of the instructor.

The course is designed to study the pure theory of international
trade and trade policy.

583 Studies in Economic Planning 3 hrs.
A study of the origin and development of macroeconomic planning
in socialist countries, an examination of the general methodological
and theoretical foundations of planning including the planning of pro-
duction, investment, labor, consumption, monetary flows, prices and
macroeconomic balances.

584 Comparative Economic Systems 4 hrs.
The economic institutions and conditions of capitalism, socialism,
communism, fascism and the cooperative movement are critically ex-
amined as to ideology and actual operation. Prerequisite: Principles of
Economics.

585 The Economics of Sub-Saharan Africa 3 hrs.
A survey of the indigenous economic systems of Sub-Saharan Africa
and how these systems have been modified over time by the intrusion
of various foreign populations. The economic progress will be examined
and a detailed investigation of economic, social, and political obstacles
to further progress will be made. Not open to students who previously
received credit in 585 Economics of North Africa. Prerequisites: Prin-
ciples of Economics 201, 202.

586 The Economics of the Soviet Union and Eastern Europe 3 hrs.
A study of Soviet and East European planning practices including
an examination of the development in commerce, agriculture and in-
dustry in these areas. Also trade among the several East bloc nations will be covered. Prerequisites: Economics 200, 201.

587 Studies in Asian Economics 3 hrs.

The course concentrates on the study of the Japanese, Chinese and Indian economic systems. These models are then applied as basis of comparison to the other Asian economies.

588 Economic Development 3 hrs.

An analysis of the economic factors such as population, resources, innovation and capital formation which affect economic growth. Selected underdeveloped areas will be studied to understand the cultural pattern and economic reasons for lack of development and the steps necessary to promote economic progress. Special attention will be paid to evaluating the effectiveness of the United States foreign-aid program and examining the issues arising as a result of the conflict with the U.S.S.R. Prerequisite: Principles of Economics.

590 Contemporary Communism—A Survey 2 hrs.

This workshop on Communism is designed to give the student an insight for the range of problems that resulted from the spread of Communism in the wake of World War II. The philosophy, economic doctrines, and government of Communism will be covered. The Workshop will be of particular value in acquainting teachers with the available materials on Communism.

598 Readings in Economics 1-3 hrs.

An independent program of study for qualified advanced students to be arranged in consultation with the instructor. Prerequisite: Consent of department head.

Open to Graduates Only

600 Applied Economics for Management 3 hrs.

The course examines the relationship between the theory of the firm and recent developments in the area of operations research. Among the concepts and tools discussed are: game theory; linear programming; capital budgeting; inventory theory; input-output analysis; price policy; cost analysis. This course may not be taken for credit if a student has received credit for Economics 400.

601 The American Economy 3 hrs.

A concentrated course in basic economic concepts with special emphasis on those areas most beneficial to teachers of social studies.

604 Economic Problems 3 hrs.

Some contemporary economic problems in such areas as economic security, labor relations, finance matters related to public expenditures and taxation, governmental controls and the balance between freedom and order are analyzed and studied. Some previous work in economics is desirable but not mandatory.

152
606 Seminar in the Evolution of Economic Thought 4 hrs.
A critical study and evaluation of the various schools of economic thought with special emphasis on the ideas and theories of the leading economists in the classical, romantic, historical, socialist, neo-classical, institutional, Keynesian, and welfare economic schools. Individual research will provide the basis for class discussion. Prerequisite: A minimum of 9 credit hours including Economics 200.

609 Seminar in Economics 3 hrs.
Offers the graduate an opportunity to investigate contemporary problems in economic theory and analysis. Prerequisite: 4 hours of advanced economic theory or consent of staff.

612 Labor Union Structure and Practice 3 hrs.
An analysis of the government and operation of American labor unions with particular reference to the problems of union leadership, disciplinary procedures, membership control and the economic and social consequences of these practices.

621 Issues in Public Finance 3 hrs.
An exploration of issues in taxation, government spending, fiscal policy, and intergovernmental relations with emphasis on recent literature in those areas. Prerequisite: 200.

628 Applied Economics for Teachers 2 hrs.
Designed as a modern aid to inservice teachers and others who desire practical help in managing some of their economic affairs which are more personal than professional. Among items stressed are credit buying, savings, insurance programs, home ownership vs. renting, personal investments, taxes, wills and trust plans.

630 Industrial Organization and Public Policy 4 hrs.
The interest of this course centers on the areas where markets are characteristically oligopolistic. After a brief review of the different market types, the more important market structure, behavior, and performance variables and their accompanying public policy implications are dealt with.

651 Seminar in Industry Studies 2 hrs.
This course offers the graduate student who has previously studied industrial organization and public policy the opportunity to investigate the structure, behavior, and performance of a particular industry of his choice. The course will be conducted as a seminar in which the participants will discuss their findings as well as particular problems that they have incurred in the course of their research. Prerequisite: 650 or the permission of the instructor.

662 National Income Analysis 3 hrs.
A basic course in economic theory with emphasis on modern theories of output of the economy as a whole and on the uses of these theories as guides to policy. Prerequisite: Economics 200.
680 Problems in International Trade and Finance 3 hrs.
An analytical understanding of contemporary issues in international trade and finance will be emphasized.

684 Analysis of Economic Systems 3 hrs.
A comparative analysis of the role of markets and planning as means for the implementation of the goals and ideals of modern economic systems. Particular stress is placed upon modern capitalism and liberal socialism in the Western World. Prerequisite: Comparative Economic Systems or consent of the instructor.

688 Issues in Economic Development 3 hrs.
An intensive examination of a number of selected key topics in development economics, centering on issues of crucial importance to developing nations. Examples of such issues are Primary Products, Capital Formation, Technological Change, Inflation, Debt Servicing, Population, etc. Prerequisite: 200.

**English**

Sadler, Chairman; Professors Callan, Denenfeld, Galligan, Holaday, Limpus, Macrorie, Malmstrom, Miller, Nelson, Rogers and Woods; Associate Professors Bahlke, Carlson, Combs, Davis, R. Goldfarb, Phillips, Rowe and Shafer; Assistant Professors C. Goldfarb and Stroupe

Open to Graduates and Upperclassmen

519 Studies of Non-Western Literatures in Translation 4 hrs.
Studies of significant forms in Chinese, Indian, and other non-western literatures and of their relation to the values and patterns of a particular society.

522 Movements in American Literature 4 hrs.
Study of a movement or movements in American literature, such as romanticism, realism, naturalism. Prerequisite: two literature courses.

530 Medieval Literature 4 hrs.
Readings in medieval drama, lyric and narrative poetry, and romances as an introduction to Dante's *Divine Comedy*. All in translation. Prerequisite: two literature courses.

531 Studies in the Age of Chaucer 4 hrs.
Readings in the major works of Chaucer and other representative medieval authors. Prerequisite: two literature courses.

532 Sixteenth Century Literature 4 hrs.
Selections from the majors works in both prose and verse, by such writers as Wyatt, More, Sidney, and Spenser. Prerequisite: 210.
533 Seventeenth Century Literature 4 hrs.
Selections from the major works in both prose and verse from 1600 to the Restoration, by such writers as Bacon, Browne, the metaphysical poets, and Milton. Prerequisite: 210.

534 Neo-Classical Literature 4 hrs.
English literature 1660-1730 with major emphasis on Dryden, Pope, and Swift. Prerequisite: two literature courses.

535 Eighteenth Century Literature 4 hrs.
Readings in Johnson, Boswell, Gray, Fielding, Sterne, and Smollett. Prerequisite: two literature courses.

536 Romantic Literature 4 hrs.
Readings in poetry and criticism, with emphasis on Blake, Burns, Wordsworth, Coleridge, Scott, Byron, Shelly, Keats. Prerequisite: two literature courses.

537 Victorian Literature 4 hrs.
Readings emphasizing Carlyle, Mill, Dickens, Thackeray, Tennyson, Browning, and Arnold. Prerequisite: two literature courses.

538 Modern Literature 4 hrs.
The study of certain of the major authors of the 20th century with some attention to their precursors. Prerequisite: 210.

543 Elizabethan and Jacobean Drama 4 hrs.
Studies in the non-Shakespearean drama in England during the Elizabethan and Jacobean periods, by such dramatists as Kyd, Marlowe, Jonson, Webster, Tourneur and Ford. Prerequisite: 210.

555 Studies in the Art and Thought of Major Writers 4 hrs.
Study of the works of a major writer. Prerequisite: two literature courses.

566 Creative Writing Roundtable 4 hrs.
An advanced course in the writing of poetry, fiction and/or drama, with class criticism of each student's writing. The course may be taken more than once.

574 Linguistics for Teachers 4 hrs.
An application of the concepts and procedures of structural and transformational linguistics to the teaching of language, literature and composition in the English curriculum. Prerequisite: English 270 or an Introduction to Linguistics course.

598 Readings in English 2-4 hrs.
Advanced students with good scholastic records may elect to pursue independently the study of some topic having special interest for them. Topics are chosen and arrangements are made to suit the needs of each student. Approval of English adviser required. May be elected more than once.
Open Only to Students Admitted to English Curricula or by Permission of the English Graduate Adviser

622 Studies in American Literature 3 hrs.
The advanced study of selected aspects of American literature. Prerequisite: one course in American literature or the consent of the graduate English adviser.

640 Poetics 3 hrs.
Systematic analysis of a number of poems with regard to tone, statement, imagery, prosody, and other formal elements. Prerequisite: a minor in English.

641 Studies in Modern Poetry 3 hrs.
An intensive study of the writings of several modern poets. Prerequisite: a minor in English.

642 Studies in Drama 3 hrs.
Selected areas of drama from classical times to the present. Prerequisite: a minor in English.

644 The Novel: Form and Technique 3 hrs.
An examination of the significant forms and techniques employed in the novel from its prototypes through its more recent development. Prerequisite: a minor in English.

645 Studies in the Modern Novel 3 hrs.
An intensive study of the works of some important novelists of the twentieth century. Prerequisite: a minor in English.

Selected tragedies of Shakespeare. Prerequisite: an undergraduate course in Shakespeare.

653 Studies in Shakespeare: Comedy 3 hrs.
Selected comedies of Shakespeare. Prerequisite: an undergraduate course in Shakespeare.

654 Milton 3 hrs.
An intensive study of Milton's major poems, correlated with significant modern criticism. Prerequisite: a minor in English.

660 Methods of Research in English 3 hrs.
Instruction in the efficient use of library resources for studies in literature and language. Required of candidates for the M.A. in English.

661 Seminar in English 3 hrs.
Study of a problem involving an author, a period, or a genre. Prerequisite: 660 Methods of Research in English.
668 Literary Criticism
A study of the major critical treatises. Prerequisite: a minor in English.

676 Early English
An examination of selected Old English (with translation), Middle English, and Early Modern English texts. Prerequisite: 270 or 570.

680 Teaching of High School English
A study of recent theories and methods of teaching literature and language in the high school. For experienced teachers of English.

681 Teaching of Freshman English
A consideration of the philosophies underlying various courses in freshman English and of methods suited to teaching the communication skills.

Geography
Jackmon, Chairman; Professors Horst and Kirchherr; Associate Professors Eichenlaub, Heller, Moore and Raup; Assistant Professor Erhart

COURSES IN SYSTEMATIC GEOGRAPHY
Open to Graduates and Upperclassmen

540 Political Geography
This course introduces the principles and concepts of political geography as they interact in the evolution of the modern political state. Geopolitical concepts of boundaries and frontiers, the "organic" State, Geopolitik, and theories of global relationships are treated in some detail.

541 Geographic Foundations of National Power
In contrast to the principles and concepts treated in Geography 540, this course takes up the applications of political geography to world power relationships; analyses the components of national power in their physical and cultural relationships; concepts of autarky, national determinism, possibleism, and supra-nationalism will be studied.

543 Cultural Geography
Techniques of spatial analysis applicable to the study of man and his adjustment to different environments. The place of origin, diffusion, and present distribution of selected cultural patterns will be traced with emphasis given to cultural traits which strongly influence human occupancy of the earth's surface.

544 Agricultural Geography
A course designed to acquaint the student with world patterns of farming activity. The first part of the course is concerned with the description and analysis of: (a) the distribution of major world crops
and domestic animals, and (b) the most common combinations of crops
and livestock on farm units. The second part of the course deals with the
spatial organization of agriculture in certain selected areas. Prereq-
usite: Geography 244 or consent.

546 Manufacturing and Transportation Geography
3 hrs.
The study of the world's dominant manufacturing types, individually
and as they occur in association with one another and of the transporta-
tion systems that link material sources, manufacturers, and markets.
Prerequisite: Geography 244.

556 Land Use Planning
3 hrs.
An examination of the philosophy and role of land-use planning at
the national, regional, and local levels; study of those decisions involved
in the establishment and design of long-range plans for land utilization,
and methods of implementation.

570 Urban Geography
4 hrs.
The study of urban settlements as distinctive geographical units.
Among the topics considered are (1) the historical geography of urban-
ization, (2) characteristics of urban forms in selected world regions,
(3) approaches to the functional classification of cities, and (4) the
analysis of land use patterns and transportation in the modern city and
metropolitan region. Special assignments are designed to acquaint the
student with source materials and field techniques utilized in urban re-
search. Prerequisite: Geography 244 or junior standing with at least a
minor in geography or the social sciences.

Open to Graduates Only

620 Seminar in Physical Geography
3 hrs.
A review of the current literature and recent developments in the
disciplines which become synthesized in physical geography. Each stu-
dent will explore some aspect of the field in depth. Prerequisites: Geog-
raphy 621 and 622, or consent.

621 Studies in Climatology and Meteorology
3 hrs.
Studies at an advanced level in climatology and meteorology. Exam-
ination and application of dynamic, complex, and synoptic methods of
climatic description. Particular emphasis is given to regional climatic
and meteorological phenomena and their relation to the general atmos-
pheric circulation. Prerequisite: Geography 105 and 225 or consent.

622 Studies in Soils and Vegetation Geography
3 hrs.
Soil and vegetation patterns are studied to develop the principles
and explain the factors which account for areal variation in soil-plant
associations. Prerequisites: Geography 105, Introduction to Soils 320;
and Biology 100 and 101, or 107; or consent.
640 Seminar in Political and Military Geography 3 hrs.
A review of current literature and recent development in both political and military geography. The geopolitical and geostrategic aspects common to both will be emphasized. Prerequisites: Geography 540, 541, and background in history, politics, and economics; or consent.

642 Seminar in Historical and Cultural Geography 3 hrs.
A review of current literature followed by selection and study of some aspect of the subject in depth. Prerequisite: Geography 542, 543; or consent.

644 Seminar in Economic Geography 3 hrs.
A review of the current literature with emphasis on some important development or aspect of economic geography such as location theory, marketing, or water management. Prerequisite: Geography 244 or consent.

645 Geographical Factors in the Development of Non-Western Societies 3 hrs.
Critical examination of various types of non-Western societies particularly agrarian systems based largely on intensive subsistence or plantation agriculture; analysis of the role of irrigation and nomadism in the development of national states; study of the locational and institutional factors which inhibited the influx of Western ideas (such as the Industrial Revolution); study of transport systems and the impact of transport technology on the development of non-Western states; and consideration of origin and spread of religions and their influence on the development of non-Western cultures.

646 Analysis of Primary Resource Utilization in Developing Nations 3 hrs.
Critical examination of the resource base of developing nations in the tropical and sub-tropical realms, with particular consideration being given to political, economic, and cultural forces affecting resource development. General themes will be developed through a study of current approaches in the measurement and mapping of resources, and examination of representative plans for regional and economic development. Students will prepare case studies in their area of concentration.

647 Developing Societies in the World Geopolitical Scheme 3 hrs.
Critical examination of those aspects of emerging societies which are significant in current ideological conflicts and power struggles. Various concepts such as neutralism, nationalism, neo-colonialism, neo-mercantilism and supra-nationalism are studied in the frame of their most recent geographic connotations. The emphasis is placed upon political-geographic interactions throughout the world.

670 Seminar: Urban Geography 3 hrs.
A review of the current literature and recent methodological developments in the field of urban geography. Prerequisite: Geography 570 or consent.
COURSES IN REGIONAL GEOGRAPHY

Open to Graduates Only

511 South America 3 hrs.
Regional study of the nations of South America with attention to the interrelationships of the physical and cultural environments. Historical background necessary for the interpretation of the present political, social and economic conditions is included. May not be taken for credit if student has credit for Geography 381.

512 Middle America 3 hrs.
Systematic consideration of the physical environment of Mexico, Central America and the West Indies. A problems approach is utilized to reckon with the economic, social and political trends of the region. May not be taken for credit if student has credit for Geography 382.

513 Western and Southern Europe 3 hrs.
Intensive regional study of these Western European nations situated west of the Iron Curtain. The physical elements (climate, landforms, resources, etc.) are examined and the associated cultural elements are identified. Emphasis is placed upon the social and economic activities of contemporary Western Europe. May not be taken for credit if student has credit for Geography 383.

Introduction to the physical, cultural and economic geography of the U.S.S.R. and Eastern Europe. The primary focus is the Soviet Union with an emphasis on the characteristic spatial patterns and relationships found within the country. May not be taken for credit if student has credit for Geography 384.

515 Monsoon Asia 4 hrs.
Study of selected physical and cultural environments of South, Southeast, and East Asia (extending from Pakistan to Japan). Characteristics and interrelationships of population growth, the development of the agrarian base and the utilization of industrial resources are examined in view of evolving political and cultural patterns. May not be taken for credit if student has credit for Geography 390.

516 Middle East and North Africa 3 hrs.
Study of the diversity and uniformity—both physical and cultural—of the Middle East and Africa north of (and including) the Sahara. Special attention is given to aridity problems, economic development, petroleum, Arab re-unification movements, and the impact of the Muslim World on the current political scene. May not be taken for credit if student has credit for Geography 387.

517 Middle and South Africa 4 hrs.
General survey of the broad physical realms and the background of contemporary political geography in Africa south of the Sahara; followed by interpretive studies of the major regions and states based on
an examination of population distribution, the characteristics of subsistence and commercial agriculture, the availability of power and mineral resources, patterns of transportation, and current programs for regional development. May not be taken for credit if student has credit for Geography 386.

518 The Pacific Realm 3 hrs.
The human and physical geography of the South and Central Pacific, with concentration on Australia, New Zealand, Fiji, and Polynesia. May not be taken for credit if student has credit for Geography 380.

Open to Graduates and Upperclassmen

542 Historical Geography of North America 3 hrs.
A study of environmental, economic, and cultural factors as they combined to influence routes of exploration and trade, settlement patterns, regional economics, and sectional identities in North America.

Open to Graduates Only

609 Studies in Regional Geography 3 hrs.
An investigation of selected topics in physical and human geography of one of the major regions, i.e., Latin America, Western Europe, Sub-Saharan Africa, Monsoon Asia. Regional concentration will vary from semester to semester, with the region being indicated at time of enrollment.

610 Seminar in Regional Geography 3 hrs.
An intensive study of selected problems of various world regions such as Latin America, Monsoon Asia, Middle East, Sub-Saharan Africa, Southwest Pacific, or U.S.S.R. Regional specialization will vary from semester to semester, permitting students to repeat the course for credit as long as subject matter is different. Subject for any particular semester will be indicated at time of enrollment.

695 Background of Contemporary Problems in Michigan 3 hrs.
An intensive interdepartmental course designed to explore in depth the historical and geographical backgrounds of several outstanding present-day problems in Michigan in the areas of resource management, agriculture, industry, and urban-rural conflicts. Resource people from other disciplines, governmental agencies and business will provide for a well-rounded treatment of the major problems of Michigan. Prerequisite: Geography 311 or History 310.

COURSES IN GEOGRAPHIC METHODOLOGY AND RESEARCH

Open to Graduates and Upperclassmen

560 Principles of Cartography 4 hrs.
Introduction to map construction with primary emphasis on the conceptual planning and designing of maps as a medium for communi-
cation and research. Lectures are supplemented by laboratory assignments to familiarize student with drafting techniques, lettering and symbolization, the concept of scale and scale transformation, map layout and design, processes of map reproduction, the employment and construction of projections, and the compilation procedures and execution of choropleth and dot maps. Two one-hour lectures and two two-hour laboratory periods.

566 Field Geography

The theory and application of geographic techniques in field investigations; collection and analysis of field data; preparation and presentation of materials. The course is based primarily upon field observations. Prerequisite: Geography 560 or consent.

567 Field Mapping and Mensuration Techniques
(Phy. Sci. Credit)

An introduction to the practical methods by which accurate, large-scale maps are constructed. Students are taught to determine the location of points in terms of distance and direction from other points by use of: the pace-and-compass method, chaining and plane tabling with open-sight and telescopic alidades. Additional environmental information is added to the map, at points, by determining altitude, slope of the land surface and hydrographic characteristics. Methods of sampling other continuous phenomena such as soils and vegetation are introduced.

568 Quantitative Methodology in Geography (Phy. Sci. Credit)

The application of quantitative concepts and methods to the solution of geographic problems. Critical review of research in quantitative geography ranging from the use of common statistical techniques to methods of model formulation in the analysis of spatial interaction. Prerequisite: A course in statistics or consent.

580 Advanced Cartography (Phy. Sci. Credit)

Study of the more complex map projections, the compilation of data and the design of maps and graphs for research papers, and the application of statistical techniques in mapping geographic phenomena. Students are assigned special problems to develop their proficiency in the use of cartography as a tool in research. One hour lecture and 2 two-hour labs. Prerequisite: Geography 560 or consent.

582 Aerial Photographic Interpretation (Sci. Credit)

The student will acquire proficiency in the fundamental techniques and skills of photogrammetry and photointerpretation during the first part of the course. The remainder of the semester will be spent in interpreting photos dealing with such topics as geomorphology, archaeology, vegetation and soils, water resource, rural and urban land use, as well as topics adapted to the interest and anticipated future work of the student.
598 Readings in Geography 1-3 hrs.
Designed for highly qualified majors and graduate students who wish to study in depth some aspect of their field of specialization under a member of the departmental staff. Prerequisite: Written consent of departmental adviser and instructor.

Open to Graduates Only

661 Geographic Research and Source Materials 3 hrs.
Introduction to problem formulation and research design in the investigation of geographical topics, and the preparation of research studies following currently accepted practices of professional geographers. Special attention to professional literature, geographical bibliographies, map intelligence, procedures of information retrieval and documentation, and data processing. Graduate students in geography are expected to complete this course before enrolling for thesis research. Prerequisite: Written consent of departmental adviser and instructor.

664 The Development of Geographic Thought 3 hrs.
The evolution of the philosophies, concepts and methods in use by geographers today is traced and evaluated. Prerequisite: An undergraduate major or minor in geography and written consent of instructor.

Geology
Schmaltz, Head; Assistant Professors Davis, Kuenzi, McGehee

Open to Graduates and Upperclassmen

502 Special Problems in Earth Science 1-2 hrs.
Individual problems involving topical reading and/or research problems in each sciences. May be repeated for credit. Prerequisite: Consent.

507 Teaching of Earth Science 2 hrs.
Philosophy, objectives, and methods of teaching secondary school earth science. Designed for each science majors and minors. One hour lecture and two hours of laboratory. Prerequisite: 16 hours of Earth Science or consent.

532 Geomorphology 3 hrs.
A systematic study of the development of land forms as created by the processes of vulcanism, gradation, and diastrophism with interpretation of topographic and geologic maps, and aerial photographs. Prerequisite: Geology 231 or consent.

533 Invertebrate Paleontology 4 hrs.
Morphology, classification, evolution, and stratigraphic distribution of major invertebrate fossil groups. Three lectures and a three-hour laboratory. Prerequisite: Geology 231, or consent.
534 **Vertebrate Paleontology** 4 hrs.
Comparative morphology, classification, stratigraphic distribution, and evolution of fossil fish, amphibians, reptiles, mammals, and birds. Three lectures and a three-hour laboratory. Prerequisite: Geology 231 or consent.

535 **Stratigraphy and Sedimentation** 4 hrs.
Principles of stratigraphy and sedimentation including correlation, facies, stratigraphic nomenclature, sedimentary petrology, processes and environments. Three lectures and a three-hour laboratory.

536 **Glacial Geology** 3 hrs.
A study of the mechanics of glacier movement, processes of glacial erosion and deposition, and the distribution of glacial features in space and time. Special emphasis will be placed on the glacial geology of the Great Lakes area. Prerequisite: Geology 231 and consent of instructor.

538 **Oceanography** 3 hrs.
Survey of oceanographic sciences including physical, chemical, biological, and geological oceanography. Lecture three hours a week. Prerequisite: Geology 112 and consent of instructor or 231.

539 **Elementary Field Geology** 3 hrs.
Field studies of rocks, structures, and land forms. Areas of geologic interest in the Great Lakes region are studied. Prerequisite: 12 hours of Geology.

**Open to Graduates Only**

605 **Regional Geology of the United States** 3 hrs.
A systematic study of the general stratigraphy, structural geology, and geomorphology of the United States. Prerequisite: 532 or consent.

620 **Advanced Oceanography** 3 hrs.
A course in oceanography with emphasis on marine geology and the relationships of physical, chemical, and biological principles to modern marine sediments and sedimentary processes. Prerequisite: Geology 538 or the equivalent.

631 **Geology for Teachers** 4 hrs.
A study of the more common rocks, minerals and fossils and a consideration of rock structures and the development of landforms with special emphasis upon Michigan and the Great Lakes Basin. Designed for elementary teachers. Three hours of lecture and two hours of laboratory. Not to be used as credit for Earth Science M.A. or Teaching of Science M.A.

650 **Topics in Earth Science** 2 hrs.
An intensive study of specific subjects in the area of Earth Science as listed. Subject offered during a semester or term will be announced in advance. Prerequisite: Consent.
660 Seminar in Earth Science 1 hr.
A seminar designed to provide students with the opportunity to examine and discuss important problems in Earth Science. Oral presentations will be required. May be repeated. Prerequisite: Consent.

History

Breisach, Chairman; Professors Brown, Brunhumer, Castel, Dunbar, Elsasser, Hamner, Macmillan, Mange, Mowen, Sommerfeldt and Starring; Associate Professors Beech, Cordier, Hahn, Hawks, Maier, Nahm and Nodel; Assistant Professors Gregory, Schmitt and Tao

I. COURSES DEALING WITH A RESTRICTED CHRONOLOGICAL PERIOD OR SPECIAL PHASE OF HISTORY

Open to Graduates and Upperclassmen

A. INTELLECTUAL HISTORY

506 Intellectual History of Western Man to 1500 3 hrs.
A study of the leading ideas and intellectual movements in Western Civilization from the earliest times to about 1500.

507 Intellectual History of Western Man since 1500 3 hrs.
Modes of thought and expression characteristic of the Renaissance and the Reformation; the scientific revolution of the 17th-century; classicism and the baroque in literature and the arts; the 18th-century Enlightenment; 19th-century romanticism, liberalism, nationalism, materialism and socialism; formation and leading features of the contemporary world view.

508 American Intellectual History to 1890 3 hrs.
The development of American thought from colonial times to 1890. Major themes in the American experience as illustrated by philosophers, theologians, educators, political scientists, and economists, and by trends in the fine arts.

509 American Intellectual History since 1890 3 hrs.
Major developments in American intellectual life from 1890 to the present. Reactions to urbanization and to the emergence of the United States as a world power.

B. UNITED STATES HISTORY

510 Field Courses in History 3 hrs.
Preliminary readings and lectures are to be followed by about sixteen days of bus travel visiting places of historic interest.

511 Historical Museums Workshop 3 hrs.
Lectures, demonstrations, field trips, reading, discussion, and work experiences in museum theory and techniques. Prerequisite: College course in American or Michigan History.
514 History of the Negro in American Life 3 hrs.
A survey of the Negro in the United States from colonial times to the present.

Art and architecture as aids to understanding American thought and life. Colonial aspirations, the development of national identity and contemporary movements in the arts as placed in historical perspective. Significant trends in artistic expression as related to Jeffersonian thought, the frontier experience, industrialism, and urbanization.

516 Constitutional History of the U.S. to 1877 3 hrs.
The development of constitutional theory and practice, with emphasis on the establishment of the governmental system and federal-state relations.

517 Constitutional History of the U.S. Since 1877 3 hrs.
The development of constitutional theory and practice since 1877, with emphasis on federal regulation of the economy and civil rights.

518 History of United States Foreign Relations 3 hrs.
The formation and evolution of United States foreign policy and foreign relations from the beginnings of the republic to the present.

520 Colonial America 3 hrs.
The American colonies: imperial foundations, political, economic, and cultural developments to 1763.

521 Era of the American Revolution, 1763-1789 3 hrs.
The causes, character, and consequences of the American Revolution.

522 The Early National Period, 1789-1818 3 hrs.
The establishment of the national government; political, social, and cultural development; Jacksonian democracy; westward expansion.

524 The Civil War and Reconstruction 3 hrs.
Causes and course of the Civil War; its significance and aftermath.

532 From Reconstruction to the Great Depression: 1877-1929 4 hrs.
An intensive study of industrialism and urbanization, overseas expansion, progressivism, World War I, the 1920's and the causes of the Great Depression.

533 Recent U.S. History: 1929 to the Present 4 hrs.
The New Deal, the coming of World War II and the impact of the war; America's role in the post-war world.

C. HISTORY OF EUROPEAN NATIONS

535 Medieval England 3 hrs.
English history from the 5th to the 15th centuries, with emphasis on governmental, religious, economic, and social institutions.
536 Tudor-Stuart England 3 hrs.
The history of England during the reigns of the Tudors and the Stuarts, 1485-1714.

537 Hanoverian England 3 hrs.
Britain during the reigns of the Hanoverian kings, 1714-1837.

538 Victorian England 3 hrs.
The character of Victorian England and its impact on the world.

539 Twentieth Century Britain 3 hrs.
British development since 1900 and the changing character of the Empire and Commonwealth.

540 Social and Cultural History of Tsarist Russia 3 hrs.
Significant intellectual currents in 18th- and 19th-century Russia with emphasis on the relationship between ideas and society.

541 The U.S.S.R. in World Affairs 3 hrs.
The ideological, psychological, political, and economic factors in the evolution of Soviet foreign policy with respect to individual countries, international problems, and outer space.

542 Social and Cultural History of Tsarist Russia 3 hrs.
The history of the principal ethnic groups of the U.S.S.R., Soviet policy towards these groups, and the extent of their assimilation into Soviet society.

D. EUROPEAN HISTORY

551 Imperial Rome, 30 B.C.-70 A.D. 3 hrs.
A study in depth of Roman politics and culture from the close of the Republican period through the Julio-Claudian Empire.

552 The Medieval Church 3 hrs.
The impact on Christianity of classical culture, and the barbarian invasions; the church and feudalism; church-state relations; the rise and fall of papal theocracy, scholasticism, and mysticism.

553 Medieval Social and Economic History 3 hrs.
A study of the development of medieval social classes and rural and urban economy from the fall of the Roman Empire to the 15th century. Special attention will be given to feudalism, the manorial system, and the rise of towns, commerce, and business institutions.

554 The Renaissance 3 hrs.
A survey of man's endeavors in politics, thought, art and literature in Renaissance Europe.

555 The Reformation 3 hrs.
The break-up of the medieval church and its significance.
557 Seventeenth-Century Europe 3 hrs.

The Thirty Years War and the shifting of power relationships; colonial enterprise and colonialism; absolutism; the rise of science; the baroque spirit.

558 Eighteenth-Century Europe 3 hrs.

Social structure and economic development in the period; domestic politics and international relations; currents in religion and the arts; and the Enlightenment.

559 The French Revolution and Napoleon 3 hrs.

Theories respecting the French and Atlantic Revolutions and the nature of revolution; the 18th-century background; the moderate and radical phases of the Revolution proper; the rise and fall of the Napoleonic Empire.

560 Nineteenth-Century Europe 4 hrs.

The reaction following the Napoleonic wars; revolutions in behalf of liberalism and nationalism; the emergence of new states; the growth of nationalism and liberalism.

562 Europe, 1914-1945 3 hrs.

The origins and nature of World Wars I and II; the great Depression; the rise of Fascism, Nazism, and Communism.

563 Europe Since 1945 3 hrs.

The recovery of Europe from World War II; the movement towards European unity; the Cold War; NATO and the defense of free Europe.

E. LATIN AMERICA AND CANADA

571 History of Mexico 3 hrs.

The evolution of Mexico since 1810, with particular emphasis on the continuing influence of significant institutions, concepts, and individuals.

572 History of the Plata Region 3 hrs.

A study of the social, economic, and institutional evolution of a significant politico-geographic region of Latin America.

575 Canadian History 4 hrs.

A survey of Canadian history from the time of the first French settlements to the present, with emphasis on Canada’s political and economic development since Confederation.

F. THE FAR EAST AND AFRICA

580 Early China 3 hrs.

The history of China to the Western inroads in the 19th-century, and a survey of the development of Chinese civilization and its influence on other Asiatic countries.
581 Modern China

The impact of the West on China; the Nationalist Revolution; relations with Japan, Russia, and the United States; the transition from the Republic to the communist regime; and Communist China today.

582 Japan to 1853

A study of political, economic, social, and cultural history of traditional Japan up to the “opening” of Japan to the West.

583 Japan Since 1853

The “opening” of Japan to the West; the rise of modern Japan; nationalism, militarism, and colonialism; the Allied occupation; domestic and foreign affairs since 1952.

584 Modern Korea

The last stage of the Yi dynasty; Korea’s struggle against foreign powers; the era of Japanese rule; Korea’s independence and the emergence of two Koreas.

585 Southeast Asia in the Twentieth Century

Nationalism in southeast Asia and the struggle against Western colonialism; the rise of social and economic revolutions; problems of independence and modernization in the newly emerging nations of the region.

587 Pre-colonial Sub-Sahara Africa

Historical survey of the pre-colonial Africa south of the Sahara.

588 Twentieth-Century Africa

Study of the political, social, and economic developments in Africa south of the Sahara, 1885-1960; from the period of dominance by European powers to the emergence of independent states.

II. GENERAL COURSES

592 The Literature of History

Selected writing of great historians, with the purpose of evaluating different approaches to history, the use of sources, the handling of controversial matters, and developing appreciation of good history.

593 The Philosophy of History

An inquiry into the conscious and unconscious attitudes towards history, which, when systematized, are philosophies of history. The thought and positions of Greek and Roman thinkers as well as St. Augustine, Marx, Spengler, Toynbee, and the existentialists.

594 Problems in Modern Warfare

Selected topics in the history of warfare from the 17th century to the present. Topics for each semester will appear in the schedule of classes.
598 Independent Readings in History 2-3 hrs.
Research on some selected period or topic under supervision of a member of the History faculty. Approval of instructor involved and chairman of the Department Honors Committee must be secured in advance of registration.

III. SERVICE COURSES

569 Background of Recent European History 2 hrs.
For seniors and graduate students not majoring in History. The movement towards European unity; the Cold War; currents of contemporary thought; economic development; changing political and cultural patterns.

629 The West in American History 2 hrs.
Especially for graduate students not working for a M.A. in History. Exploration, trade, transportation, settlement, Indians, land, and government developments and problems are studied.

IV. COURSES OPEN ONLY TO GRADUATE STUDENTS

A. STUDIES IN HISTORY

(Courses in which, through lectures, reading, reports, and discussion topics in an historical field are explored in depth. Where only general field is indicated, the specific field will be specified in the schedule of classes when the course is offered.)

610 Studies in Michigan History 3 hrs.
628 The History and Culture of the Old Northwest 3 hrs.
637 Studies in United States History 3 hrs.
652 Medieval Studies 3 hrs.
654 Studies in the Renaissance and Reformation 3 hrs.
658 The Enlightenment 3 hrs.
662 Studies in Russo-Soviet History 3 hrs.
664 France Since Napoleon 3 hrs.
667 Studies in Recent European History 3 hrs.
685 Studies in Far East History 3 hrs.

B. SEMINARS

(Courses which focus on research and the preparation of papers. The specific field of each seminar, when offered, will be indicated in the schedule of classes.)

626 Seminar in Early American History 3 hrs.
636 Seminar in Recent American History 3 hrs.
646 Seminar in Ancient and Medieval History 3 hrs.
656 Seminar in Early Modern European History 3 hrs.
666 Seminar in Recent European History 3 hrs.
676 Seminar in Russo-Soviet History 3 hrs.
686 Seminar in Far East History 3 hrs.

C. PROFESSIONAL COURSES

690 Historical Method 2 hrs.
Designed to introduce students to and familiarize them with the tools, techniques, and principles of historical research and writing. The principal reliance is upon exercises in the application of historical method to specific problems.

692 Studies in Historical Literature 3 hrs.
Designed to acquaint the student with the major historical works in his designated field of special interest. Required of all candidates for the Master’s or Specialist degree in History. Students enrolling should consult the Graduate Adviser.

699 Historical Essay 4 hrs.
An analytical and interpretive study to be written under the supervision of a member of the History faculty and selected in consultation with the graduate adviser.

Modern and Classical Languages

Gallant, Chairman; Professors Coutant, Noble and Kothfuss; Associate Professors Cole, Giedeman, Jones and Osmun; Assistant Professor Ebling

LANGUAGE TEACHING COURSES

Open to Graduates and Upperclassmen

500 Critical Languages 4 hrs.
Audio-lingual self-instruction in a “neglected” language under the supervision of a linguist and with the assistance of a native speaker. Emphasis will be on oral production and comprehension. The course will meet for ten hours a week (5 classroom drill sessions and 5 language-laboratory sessions). Permission of instructor. May be repeated for credit.

Language 558 (French, German, Spanish, or other language)
Modern Language Instruction 3 hrs.
Required for modern language teaching majors; recommended for teaching minors. The principles underlying language learning and teach-
ing methodology are treated, with particular attention to the audiolingual method of instruction. Emphasis is placed on practical problems encountered by the language teacher. Preferably, students should complete this course before beginning directed teaching. These methods courses will be offered regularly.

The comparable methods course for Latin, 557 Teaching of Latin, is described under Latin offerings.

**FRENCH**

**Open to Graduates and Upperclassmen**

**French 544 Summer Proseminar in France** 4 hrs.

A summer study of French language, literature, and culture concentrated at Grenoble and Paris. Designed especially for teachers and advanced college students of French, the course consists of three weeks of formal classes at the University of Grenoble with regularly scheduled lectures and discussions in the French language on questions relating to French history, institutions, social problems, linguistics, and teaching methods. The session at Grenoble is supplemented by twelve days of organized inspection of cultural monuments in Paris with full explanations by an instructor for all points visited. Each student submits a term paper investigating one phase of his studies of particular interest to him. Graduate or undergraduate credit. Offered in summers of 1969 and 1972.

**French 550 Independent Study in French** 1-3 hrs.

Directed, individual study of a specific topic in a French literary or linguistic area. Departmental approval required for admission.

**French 551 Advanced French Composition** 3 hrs.

Intensive practice with written French. Prerequisite: Six hours of French 316-317 or equivalent.

**French 552 Advanced French Conversation** 3 hrs.

Intensive practice with spoken French. Prerequisite: Six hours of French 316-317 or equivalent.

**French 560 Studies in French Literature** 3 hrs.

Topic varies according to genre, author, or period and will be announced. Each of these courses carries separate credit, although all are listed under 560. This, a student may take any or all of the offerings at various times. Prerequisite: six hours selected from French 322, 326, 327, 328, 329, 550. Representative topics which may be treated in this area include:

Medieval and Renaissance Literature—Outstanding works from the *Chanson de Roland* (in modern French) to the end of the sixteenth century.

Seventeenth Century Literature—Preclassic period: Reforms of Malherbe, *preciosité*, Descartes, beginnings of classical drama, and Corneille. Also, Classic period: significant works from the beginning of the reign of Louis XIV to his death.

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Eighteenth Century Literature—Analysis of outstanding works of the period.

Nineteenth Century Literature—Studies in romanticism, realism and naturalism.

Twentieth Century Literature—General analysis of representative works from the beginning of the century to the end of the Second World War. Also, particular emphasis on contemporary drama and post-war literature.

Open to Graduates Only

French 600 French Classical Drama 3 hrs.
   *Drama classique.* Seventeenth century French tragedy and the comedies of Molière.

French 601 Voltaire and Rousseau 2 hrs.
   *Voltaire et Rousseau.* Influential ideas of the eighteenth century expressed in the writings of Voltaire and Rousseau.

French 602 Contemporary French Novel 3 hrs.
   *Roman contemporain.* Representative novels of the twentieth century.

French 603 French Literary Criticism 3 hrs.
   Study of French literary criticism as a literary genre and as a basis of judgment.

French 604 Modern French Poetry 3 hrs.
   Evaluation of French poetry from the end of the Romantic period to the present. Special emphasis will be given to major trends and leading personalities in the various schools.

French 620 Seminar 2-4 hrs.
   *Seminar.* Topic to be selected from a French literary or linguistic area.

GERMAN

Open to Graduates and Upperclassmen

German 510 The Central European Area 2 hrs.
   Investigates cultural aspects necessary for an understanding of Central Europe. Countries included are Germany, Austria, Switzerland, and Czechoslovakia. Historic, geographic, social and religious factors are treated. No foreign language prerequisite.

German 528 Survey of German Literature 3 hrs.
   A comprehensive study of German literature from its beginning through Romanticism. Prerequisite 316 or 317, and 326 or 327.

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German 529  Survey of German Literature  3 hrs.
A comprehensive study of German literature from German Realism to the present. Prerequisites: 316 or 317, and 326 or 327.

German 550  Independent Study in German  1-3 hrs.
Directed, individual study of a specific topic in a German literary or linguistic area. Departmental approval is required for admission.

German 552  Advanced German Composition  3 hrs.
Intensive practice in composition and stylistics directed towards appreciation of literary and other written expression in German with work in free composition at an advanced level. Prerequisites: German 316 and 317.

German 553  Advanced German Conversation  3 hrs.
Intensive training in conversational German with emphasis on colloquial language and idiom. Prerequisites: German 316 and 317.

German 559  History of the German Language  3 hrs.
Survey of the development. Prerequisite: six hours of "500" level German or equivalent.

German 560  Studies in German Literature  3 hrs.
Topic varies according to genre, author, or period and will be announced. Each of these courses carries separate credit, although all are listed under 560. Thus, a student may take any or all of the offerings at various times. Prerequisite: German 326 or 328 or equivalent. Representative topics which may be treated in this area include:

The Novelle—Survey of the development with representative selections.
Lyric Poetry—Survey of the development with significant selections.
Nineteenth Century Drama—Primarily Kleist, Grillparzer, Hebbel, and Hauptmann.
Twentieth Century Drama—Representative selections.

German 575  German Literature in English Translation  3 hrs.
A comparative study of literary themes and techniques of major German writers from Hauptmann to the present, including Mann, Brecht, Kafka, and Borchert. This course does not apply toward a major or minor in German. No prerequisite.

Open to Graduates Only

German 600  Goethe  3 hrs.
Das Werk Goethes. The literary and cultural contributions of Goethe, excluding Faust. Alternates with German 640.

German 601  Faust  3 hrs.
Goethes Faust. Significant selections from parts I and II of the poem. Alternates with German 641.
German 640 Basic Middle High German

Einführung in die mittelhochdeutsche Sprache. Introduction to MHG language and literature.

German 641 Middle High German Literature

Die mittelhochdeutsche Dichtung. Literary selections. Prerequisite: German 640 or equivalent.

German 620 Seminar

Ausgewählte Gegenstände aus dem Gebiete der Germanistik. Topic to be selected from a German literary or linguistic area.

LATIN

Open to Upperclassmen and Graduate Students and Others by Permission of the Instructor

Latin 552 Latin Writing

Practice in the fundamentals of correct expression. Required for Latin majors. Prerequisite: Latin 326 or 327 or equivalent.

Latin 557 Teaching of Latin

For prospective teachers of Latin in the elementary or secondary school. Principles, problems, and current practices.

Latin 560 Studies in Latin Literature

Topic varies according to genre, author, or period and will be announced. Each of these courses carries separate credit, although all are listed under 560. Thus, a student may take any or all of the offerings at various times. Prerequisite: Latin 326 or 327 or equivalent. Representative topics which may be treated in this area include:

Satire—Rome as pictured in the Conversations of Horace and the invectives of Juvenal. Readings on the origins and development of satire as a genre.

History—Reading and appraisal of Livy and of Tacitus as historians and literary artists.

Bucolic Poetry—Readings from Vergil's Eclogues and Georgics plus selections from later writers of bucolic poetry and discussion of its development as a literary form.

Lyric and Elegiac—Broad readings in Roman poetry, centering around Catullus, Ovid, Martial and the other poets of love. Discussion of the origin and influence of elegy as a poetic form.

Medieval Latin—A study of the period 500-1500 A.D. when Classical Latin was blending into the new vernaculars to form eventual Romance Languages. Prose and poetic readings include a variety of themes reflecting the intellectual, cultural, and religious thinking of the times.
Latin 568 Mythology 3 hrs.

Investigates the origins, elements, and interpretations of the principal myths and legends of Greece and Rome and their preservation not only in literature, but also in painting, music, and sculpture. No prerequisite.

Latin 575 Classical Drama in Translation 3 hrs.

Readings and analysis of selected plays of Aeschylus, Sophocles, Euripides, and Aristophanes as dramas and as expressions of the Greek view of life. Some attention to Roman drama.

Latin 601 Roman Novel 3 hrs.

A study of the history and development of the Greek romance and the Roman novel. Extended readings of Petronius's *Satyricon* and Apuleius's *Metamorphoses* in Latin.

Latin 602 Comparative Classical Grammar 3 hrs.

Evolution, history and mutual relations of the Indo-European group of languages, especially Greek, Latin, and Sanskrit and their systems of phonology, inflection, syntax, and semantics.

Latin 620 Cicero: The Man and his Times 3 hrs.

A critical study of Cicero's works for the information they give concerning Roman public and private life and the political history of the period.

Latin 621 Lucretius: De Rerum Natura 3 hrs.

A study of Lucretius' *De Rerum Natura* both in the tradition of Epicurean philosophy and as a landmark in the development of the Latin didactic epic.

Latin 628 Seminar 3 hrs.

Topic to be selected from a Latin linguistic or literary area.

**RUSSIAN**

Open to Graduates and Upperclassmen

Russian 510 Russian Civilization 3 hrs.

Survey of the historical, cultural, and philosophical development of Russia from its origins to the present. Prerequisite: Russian 201 or equivalent.

Russian 550 Independent Study in Russian 1-3 hrs.

Directed, individual study of a specific topic in a Russian literary or linguistic area. Departmental approval required for admission.

Russian 560 Studies in Russian Literature 3 hrs.

Topic varies according to genre, author, or period and will be announced. Each of these courses carries separate credit, although all are listed under 560. Thus, a student may take any or all of the offerings.
at various times. Prerequisite: six hours of 300-level Russian or equivalent. Representative topics which may be treated in this area include:

- Poetry—Selections from classic masterpieces and contemporary poetry.
- Eighteenth Century Literature—Survey of the classical and pre-romantic periods.
- Nineteenth Century Literature—Representative selections from the period.

**SPANISH**

**Open to Graduates and Upperclassmen**

**Spanish 550 Independent Study in Spanish** 1-3 hrs.

Directed, individual study of a specific topic in a Spanish literary or linguistic area. Departmental approval required for admission.

**Spanish 552 Advanced Spanish Grammar and Composition** 3 hrs.

An advanced review of the intricacies and problems of Spanish Grammar and a study of syntax, stylistics, and methods of expressing oneself in original Spanish. This course is designed to be taught in Spanish. Prerequisite: Spanish 328 or 329 or equivalent.

**Spanish 560 Studies in Spanish Literatures** 3 hrs.

Topic varies according to genre, author, or period and will be announced. Each of these courses carries separate credit, although all are listed under 560. Thus, a student may take any or all of the offerings at various times. Prerequisite: Spanish 328 or 329 or equivalent. Representative topics which may be treated in this area include:

- Cervantes—*Don Quixote* and other works of Cervantes together with his life and thought.
- Seventeenth Century Theater—Main works of Lope de Vega through Calderon de la Barca.
- Nineteenth Century Novel—Development of the regional novel from Fernán Caballero through Blasco Ibanez.
- The Romantic Movement.
- Generation of ’98—Thought and works of typical representatives as Unamuno, Ortega y Gasset, and Azorin.
- Contemporary Theatre—Evolution and analysis of the characteristics.
- Spanish-American Short Story—Significant short stories along with the cultural and social background.
- Contemporary Spanish-American Novel—The twentieth century novel along with the cultural and social background.

**Open to Graduates Only**

**Spanish 600 Golden Age Prose** 3 hrs.

Study and Comparison of the major prose types of the period with special attention to the picaresque novel.
Spanish 602 Contemporary Spanish Novel 3 hrs.
Study of forms and trends.

Spanish 603 Spanish-American Modernism 3 hrs.
Study of the rise and development of major works of the period.

Spanish 606 Medieval Spanish Literature 3 hrs.
Linguistic and literary analysis from the time of the Cid to the fifteenth century.

Spanish 608 Nineteenth and Twentieth Century Spanish Poetry 3 hrs.
Study of trends from Romanticism to present times and analysis of works of the major poets.

Spanish 620 Seminar 2-4 hrs.
Topic to be selected from a Hispanic literary or linguistic area.

Linguistics
Palmatier, Chairman; Assistant Professor Hendriksen

Open to Graduates and Upperclassmen

500 Introduction to Linguistics 4 hrs.
An introduction to the principles and practices in the major schools (e.g. structural, transformational), fields (e.g. historical, comparative), and applications (e.g. dialectology, lexicography) of modern linguistic study.

520 Phonological Analysis 4 hrs.
An examination of theories of phonological structure and methods of phonetic and phonemic analysis, correlated with field work in the analysis and description of phonological structures. Prerequisite: Linguistics 500 or equivalent.

530 Grammatical Analysis 4 hrs.
An examination of ancient, medieval, and modern theories of morphology and syntax, with emphasis on conflicts and correlations among current systems of grammatical analysis. Prerequisite: Linguistics 500 or equivalent.

548 Studies in Languages of the World 4 hrs.
Intensive study of a group of languages (varying from semester to semester) that are either genetically related (e.g. Slavic languages), typologically similar (e.g. “tone” languages), or geographically proximate (e.g. African languages). Prerequisite: Linguistics 200 or equivalent for undergraduates; no prerequisite for graduate students. May be repeated for credit.

560 Comparative Linguistics 4 hrs.
This course introduces the student to the branch of linguistics which deals with the similarities and differences between related languages
and the methodology through which the linguist is able to make statements about correspondences and divergences between related languages.

Prerequisite: Linguistics 500 or equivalent.

570 Studies in Linguistic Structures
4 hrs.

This course presents a detailed examination of the phonological, morphological, and syntactic structure of a given language. Various models for describing the structure of the language will be considered. The language under analysis will be announced prior to the beginning of the term in which the course is offered. Prerequisite: An undergraduate minor in linguistics or its equivalent. May be repeated for credit.

580 Linguistic Field Techniques
4 hrs.

Interview techniques for the elicitation of oral language data, and methods of analysis of the data into significant linguistic units for their eventual arrangement in the form of a grammar and dictionary. Prerequisite: Linguistics 200 or equivalent for undergraduates; no prerequisite for graduate students.

Mathematics

Clarke, Head; Professors Beeler, Hannon, McCully, Powell, Rothe and Seber; Associate Professors Alavi, Chartrand, Gioia, Hsieh, Leja, Lick, Meagher, Petro, Stoddart, Turner and Yang; Assistant Professors Chiang, Kapoor, Kronk, Latil, McDaniel, Schreiner, Sievers and Stoline

Open to Graduates and Upperclassmen

500 Differential Equations
3 hrs.

This course is a continuation of linear ordinary differential equations studied in Math 223. Topics include: simultaneous linear equations, equations with variable coefficients, series solutions leading to Bessel, Legendre and other functions, partial differential equations, method of separation of variables in Laplace’s and related equations. Prerequisite: Math 223 (Math 380 recommended).

506 Programming for Computers
3 hrs.

Designed to give preparation in the organization and general use of high speed computing machines used in scientific and engineering computations. The language of the Computer, Symbolic Programming System, and Fortran II will be used to prepare programs. Problems such as exponential, multiplication of matrices, inverse of a matrix, solution of polynomials, numerical integration, and solution of a differential equation will be prepared to be run on the Computer. Prerequisite: Math 222 or equivalent (223 recommended).

507 Numerical Analysis
3 hrs.

Numerical methods involving polynomial evaluation, Legendre polynomials, Cebyshev polynomials, differences, integration, solution of differential equations and linear programming. Prerequisites: Math 223 and Math 506.
508 Automatic Programming Systems

A thorough study of the internal organization of the Fortran Compiler. Each student will be required to construct a compiler. Prerequisite: Math 506.

520 Introduction to Topology

Topics include: Metric spaces, convergence and sequential compactness, principle of contraction mapping and its application in analysis, topological spaces, product spaces, continuity and other related topological properties, compactness, separation axioms, metrizable spaces, applications. Prerequisite: Math 380.

530 Linear Algebra I

Properties of n-dimensional vector spaces, linear transformations, and matrix algebra are studied. Prerequisite: Math 330.

531 Linear Algebra II

A continuation of Math 530. Topics covered will include rational and Jordan canonical forms, inner product spaces, self-adjoint, unitary, and normal operators, the spectral theorem and bilinear forms. Prerequisite: Math 530.

540 Introduction to Algebraic Geometry

A study of the basic properties of projective space of n-dimensions utilizing both the algebraic and synthetic definitions, representation of projective geometry as the geometry of subspaces of a vector space, and the algebraic approach to affine geometry. Prerequisite: Math 380 (Math 330 recommended).

542 Differential Geometry

Topics include: directional derivatives, differential forms, curvature and torsion of curves, transformations and tensor calculus, geodesics and other curves on surfaces, conformal and isometric mappings, minimal surfaces. Prerequisite: Math 570.

550 Teaching of Secondary Mathematics

In this course consideration is given to curriculum problems and trends in secondary school mathematics and to specific problems of teaching mathematics effectively to secondary school students. Prerequisite: Math 380.

552 Teaching of Elementary Mathematics

In this course consideration is given to curriculum problems and trends in elementary school mathematics and to specific problems of teaching mathematics effectively to elementary school children. Prerequisite: Math 150 or equivalent.

560 Probability

Probability spaces; mathematical expectation; moment-generating functions; special discrete and continuous distributions; independence;
transformations of variables; sampling theory; statistical inference. Prerequisite: Math 380 or equivalent.

561 Mathematical Statistics 3 hrs.
A continuation of Math 560. Point estimation, maximum likelihood, estimates, sufficiency and stochastic independence, limiting distributions, some distribution-free problems, statistical hypotheses, quadratic forms and some multivariate distributions. Prerequisite: Math 560.

562 Statistical Analysis I 4 hrs.
Elementary probability theory; combinatorial probability; binomial, Poisson, and hypergeometric distributions and applications; normal, chi-square, F, and t distributions with applications to estimation, hypothesis testing, and confidence intervals; curve fitting; linear regression; non-parametric techniques; emphasis on applications. Followed by Mathematics 662. Prerequisite: Mathematics 222 (Mathematics 223 recommended).

570 Introduction to Analysis I 3 hrs.
This course, along with Math 571, constitutes a further study of calculus beyond that covered in the Math 122, 123, 222, 223 sequence. The concepts of limit, continuity, differentiability, and the Riemann integral are developed rigorously; mean value properties are emphasized. The properties of infinite series are discussed in detail. The calculus of several variables is developed carefully with discussions of the implicit function theorem, maxima and minima problems, line and surface integrals, elementary vector analysis, Green’s theorem and the divergence theorem.

571 Introduction to Analysis II 3 hrs.
(See description of Math 570.) Prerequisite: Math 570.

572 Mathematical Analysis 3 hrs.
The real number system. Elementary topology and differentiation in Euclidean spaces. Uniform convergence. Prerequisite: Math 570 or consent of adviser.

575 Applied Analysis I 3 hrs.
This course and Math 576 forms a two semester sequence wherein the principal aim is the study of certain topics in mathematics which are useful in varied fields of application. Topics will be selected from vector analysis; differential equations, series solutions and some special functions; partial differential equations; Laplace transform; complex variables and contour integration; conformal mapping; calculus of variation. Prerequisite: Math 223 (380 recommended).

576 Applied Analysis II 3 hrs.
(See Math 575.) Prerequisite: Math 575.

580 Number Theory 3 hrs.
Diophantine equations, congruences, quadratic residues, and properties of number theoretic functions. Prerequisite: Math 380 or equivalent.
598 Independent Study in Mathematics 1 to 3 hrs.
Advanced students with good scholastic records may elect to pursue independently the study of some topic having special interest for them. Topics are chosen and arrangements are made to suit the needs of each particular student. Prerequisite: Approval of head of department.

Open to Graduates Only

602 Fourier Series and Boundary Value Problems 3 hrs.
Topics covered include Fourier Series and Fourier Integrals and a further study of boundary value problems and special functions beyond those covered in Math 500. Prerequisite: Math 500; 570 or equivalent.

604 Operational Mathematics 3 hrs.
Topics covered include the study of the theory and application of Laplace Transform and other linear integral transformations. Prerequisite: Math 500; 676 or equivalent.

608 Linear Programming 3 hrs.
Linear inequalities; convex geometry; optimization in linear systems; zero-sum games; applications. Prerequisites: Math 506, 530 and 570.

609 Studies in Applied Math 3 hrs.
Advanced work organized around topics related to the field of study indicated at the time the course is scheduled. Students may take this course more than once.

620 Topology 4 hrs.
Elementary properties of topological spaces, metric spaces, compact spaces, and continuous functions. Prerequisite: Math 570.

621 Algebraic Topology 3 hrs.
Topics will include: Simplicial complexes, homology, and cohomology theories including singular homology theory. Prerequisite: Math 620.

625 Theory of Graphs 3 hrs.
Fundamental concepts; distance in graphs; trees; connectivity and Menger's Theorem; eulerian and hamiltonian graphs; line-graphs; factorization; covering sets and independent sets; Euler's Formula; planarity and Kuratowski's Theorem; colorings. Prerequisite: Approval of Department.

629 Studies in Topology 3 or 4 hrs.
Advanced work organized around topics related to the field of study indicated in the above title. Students may take this course more than once.

630 Abstract Algebra I 3 hrs.
Algebraic system studied include groups and sub-groups, rings and ideals, and fields. Quotient structures and ring extensions are discussed in detail. Prerequisite: Math 530.
631 Abstract Algebra II
A continuation of 630.
Topics will be selected from: modules, linear transformations, Galois Theory, Gaussian domains, Noetherian rings, and structure of rings. Prerequisite: Math 630.

639 Studies in Algebra
Advanced work organized around topics related to the field of study indicated in the above title. Students may take this course more than once.

649 Studies in Geometry
Advanced work organized around topics related to the field of study indicated in the above title. Students may take this course more than once.

660 Statistical Decision Theory
The decision problem; loss functions; risks; unbiasedness; invariance; maximum likelihood; Bayes procedures; minimax procedures; sufficient statistics; complete classes; least favorable distributions. Prerequisites: Math 561 or permission of instructor.

661 Multivariate Statistical Analysis
Multivariate normal distribution theory; characteristic functions; multiple and partial correlation coefficients; sample correlation coefficient; Hotelling's $T^2$-statistic; Wishart distribution; applications to tests of the mean vector and covariance matrix; general linear hypothesis. Prerequisite: Math 561.

662 Statistical Analysis II
Multivariate normal distribution; non-central distributions; least squares; regression models (general linear, curvilinear, and non-linear); partial and multiple correlation; analysis of variance models; non-parametric models; applications. Prerequisites: Math 562 or 561 and preferably some elementary matrix theory.

663 Sampling Theory and Applied Statistics
Simple, stratified, and systematic sampling; subsampling; applications of statistical techniques to applied problems. Students may take this course more than once for a total of no more than 4 hours of credit. Prerequisite: Math 662 or 660.

664 Design of Experiments
Contracts; orthogonal components; Latin squares; incomplete block designs; factorial experiments; analysis of variance and covariance; applications. Prerequisite: Math 662 or 660.

667 Introduction to Random Processes
Discrete and continuous Markov processes; transition and rate matrices; Chapman-Kolmogorov equations; Kolmogorov systems; transi-
ent and limiting behavior; examples and illustrations: random walks, birth-and-death processes, etc.; stationary processes. Prerequisites: Math 530, 560, and 572 or preferably 670.

Advanced work organized around topics related to the field of study indicated in the above title. Students may take this course more than once.

670 Measure and Integration 3 hrs.
The basic theory of measure and integration including such topics as Lebesgue measure, abstract measures, measurable functions, product measures, L^p spaces, Radon-Nikodym theorem. Prerequisite: Math 572.

671 Introduction to Functional Analysis 3 hrs.

672 Functional Analysis 3 hrs.
A continuation of Math 671 to include such topics as linear topological spaces, locally convex spaces, and Banach algebras. Prerequisite: Math 671.

676 Complex Analysis I 3 hrs.
Cauchy Theory, series expansion, types of singularities, analytic continuation, and theory of residues. Prerequisite: Math 570.

677 Complex Analysis II 3 hrs.
Power series, representation theory, singularities, calculus of residues, analytic continuation, conformal mapping, meromorphic functions. Prerequisite: 676.

679 Studies in Analysis 3 hrs.
Advanced work organized around topics related to the field of study indicated in the above title. Students may take this course more than once.
The prerequisite for any seminar will be the approval of the instructor in charge.

690 Seminar in Applied Mathematics 1-3 hrs.
692 Seminar in Topology
693 Seminar in Algebra
694 Seminar in Geometry
696 Seminar in Probability and Statistics
697 Seminar in Analysis

184
The student will investigate math journal articles related to a topic selected by him with the approval of the graduate faculty member in charge of the seminar. The student will prepare for presentation to the seminar at least one article.

The following courses are primarily for teachers and in general will not apply towards the M.A. in Mathematics.

**610 Concepts of Mathematics**  
This course will include the following topics: sets, relations, functions, equivalence and order relations, axiomatics, groups, rings, fields, logical structure of elementary algebra, integers, rational and real numbers, inequalities, mathematical induction. Prerequisite: Consent of Department Head.

**612 Probability and Statistics**  
This course will include the following topics: probability models, sampling, conditional probability, random variables, binomial distribution, normal distribution, estimation, tests of significance. Prerequisite: Consent of Department Head.

**613 Elementary Theory of Numbers**  
This course will include the following topics: division algorithm, primes, fundamental theorem of arithmetic, congruence, diophantine equations, historical background. Prerequisite: Consent of Department Head.

**614 Mathematical Logic**  
This course will include the following topics: sentential connectives, theory of influence, symbolizing language, quantifiers, formal and informal proofs. Prerequisite: Consent of Department Head.

**615 Intermediate Analysis**  
This course will include the following topics: limits, continuity, differentiation, integration, applications. It will stress concepts rather than techniques. Prerequisite: Consent of Department Head.

**617 Foundations of Geometry**  
The first part of the course will be a survey of analytic geometry in space using vector methods. The second part will be an axiomatic development of projective geometry and analytic projective geometry in n-dimensions. Prerequisite: Consent of Department Head.

**619 Numerical Methods**  
This course will include the following topics: automatic programming, systems for digital computers, matrices, inequalities, areas, other selections from numerical analysis. The participants will actually use the IBM 1620. Prerequisite: Consent of Department Head.
650 Mathematics for Elementary School Teachers 2 hrs.
Emphasizes the concepts and foundations of the mathematics commonly taught in the elementary school, and of associated problems of learning and teaching. Each student will be expected to study and report on some special problem or aspect of the teaching of arithmetic.

652 Mathematics for Junior High School Teachers 2 hrs.
This course is designed to acquaint the student with modern trends in Junior High School Mathematics. Several current programs will be studied to determine what topical content should be included and the treatment to be given to this content in a modern mathematical program for Junior High School Students.

654 Curriculum Studies in Algebra and Geometry 4 hrs.
Current recommendations, materials, and methods related to teaching mathematics in secondary schools are used as the basis for reports and projects to be prepared and given by the students. Prerequisite: Consent of Department Head.

Music
Holmes, Chairman; Professors E. Adams, Belof, Carter, Matthews, Meretta and Stulberg; Associate Professors Faustman, Fink, Hardie and Osborne; Assistant Professors Boucher, Heiles, Lloyd, Ryan and Work

Open to Graduates and Upperclassmen

517 Collegium Musicum 1 hr.
Performance of early Western music. Open to all students of the University. Required of Music History majors. Additional transcription, arranging, editing, and conducting of early music is required of Music History majors. Graduate students may count not more than two hours of this course for graduation. Membership by audition.

530 Advanced Choral Conducting 2 hrs.
Supervised experience in conducting vocal ensembles. The student may be called upon to prepare an ensemble for public performance. Prerequisite: 330.

531 Advanced Instrumental Conducting 2 hrs.
Supervised experience in conducting instrumental groups. The student may be called upon to prepare an ensemble for public performance. Prerequisite: 331.

540 Elementary School Music 2 hrs.
Emphasizes the place of music in the curriculum and the use of music in the day-to-day activities in the classroom. The fundamental musical skills are developed in order to assist the teacher to achieve these objectives.
541 Music Supervision and Consultation 2 hrs.

A study of the structuring and implementation of a music education program in the schools, in terms of three organizational relationships: the music administrator or supervisor, the scheduled music teacher, and the unscheduled music consultant. Relation of music specialist to classroom teacher.

542 Studies in Music Education 2 hrs.

Topic to be announced. Selection will be made from the following or similar topics: Music in the Humanities, Evaluation of Music Education Materials, and Curriculum Planning for Innovation in Music Education. This course may be repeated to an accumulation of not more than four credits.

543 Psychology of Music Education 2 hrs.

Personal and social needs, motives, and goals in relation to music in education. The function of musical achievement and aptitude tests in music education. Psychological aspects of behavior pattern in musical organizations. Physical, social, and psychological factors involved in a developmental music program.

544 Analysis and Evaluation of Music Education Materials 2 hrs.

A study of the theoretical bases for, and practice in, analyzing and evaluating music for use in music education programs.

560 Counterpoint 2 hrs.

Modal and harmonic counterpoint as exemplified by the composers of the sixteenth, seventeenth, and eighteenth centuries. Practical application through the writing of strict counterpoint in the five species—double counterpoint, obbligatos, descants, canons, and fugues. Prerequisite: 261 with a grade of C or better.

561 Counterpoint 2 hrs.

A continuation of 560.

562 Advanced Composition 2 hrs.

A study of twentieth century techniques in composition with original work in vocal and instrumental forms. Prerequisite: 560.

563 Advanced Composition 2 hrs.

A continuation of 562.

564 Form in Music 2 hrs.

A survey of the musical forms, large and small, used from the Baroque period to the present day. Analysis of both structure and texture of representative works of the various periods and styles. Prerequisite: 261 or consent of instructor.

567 Orchestration 2 hrs.

A study of the characteristics of instruments, arranging for the various individual choirs, for combinations of choirs, and for full orchestra. Prerequisite: 366.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>568</td>
<td>Orchestration</td>
<td>2 hrs</td>
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<tr>
<td>570</td>
<td>Introduction to Musicology</td>
<td>3 hrs</td>
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<td></td>
<td>History, purposes, scope of musicology; leading historians, past and present; modern methods of research, with special emphasis on primary sources and bibliography of the field.</td>
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<tr>
<td>571</td>
<td>Introduction to Musicology</td>
<td>3 hrs</td>
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<td>A continuation of 570.</td>
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<tr>
<td>572</td>
<td>Baroque Music (1600-1750)</td>
<td>2 hrs</td>
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<td></td>
<td>A survey of the choral and instrumental music of the Baroque masters such as J. S. Bach and G. F. Handel. Special attention to the development of style from monody through harmonic polyphony. Prerequisite: 370-371.</td>
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<tr>
<td>573</td>
<td>Classical Music (1750-1800)</td>
<td>2 hrs</td>
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<td></td>
<td>Examination of the chief works of Mozart and Haydn, with intensive study in symphonic form and the development of the classic opera. Prerequisite: 370-371.</td>
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<tr>
<td>574</td>
<td>Romantic Music (1800-1910)</td>
<td>2 hrs</td>
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<td></td>
<td>Music of the important composers of the period beginning with Beethoven, along with the historical, cultural, and political background of the era. Special attention is given to the development of Nationalism. Prerequisite: 370-371.</td>
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<tr>
<td>575</td>
<td>Musicology and Research</td>
<td>3 hrs</td>
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<td></td>
<td>Presentation of musicological material in formal writing as well as informal classroom lecture; specific research projects with emphasis on selection and qualitative judgment of materials used.</td>
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<tr>
<td>576</td>
<td>Musicology and Research</td>
<td>3 hrs</td>
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<td></td>
<td>A continuation of 575.</td>
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<tr>
<td>591</td>
<td>Piano Pedagogy</td>
<td>2 hrs</td>
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<tr>
<td></td>
<td>A study of the teaching of piano at beginning level, to children and adults in private studio or in groups. The ideas developed in beginning piano will be extended through the intermediate and advanced levels.</td>
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<tr>
<td>598</td>
<td>Readings in Music</td>
<td>2 hrs</td>
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<td>Graduate students may enroll in this course after consultation with the graduate adviser.</td>
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**Open to Graduates Only**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>617</td>
<td>Opera Workshop</td>
<td>2 hrs</td>
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<tr>
<td></td>
<td>A production experience in the acting, singing, accompanying, and producing of musical theatre. The class is offered each semester and</td>
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</tbody>
</table>
culminates in the performance of an opera or operatic scenes. Open to advanced singers, pianists, and persons interested in production techniques. Admission is by personal interview with the instructor.

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Hours</th>
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<tbody>
<tr>
<td>640</td>
<td>Band Techniques and Organization</td>
<td>2</td>
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<tr>
<td>641</td>
<td>Choral Techniques and Organization</td>
<td>2</td>
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<tr>
<td></td>
<td>The study of choral activities in relation to organization, repertoire, style, diction, singing technique, balance, blend, tone quality, phrasing, rehearsal technique, and conducting.</td>
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<tr>
<td>642</td>
<td>Philosophy and History of Music Education</td>
<td>2</td>
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<tr>
<td></td>
<td>Designed to acquaint the student with the development of music education in the United States and how this development is a reflection of a growing philosophy of music education.</td>
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<tr>
<td>650</td>
<td>Seminar in Music Education</td>
<td>2</td>
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<td></td>
<td>Each participant will be expected to develop a project which is of interest to him, but each project will be subject to group discussion, review, and analysis. The lectures and reading will deal with the entire field of music education.</td>
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</tr>
<tr>
<td>658</td>
<td>Techniques of Research in Music Education</td>
<td>2</td>
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<tr>
<td></td>
<td>Available research in music education will be analyzed as to method and technique. Outlines will be submitted for proposed studies involving the techniques thus discovered, and one will be developed.</td>
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<tr>
<td>659</td>
<td>The Teaching of Applied Music (on demand)</td>
<td>2</td>
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<td></td>
<td>Survey of teaching problems involved in music of various periods and styles. Critical analysis of performances in student's major performance medium, as well as other media, will be required. Pedagogical problems of teaching both secondary and university age level students will be considered.</td>
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</tr>
<tr>
<td>660</td>
<td>The Teaching of Theory (on demand)</td>
<td>2</td>
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<tr>
<td></td>
<td>Analysis of various techniques, philosophies, and materials used in teaching theory and their relative strengths and weaknesses. Application of what we know about the learning processes to theory and the practical application of theory to all musical study.</td>
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</tr>
<tr>
<td>665</td>
<td>Band Arranging</td>
<td>2</td>
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<tr>
<td></td>
<td>Instruction in scoring for small wind instrument ensembles and the band. Opportunity will be provided to hear the results of each student's work.</td>
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</tr>
<tr>
<td>672</td>
<td>Medieval and Renaissance Music</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Music of Western Europe from Gregorian Chant through sixteenth century polyphony.</td>
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</tr>
</tbody>
</table>
673 Contemporary Music  
A survey of trends in European music and music of the Americas from about 1910 to the present day.

690 Graduate Recital  
Presentation of a full-length recital in the student’s area of concentration (applied music or composition). This course also requires an appropriate document relative to the repertoire performed. The course is evaluated by the faculty teaching in that area. By consent of instructor.

691 Special Project in Music Education  
A research project designed as one alternative for the culmination of Master of Music—Music Education degree. The nature of the special project is to be determined in consultation with the graduate adviser. Consent of graduate adviser required. May be repeated for credit to a total of not more than 6 hours.

Applied Music  
Qualified students may take graduate study in applied music for a total of four semester hours per semester in the major performance area and for a total of two semester hours in a minor performance area (one semester hour per semester). Requires 60 or 120 minutes per week of instruction and necessary practice.

H36-H39 Harp  
H56-H59 Piano  
H76-H79 Organ  
H96-H99 Voice  
Z36-Z39 String  
Z56-Z59 Brass  
Z76-Z79 Woodwind  
Z96-Z97 Percussion

500 Applied Music  
Students who are not majoring in applied music and who do not meet graduate performance level may register for this course for a total of not more than three credit hours.

Philosophy  
Westphal, Acting Chairman; Associate Professor Ellin; Assistant Professors Falk, Milton, Mullane, Pulaski and Sheridan

Open to Graduates and Upperclassmen

500 Seminar in Medieval Philosophy  
Medieval philosophical thought from Augustine to Ockham.

501 Seminar in History of Philosophy  
Topic to be announced. The topic selected may be either the concentrated study of an individual philosopher, or an identifiable philo-
sophisical school, or the historical examination of a philosophical problem or concept. Prerequisite: permission of the instructor.

510 Seminar in Theory of Value 4 hrs.
An analysis of the value concepts as employed in the general theory of value, or in the value disciplines, ethics, political philosophy, and aesthetics.

520 Seminar in Logic 4 hrs.
Selected topics in one or more of the following areas: foundations of logic and mathematics, meta-mathematics, set theory, modal and many-valued logics, inductive logic, formal semantics and linguistics, the history of logic. Prerequisite: two courses in logic (or their equivalent) and permission of the instructor.

521 Philosophy of Science 4 hrs.
Examination of the sciences from the point of view of their methods, presuppositions, and implications for philosophy. Prerequisite: one course in logic or its equivalent, or permission of the instructor.

530 Seminar in Theory of Knowledge 4 hrs.
Selected problems in the theory of knowledge. The course focuses on the roles of reason and perception in knowing, and examines the problem of the external world. Prerequisite: permission of the instructor.

531 Seminar in Metaphysics 4 hrs.
A study of selected topics from among typical metaphysical questions such as the mind-body problem. The course includes the examination of concepts such as reality, existence, being, substance, space, time, causality.

Physics

Bradley, Head; Professors Derby, Kruglak, Nichols, and Zietlow; Associate Professors DeWitt, Hardie, Miller, Oppliger, Shamu, and Soga; Assistant Professors Carley, Dotson, Herman, Hoyer, and Kusmiss

Open to Graduates and Upperclassmen

520 Analytical Mechanics 3 hrs.
The topics include statics, dynamics of a particle and of a rigid body. Lagrange’s and Hamilton’s equations are introduced. Vector methods are used frequently. Prerequisites: Physics 211, Math III.

540 Fundamentals of Electricity and Magnetism 3 hrs.
This is a theoretical course providing a thorough investigation of electric and magnetic fields. The applications of the theories of Stokes and Gauss are emphasized and Maxwell’s equations are developed. Prerequisites: Physics 212, Math IV.
552 Applied Spectroscopy 3 hrs.
This is a combined class and laboratory course on methods of spectrographic analysis. The topics studied include the history of spectroscopy, the origin of line spectra, spectrographic instruments, and modern techniques of qualitative and quantitative analysis. Prerequisites: Physics 212, Physics 352, or consent of instructor.

560 Modern Physics I 4 hrs.
This course includes an introduction to quantum mechanics with selected applications, the one-electron atom, radioactive transitions, atomic shell structure, and atomic and molecular spectroscopy. A knowledge of differential equations is assumed. It is recommended for seniors. Prerequisites: Physics 212, Math III.

561 Modern Physics II 4 hrs.
This course is a continuation of Physics 560 and includes a study of nuclear physics including properties of nuclei, nuclear reactions and models, and the particles of physics. Prerequisite: Physics 560.

563 Solid State Physics 3 hrs.
This course is designed to acquaint the student with modern theories of the structure of solids. Included in the course are discussions on the symmetry properties of solids; bond structure; electrical and thermal properties of insulators, semi-conductors and metals; and theories of magnetism. Attention will be given to both theoretical and experimental aspects of these topics. Prerequisite: Physics 561, or consent of instructor.

592 Techniques in the Use of Radiation and Radioisotopes 2 hrs.
This course consisting of one lecture and one laboratory per week is designed to prepare graduate students and advanced undergraduates for safely using these materials in fields of Biology, Chemistry and Physics. Students completing the course will meet certain requirements for A.E.C. licensing in the use of radioisotopes.

598 Selected Topics 1-1 hrs.
An advanced student with a good academic record may elect to pursue independently the study of some topic having special interest to him. Topic chosen must be approved by and arrangements made with consent of the instructor to be involved. May be elected more than once.

Open to Graduates Only

612 Current Developments in Physics 2 hrs.
This course consists of a demonstration-lectures and discussions of some of the outstanding developments in physics in recent years, such as nuclear energy and its applications, artificial radioactivity, elementary particles, solid state physics, high energy accelerators, semi-conductors and transistors and ultrasonics. Special attention will be given to make the course of practical value to high school teachers of science. Prerequisite: one year of General College Physics.
622 Quantum Mechanics 3 hrs.
This course is designed to provide a foundation of fundamental techniques of calculation for more advanced work in physics and chemistry of atoms, molecules, nuclei and solids. An attempt will be made to provide an understanding of the principles of the subject through the Schrödinger-Heisenberg equations as well as through the formal operator theory of Dirac. Discussing the simple and representative systems of the simple harmonic oscillator and the one electron atom. The course will confine itself almost solely to the non-relativistic approximation.

624 Statistical Mechanics 3 hrs.
This course deals with concepts of probability and statistics as applied to physics with particular emphasis on the kinetic theory of gases. Topics covered will include Laplace's formula, Stirling's formula, normal distribution law, Maxwell distribution of velocities, canonical ensemble, and Gibbsian ensemble.

630 Classical Mechanics 3 hrs.
This course deals with the Hamiltonian method of mechanics and develops the variational principles and the equations of Lagrange. Examples of point mass and rigid body problems are examined by these methods. The principles of relativity are introduced by establishing the Lorentz invariance requirement for the Hamiltonian. Canonical transformations, angle and action variables, and the theory of small vibrations, are introduced in a way that makes the historical bridge between classical and quantum mechanics.

662 Electricity and Magnetism 3 hrs.
This course deals with static and time-dependent electromagnetic fields and their interaction with matter. Radiation, wave motion, scattering, and relativity, are several of the topics in the latter part of the course. Vector analytical notation is used exclusively.

Political Science
Greenberg, Chairman: Professors Clark, Olton, Phillips, Plano and Stine; Associate Professors Batson, Kaufman, Kim, Klein, Ritchie and Ziring; Assistant Professors Dahlberg, Isaak, McAnaw, Richardson, Rossi and Wolpe

NOTE: All seminars and most 500 level courses entitled “Problems...” or “Studies...” vary in topics each semester or session with repeated enrollments permitted. Schedule of classes will indicate credit for courses designating variable credit.

600 Courses are Open to Graduates Only

MAJOR AREAS

AMERICAN GOVERNMENT

502 Studies in Political Behavior 3 or 4 hrs.
Analysis of behavior of participants in the political process. Group behavior, Legislative, Administrative, or Judicial behavior will be studied
utilizing modern research tools for the analysis of the political system. The subject matter of the course will vary from semester to semester and students may repeat the course. Prerequisite: Junior Standing.

506 Problems of American Government 3 or 4 hrs.
A critical examination of major problems facing national, state, or local government with emphasis upon contemporary efforts to reach solutions to such problems. Significant issues such as agriculture, education, taxation, welfare, labor and business will be considered. The subject matter will vary from semester to semester and students may repeat the course.

600 Seminar: State or Local Government 3 or 4 hrs.
Supervised study-research on question of significance in (local) (state) government. Problems considered will vary from semester to semester. Students may repeat the course.

POLITICS

510 The Political Process of Government 5 hrs.
An analysis of political behavior in the United States with particular reference to the growth and internal dynamics of interest groups; the characteristics of the party system; the role of both groups and party in relation to public opinion and to the operation of the legislative, executive, and judiciary. Not open to students who have taken Political Science 310.

610 Seminar: U.S. Politics 3 or 4 hrs.
Analysis of political instruments, leadership, and techniques as exemplified in the United States political system. Students will pursue research projects. The course will give emphasis to either public policy formation, political parties, political behavior, or pressure groups and propaganda. The course may be repeated.

PUBLIC LAW

524 Constitutional Law and Civil Liberties 4 hrs.
A study of the interpretation of the United States Constitution as embodied in the opinions of the United States Supreme Court. The political and social situation giving rise to great constitutional controversies are studied in the context of the role of law and judges. Subject areas covered include national-state relations, judicial, legislative and executive power, with special attention to contemporary developments in civil liberties and civil rights.

526 Administrative Law and Public Regulation 4 hrs.
A study of the requirements for, and the limits on, the exercise of administrative powers by public officials charged with regulating significant aspects of the social and economic life of the nation. Special attention is paid to the extent of government regulation and the means
of safeguarding individual rights through fair administrative procedures and judicial control over administrative determinations.

620 Seminar: Public Law 3 or 4 hrs.

Study and research on major topics of interest in the judicial process, administrative law, constitutional law, and civil liberties. Individual papers and reports will be presented. Topics considered will vary from semester to semester and students may repeat the course.

PUBLIC ADMINISTRATION

530 Problems of Public Administration 3 or 4 hrs.

Consideration of issues and problems of current interest in the field of public administration. This course is intended to provide advanced work for undergraduates and also to serve as an introduction to the field for graduate students without previous training in public administration. Prerequisite: for undergraduates, 330 or consent of instructor.

542 Administration in Developing Countries 3 hrs.

A consideration of the relation of administrative structure and technique to the political, economic and social problems of the developing countries. Special attention to the role of the bureaucracy in the political system and the nature of, and obstacles to, administrative modernization.

630 Seminar: Public Administration 3 or 4 hrs.

Study and research on selected major topics in public administration. Independent reports will be made. Subject matter will vary and the course may be repeated. Prerequisite: 330, 530 or consent of instructor.

COMPARATIVE GOVERNMENT

540 Problems of Foreign Political Systems 3 or 4 hrs.

Course will consider selected problems of the governments and political systems of Western and Eastern Europe, Asia, Africa, and Latin America. The specific problems, topics, and countries to be studied will be announced each semester. May be repeated.

546 Governments of the Soviet Union & Eastern Europe 3 or 4 hrs.

The governmental organization and political structure of the Soviet Union and the States of Eastern Europe. Special attention is directed to the Communist Party and its relationship to the organization of the state. The educational and economic bases of the current system are stressed.

610 Seminar: Comparative Government 3 or 4 hrs.

Independent research and seminar presentation for each student are stressed. The topic and area of concentration may include Europe, Asia, Africa or Latin America and will vary from semester to semester. May be repeated.
INTERNATIONAL RELATIONS

550 Problems of International Relations 3 or 4 hrs.
An intensive introduction for seniors and graduate students who have had no previous work in the international field. The course surveys the subfields of international politics, law, organization, and foreign policy. Constitutes a prerequisite to any other 500 or 600 level international courses for such students. May not be taken by students who have had Political Science 250.

552 Studies in International Relations 3 or 4 hrs.
Examines selected topics within the field of international relations. Topics will vary and will be announced each semester. Course may be repeated. Prerequisite: 250 or equivalent.

650 Seminar: International Relations or Foreign Policy 3 or 4 hrs.
Study and research on major topics of current international political, organizational, legal, or foreign policy significance. Individual papers and reports will be presented. The content of the course will vary from semester to semester and the subject to be studied will be indicated in advance. May be repeated.

POLITICAL THEORY

560 Comparative Political Ideologies 3 or 4 hrs.
A consideration of the functions of ideology in various political systems. Communism, Fascism, and Democracy are directly considered.

562 Modern Democratic Theory 3 hrs.
The course consists of two parts. First, a consideration of traditional democratic theories, and the criticisms of these theories emanating from modern elitists such as Mosca, Michels, Pareto and Ostrogorski. Second, an analysis of the attempts by contemporary economists, political scientists, and sociologists to meet these criticisms by revising democratic theory.

660 Seminar: Political Thought 3 or 4 hrs.
An analysis of problems and subject matter considered by political philosophers and significant to the social sciences. Various issues arising in political thought, certain periods in history, or regions of the world may be considered. Subject considered will vary and the course may be repeated.

READING AND SPECIAL STUDIES

590 Research Methodology 4 hrs.
Study of the formulation of research questions, the design of research projects, the methods of data gathering, and the procedures for analysis of data. The course will involve discussion of measurement theory, statistics, and data processing mechanism, including computers. Each student will be required to apply the methods discussed. For
graduates and those undergraduates who intend to pursue graduate studies. Undergraduates must obtain permission of instructor before entering.

598 Studies in Political Science 1-4 hrs.

An opportunity for advanced students with good scholastic records to pursue independently the study of some subject of interest to them. Subjects are chosen and arrangements made to suit the needs of individual students. Prerequisite: Approval of Chairman of Department or instructor.

690 Scope and Method in Political Science 3 hrs.

A delineation of scope and substance of political science and its relationship to other social sciences. Major conceptions of methodology as embodied in current leading studies in the discipline; the present state of systematic theory in political science; and the role of value theory in political research.

Psychology

Mountjoy, Acting Chairman; Distinguished University Professor Travers; Research Professor Ulrich; Professors Asher, Davis, Fatzinger, N. Kent, Kuffel and Schmidt; Associate Professors Anger, Hopkins, Hutchinson and Koronakos; Assistant Professors Hawkins, L. Kent, Lyon, Malott, Nangle and Whaley

Open to Graduates and Upperclassmen

505 Teaching Psychology in the Secondary School 3 hrs.

Class discussions, laboratory experiences and field work concerned with the teaching of Psychology in high school. Prerequisite: Psychology 360.

510 Advanced General Psychology 3 hrs.

Lecture and discussion of general topics in the behavioral sciences. Not open to Psychology majors. Prerequisite 150.

512 Physiological Psychology 3 hrs.

A survey of the interrelationships of physiological and behavioral processes. Lecture and Lab. Prerequisite: Permission of instructor.

513 Animal Behavior 3 hrs.

A phylogenetic approach to the study of behavior. Emphasis on unlearned behavior. Prerequisite: Permission of instructor.

516 Conditioning and Learning 3 hrs.

A study of the various approaches to response measurement, experimental methodology, and theoretical interpretations of data in the area of conditioning and learning. Lecture and laboratory. Prerequisite: Permission of the instructor.
517 Psychology of Learning for Teachers 3 hrs.
An introduction to some of the basic principles of learning with particular emphasis on application. Not open to psychology majors. Prerequisite: 150.

518 Sensory and Perceptual Processes 3 hrs.
A survey of sensory and perceptual phenomena with an emphasis on vision and audition. Lecture and laboratory. Prerequisite: Permission of the instructor.

530 Statistics for Education 3 hrs.
An introduction to basic statistical procedures and concepts. Primarily for students in education. Not open to psychology majors.

535 Instrumentation in Psychology 3 hrs.
A survey of problems in response measurement in experimentation. Lecture and laboratory. Prerequisite: Permission of the instructor.

540 Industrial Psychology 3 hrs.
Application of psychological principles to industry. An examination of employee selection, occupational analysis and classification, training, evaluation of performance, supervision, and working conditions. Prerequisites: 150 and 381.

542 Human Factors in Engineering 3 hrs.
A survey of research on the adaptation of equipment, products and environment to man's use. Prerequisite: Permission of instructor.

574 Experimental Social Psychology 3 hrs.
Methodology of research with groups, with emphasis upon design and application. Prerequisite: Permission of the instructor.

580 Testing and Measurement in Education 3 hrs.
Educational applications of testing and measurement procedures.

581 Personnel Selection and Placement 3 hrs.
Application of testing procedures to selection and placement problems in industry.

595 History of Psychology 3 hrs.
The historical and philosophical foundations of contemporary American psychology.

597 Topical Seminar 2-4 hrs.
A survey in depth and discussion of a research topic of current interest. Prerequisite: Permission of instructor. May be repeated for credit.

598 Special Projects in Psychology 2-4 hrs.
Open to Graduates Only

613 Comparative Psychology 3 hrs.
Phylogenetic and ontogenetic comparisons of behavior with relation to structure and function. Lecture and laboratory.

614 Motivation and Emotion 3 hrs.
An introduction to the experimental analysis of psychological and physiological aspects of motives, incentives, and emotions.

617 Experimental Psychology of Learning 3 hrs.
An intensive study of selected topics with special emphasis upon the techniques employed in the experimental analysis of behavior in the human and infra-human organisms. Lecture and laboratory.

618 Experimental Psychology of Perception 3 hrs.
An examination of the current facts and theories of sensation and perception. Lecture and laboratory.

623 Advanced Abnormal Psychology 3 hrs.
Comprehensive study of pathological behavior patterns with consideration of experimental studies and theoretical approaches to causes and treatment.

624 Personality Theory 3 hrs.
Consideration and evaluation of the major theories of personality with emphasis on those theories having implications for counseling and therapy. An examination of experimental evidence and illustrative case studies.

631 Advanced Statistics 3 hrs.
Small sample theory and analysis of variance as applied to principles of experimental design.

635 Correlation Methods 3 hrs.
A study of simple, partial and multiple correlation techniques. An examination of non-parametrics will also be made.

644 Personnel Selection and Training 3 hrs.
Emphasis on the psychological principles and methodologies used in the selection, classification, and training of employees.

645 Psychology of Work 3 hrs.
Emphasis is placed upon an investigation of worker attitudes, morale, motivation, supervisory styles, and social interaction as determiners of employees productivity and job satisfaction.

660 Introduction to Clinical Psychology 3 hrs.
A study of the role of the clinical psychologist. An examination of the current techniques of behavior assessment and behavior modification.
661 Psychological Counseling 3 hrs.
A consideration of some theories of psychological counseling and their relationships to evaluation, program planning, and technique. Individual and group counseling, and methods appropriate for different developmental levels, and kinds and degrees of psychopathological severity will be discussed.

662 Counseling Practicum 3 hrs.
Closely supervised practice in clinical counseling. Emphasis is placed on diagnostic evaluation, planning, technique, interpersonal factors.

663 Seminar in Clinical Assessment 2 hrs.

680 Advanced Tests and Measures 2 hrs.
Studies of principles of psychological test construction with particular emphasis on maximum performance tests.

681 Personality Measures (Non-projective) 2 hrs.
Studies of the principles of objective personality measurement, the findings of studies using these tests and their applications.

682 Individual Testing 2 hrs.
Theory and basic concepts underlying the use of individual tests of intelligence. Experience under supervision in administration, scoring and interpretation of the Wechsler Adult Intelligence Scale (WAIS) and the Wechsler Intelligence Scale for Children (WISC).

683 Individual Testing 2 hrs.
Theory and basic concepts underlying the use of individual tests of intelligence. Experience under supervision in administration, scoring and interpretation of the Stanford-Binet Intelligence Scale, Form L-M.

684 Projective Techniques 3 hrs.
Survey of the theory of projective psychology and the basic concepts of projective measurement. Emphasis is placed on the administration, scoring, and interpretation of the Rorschach. The Revised Bender-Gestalt, Porteus Maze, TAT, and figure drawing tests are also considered. Supervised practice. Clinical and School Psychological Examiner only.

685 Advanced Projectives 3 hrs.
An intensified study of and supervised practice in Rorschach, Revised Bender-Gestalt, Porteus Maze, figure drawing, and other projective tests. Emphasis on selection and interpretation of projective test battery. Psychology 684 or permission of instructor. Clinical and School Psychological Examiner only.

696 Systematic Psychology 3 hrs.
An intensive study of current theories in psychology with emphasis on the philosophy of science and the logic of system building.
Advanced Seminar 1-5 hrs.

This course will be an examination in depth of a research topic of current interest.

Religion

Lawson, Head; Associate Professors Grunable and Siebert; Assistant Professors Auer, Bischoff, Earhart, Kaufman and Long

Open to Graduates and Upperclassmen

500 Historical Studies in Religion 2-4 hrs.

The topic to be announced in the time schedule. The content of the course will vary from semester to semester. Students may repeat the course for credit as long as the subject matter is different. Topics such as the following will be discussed: Primitive Religions, Early and Medieval Christianity, Buddhism, Hinduism, The Protestant Reformation, The Post Reformation Period, Romantic Spirituality, 19th Century Enlightenment Rationalism and Liberalism, 20th Century Neo-Orthodoxy, the Evolution of Modern Catholicism, the Shaping of Religion in America, etc.

510 Morphological and Phenomenological Studies in Religion 2-4 hrs.

The topic to be announced in the time schedule. The content of the course will vary from semester to semester. Students may repeat the course for credit as long as the subject matter is different. Topics such as the following will be studied: Divine Forms in West African Religions, Christian Rites and Symbols, etc.

520 Methodological Studies in Religion 2-4 hrs.

Topic to be announced in the time schedule. The content of the course will vary from semester to semester. Students may repeat the course for credit as long as the subject matter is different. Topics such as the following will be studied: Hermeneutics and Exegesis, Philosophical and Cultural Approaches to Religion, Psychological and Sociological Theological Method, etc.

530 Constructive Studies in Religion 2-4 hrs.

Topic to be announced in the time schedule. The content of the course will vary from semester to semester. Students may repeat the course for credit as long as the subject matter is different. Topics such as the following will be studied: Constructive Approaches to Christian Ethics, the Possibility of a Post-Christian Theology, Contemporary Religious Issues and Problems, Dialogue Between the Religions of the World, Religion and Science, etc.

Open to Graduates only

621 Seminar in Non-Western Religions 4 hrs.

A study of one of the Non-Western religions, or of some aspect or problem of one of these religions.
Science Division

Professor G. Mallinson, Assistant Professor J. Mallinson

Open to Graduates and Upperclassmen

510 Studies in Space Science 3 hrs.
The properties, structure, and evolution of stars will be emphasized in this course. Topics covered will also include: tools and methods of investigation, galaxies, cosmogony, and cosmological theories. Prerequisites: Physics 106, or Physics 110 and Physics 111, or equivalent, Astronomy 104 or equivalent.

Open to Graduates Only

610 Science for Elementary Teachers 2 hrs.
Indicates the part played by science experiences in the development of children, acquaints teachers with types of science content and teaching procedures suitable in elementary education.

620 The Teaching of Science 2 hrs.
Analyzes and evaluates the objectives of science as a high school subject and considers modern practices with respect to such topics as classroom method, motivation, laboratory work, directed study and like problems.

690 Science Education Seminar 4 hrs.
Designed to provide an integrating experience for students studying in the Science Education Doctoral Program. The subject of the seminar will vary from one semester to the next. The student may repeat this course.

Social Science Division

Professors Kercher and Stine; Associate Professor Johnson; Assistant Professors Dykstra and Fox

Open to Graduates and Upperclassmen

504 Social Studies Seminar: East Africa 6 hrs.
A lecture and field-study program of approximately six weeks in Kenya and Uganda, especially designed for students and teachers in the social sciences with a special interest in Africa. A lecture series, focusing on the general theme "Education and Planning for Development" and combined with discussion forums is presented at the University College, Nairobi. University authorities and prominent leaders in African affairs deliver the lectures. Field study trips follow the lecture series. Three additional weeks are devoted to global travel. A maximum of three hours undergraduate or graduate credit may be earned in each of two Departments of the Division, under such conditions and stipulations as the individual Departments may determine but arrangements for this must
be made in advance with the heads of the Departments in which the student wishes to earn credit. Offered Summer 1968.

506 Studies in the Non-Western World 2 or 3 hrs.

Gives teachers an awareness of social forces operating outside of Western Civilization. The workshop approach will be used to introduce students to such problems in Asia and Africa as industrialism, nationalism, self-government, social integration, population explosion, and the Western impact. The answers which two-thirds of the world are now giving to these problems cannot help but affect Western society. The ultimate objective is to provide teachers with selected resource materials and initial awareness of dynamic forces shaping over half the world.

Open to Graduates Only

600 Seminar in the Teaching of Social Studies 2 or 3 hrs.

Assists teachers of social studies to evaluate their philosophy and teaching methods in the light of accepted principles and current practices in social studies instruction. Students will be encouraged to do individual studies which will enable them to remedy their own weaknesses. Prerequisite: Open only to graduate students who are teaching or have taught social studies in the public schools.

606 Colloquium in International and Area Studies 3 hrs.

Papers and reports on topics such as population, urbanization, economic affairs, cultural change, political processes, historical evolution, technology, ideologies and others related to developing areas. Students are expected to share their findings with the members of the Colloquium and to acquire a general view of the topics covered.

Sociology

Kercher, Head; Professors Bouma, Horton, Hunt, Manis and Schellenberg; Associate Professors Bennett, Brawer, Erickson, Eshleman, Horning, D. Lewis, Robin and Walker; Assistant Professors H. Lewis, MacDonald, Smith and Wagenfeld

Open to Graduates and Upperclassmen

500 History of Social Thought 3 hrs.

A critical survey of the social thinking of outstanding students of society from Plato to those of modern social science. Prerequisite: Soc. 200 or 600, or equivalent.

504 Sociological Theory 3 hrs.

A study of the major theoretical approaches in contemporary sociology. Prerequisite: 9 hours of sociology.

510 Selected Social Problems 3 hrs.

An examination of a selected area of concern in social problems not intensively covered in other courses. This course may be repeated for credit with consent of adviser. The focus of the course will be sub-
stantive, rather than theoretical or methodological. Topics may include such areas as poverty, mental illness, narcotic addiction, alcoholism, aging, international tensions, etc. Prerequisites: Sociology 200, 210 or consent of instructor.

512 Seminar in Criminological Theory 2 hrs.
A critical analysis and evaluation of the leading theories concerning the causes of crime, the nature of criminal personality and the treatment of convicted offenders. Prerequisite: Soc. 312 or 514 or consent of instructor.

514 Juvenile Delinquency and the Community 3 hrs.
A study of juvenile delinquency as a social problem. Extent, causative factors, methods of treatment and programs of prevention and control are covered. When possible, extensive use of community resource people is made. Prerequisite: Soc. 200 or 600, or equivalent.

515 Social Conflict 3 hrs.
An examination of causes of social conflicts, strategies in pursuing conflict, and forms of conflict resolution in conflicts between individuals, between groups, and between nations. Prerequisite: 15 hours of sociology, political science and economics.

523 Contemporary Social Movements 3 hrs.
A study of the growth and place in contemporary society of selected social movements, including communism, fascism, Ku Klux Klan, the Townsend movement and the like. Prerequisite: Soc. 200 or 600, or equivalent.

524 Advanced Social Psychology 3 hrs.
A study of selected theoretical, methodological and substantive problems in social psychology. Prerequisite: Soc. 220 or equivalent.

525 Social Psychology of Education 3 hrs.
An intensive examination of student, teacher, and administrator roles. Particular attention will be given to the import of peers, family, and social structure. Prerequisite: Soc. 220.

532 Introduction to Comparative Sociology 3 hrs.
An introduction to the history, major theoretical viewpoints and methodological issues associated with cross-national and cross-cultural studies. Particular emphasis will be placed upon those studies of major institutions and problem areas which have been central to the development of the comparative approach in sociology. Prerequisite: 9 hours of sociology or consent of the instructor.

554 Sociological Analysis of Population 3 hrs.
Applications of selected sociological theories to analyze and interpret population characteristics and processes such as size, growth, social structure, and social change. Prerequisite: 9 hours of sociology or permission of the instructor.
556 Social Stratification 3 hrs.
An analysis of the structuring of societies along social class and caste lines. Emphasis is placed on the class structure of the United States and its implications for educational, occupational and political policies. Prerequisite: Soc. 200 or 600 or consent of instructor.

557 Changing Social Systems: Sub-Saharan Africa 2 hrs.
A study of the erosion of traditional tribal systems and the rise of secondary associations and social systems in sub-Saharan Africa resulting from the impact of European culture and other contemporary world influences. Prerequisite: Soc. 200 or Anthro. 230 or consent of instructor.

558 Social Forces in Underdeveloped Areas 3 hrs.
An examination of the social factors which influence the growth of industrialization in underdeveloped areas. These factors include cultural tradition, social class stratification, and the problems involved in a shift from rural to urban residency. Case materials from private business enterprises, missionary and educational ventures. U.S. Foreign Aid projects included. Prerequisite: Soc. 200, 330 or 600.

560 Principles of Social Work 3 hrs.
A course designed for students without social work experience. It constitutes a general introduction to the basic principles and processes of social case work and social group work. Prerequisite: Minimum of 5 semester hours of sociology.

571 Social Change (designated areas) 2 hrs.
This course deals with institutional change in specific geographic areas designated in the full course title as scheduled. Deals with various kinds of institutional changes in specific political and geographic regions. The regions emphasized may vary from semester.

572 Community Agency Resources 2 hrs.
A study of community agencies and resources for those concerned with family and personal problems. Emphasis is placed upon the availability of these resources and their effective use by business and industry, speech therapists, guidance counselors, teachers, etc.

573 The Sociology of Political Behavior 3 hrs.
Systematic sociological theory and research applied to the study of American political behavior, including such topics as power, decision making, leadership, and communications. Prerequisite: 6 hours of sociology or consent of instructor.

574 Sociology of Religious Institutions 2 hrs.
A study of the social role of religious institutions and beliefs with particular reference to the United States; the relation between religions and other aspects of society. The course considers social factors affecting the development of different types of religious institutions and the influence of religion on American society. Prerequisite: Sociology 200 or 600.
575 Industrial Sociology 3 hrs.

The sociological study of work organizations. The impact of industrialization on society, the factory as a social system, the structure and function of work organizations, status systems in work groups, the individual in work organizations, and analysis of worker dissatisfaction in terms of group relations. A consideration of the power relationships between labor and management. Prerequisite: Soc. 200 or equivalent.

576 Sociology of Education 3 hrs.

The classroom as a social situation analyzed in terms of the interaction between teacher-student and student-teacher. The educative process as a function of the interpersonal relations among teachers and between teachers and administrators. The school as a social system as it affects and is affected by the community in which it is located and society at large. Prerequisite: Soc. 200 or 600, or equivalent.

577 Comparative Institutional Studies 2 hrs.

A comparative study of the structure and the functioning of selected aspects of culture in selected countries or areas and America. The courts, the educational system, the welfare state, class stratification, correctional institutions, political organization and the basic structure of government are considered. Prerequisite: Soc. 200 or 600, or equivalent.

578 Social Structure of the Soviet Union 3 hrs.

A sociological analysis of contemporary Soviet society focusing on the patterns and functions of its basic institutions—the family, government, education, and industry. Consideration will also be given to the existing stratification system in terms of class formation and distribution of power. Prerequisite: Soc. 200, 330 or GOO, or consent of instructor.

579 Social Structure and Social Change in Japan 2 hrs.

Introduction to Japanese society, focusing upon the contemporary processes of industrialization and urbanization and their impact upon Japanese family life, village organizations, urban community, class structure and personality. Prerequisite: Soc. 200 or 600 or equivalent.

580 Sociological Statistics I 3 hrs.

An introduction to statistical reasoning with particular reference to social science research. Views statistics as an aspect of scientific inquiry and considers problems of analysis and interpretation of typical social science data. No prerequisite required but some background in algebra is recommended.

582 Introduction to Social Research 3 hrs.

An introduction to the basic methods of empirical research in sociology. Techniques and theory of research design, formulating and testing hypotheses, sampling, collection, analysis and interpretation of data are studied. Prerequisite: 9 hours of sociology.
590  The Family as a Social Institution 3 hrs.
The family viewed in historical and cross-cultural perspectives. A structural-functional analysis of the family institution and the relationship between the social structure of society and the family system. Emphasis is placed on change and comparative analysis. Prerequisite: Soc. 200 or equivalent.

592  Family Life Education and Counseling 2 hrs.
Provides the student with a working knowledge of the methods and materials appropriate in the school, the church and other social situations, for working with individuals and small groups who desire preparation for marriage and parenthood. Some attention will be given to the techniques for handling counseling opportunities arising out of these teaching situations. Prerequisite: Soc. 200 or 600, or consent of instructor.

598  Readings in Sociology 1-4 hrs.
Offers graduate students with good scholastic records an independent program of study, arranged in consultation with the instructor. Prerequisite: Honors Program, or consent of the Head of the Department. Open to Graduates Only

600  Social Dynamics of Human Behavior 2 hrs.
The concepts of sociology, cultural anthropology and social psychology essential to understanding human development and social behavior are systematically explored and integrated. The student is taught how to assess the concrete social situation in which he finds himself, and in which he observes other people from day to day. This course is not open to those who have had a foundation course in sociology.

601  Advanced General Sociology 3 hrs.
A comprehensive survey of trends in the major fields of sociology. Prerequisite: Open only to graduate students in sociology.

604  Seminar in Sociological Theory 2 hrs.
An advanced, intensive study of certain selected theoretical topics of contemporary significance. Prerequisite: One course in social theory.

605  Seminar in Role Theory 2 hrs.
An examination of various role theory formulations and their usefulness in understanding social behavior. Also, an overview of research methods and findings in the area of role theory. Prerequisite: Soc. 220, 504 or consent of instructor.

610  Social Pathology and Personal Deviation 2 hrs.
A study of the social aspects of personal deviation. Subject-matter would include consideration of the alcoholic, the drug addict, the marginal man and the sexually maladjusted. Course considers deviate behavior in light of social background, causative factors and possible therapy. Prerequisite: Soc. 200 or 600, or equivalent.
612 Seminar in Corrections and Penology 2 hrs.
Study of correctional institutions, probation, parole, and other means of dealing with criminal behavior. Prerequisite: Soc. 200 and 312.

614 Seminar in Race Relations 3 hrs.
Advanced study of race relations problems and trends. Prerequisite: Soc. 200 and 314.

615 Techniques of Intercultural Adjustment 2 hrs.
A study of intercultural processes of adjustment involving different racial, national and religious groups. The factors giving rise to present-day conflict situations are examined and special emphasis is given to techniques of adjustment through individual and community action. Prerequisite: Soc. 200 or 600, or equivalent.

616 Seminar in Social Problems 2 hrs.
A detailed study of a social problems area through student reports and seminar discussion. Instructor will select specific topic. Course is intended to provide intensive joint exploration of significant sociological issues.

622 Publics and Propaganda 3 hrs.
A systematic analysis of the nature, composition and etiology of publics and related phenomena such as masses and interest groups. Also, it will involve an exploration of propaganda techniques and research. Prerequisite: 582 or consent of instructor.

624 Primary Group Dynamics 2 hrs.
A study of the forces that influence the outcomes of primary group activity. The effects of diverse personalities, of varying leadership roles, of person-to-person interaction and of the responses of the group as a whole are considered. Principles of effective group dynamics are practiced, as well as observed and studied, in the educational setting. Prerequisite: Soc. 200 or 600, or equivalent.

630 College Teaching Practicum in Sociology 3 hrs.
A practicum in the teaching of sociology in college. Students will attend assigned lectures and seminars, prepare a syllabus for a course in sociology, and deliver at least two supervised lectures to a sociology class. Prerequisite: 15 hours of graduate sociology courses and consent of graduate adviser.

631 Supervised College Teaching in Sociology 1 hr.
Teaching of a section of a sociology course under supervision. Prerequisite: Sociology 630 and approval by department head.

632 Seminar in Comparative Sociology (Variable Topics) 2 hrs.
Intensive analysis of selected topics using a comparative frame of reference. The seminar will alternate its topical concern by focusing upon major theoretical perspectives, methodological issues, and inter-
pretation of results of studies of such topics as: criminal and penal systems, educational systems, industrial systems, family systems, and other institutions and problem areas. Prerequisite: Sociology 532 or equivalent, or consent of the instructor.

663 Integration of Education and Social Work Techniques 3 hrs.
This course is a specialized social work course restricted to students in preparation for teaching the adult blind. It is designed to afford an opportunity for a discussion of behavior and the effect of behavior on learning and of counseling and guidance as aspects of a sound teaching relationship. Field observations and some limited work with blind clients will give the student a chance to present realistic situations in group discussion as problems in learning. Prerequisite: consent of instructor.

673 Formal Organization 3 hrs.
This course analyzes the nature of large-scale, formal organizations, concentrating on their structure, types of organizational goals, processes of control, authority and leadership, and the relationship of organizations to their social environment. Examples of organizations will be selected from different areas such as education, government, medicine, science, leisure and industry. Prerequisite: 9 hours of sociology.

674 Seminar in Political Sociology 3 hrs.
Intensive analysis of selected areas of political behavior in the United States and abroad, within the framework of systematic sociological theory and research. Different topics will be considered each semester the course is offered. Topics would include: political socialization, political roles and organization, decision making in the political process, political movements, political communication and alienation and political behavior. Students may repeat the course for additional credit. Prerequisite: Soc. 573.

675 Sociology of Law 3 hrs.
An examination of legal organization, the legal profession and legal norms in the United States and other Western societies. Emphasis will be placed upon the relationship between the legal system and society in which it functions. Prerequisite: Soc. 200 or 600.

676 The School and the Community 2 hrs.
The school as a social institution in the American community. Interaction between the school and the other basic social institutions and their values. The sociological significance of community structures, processes and problems for school-community relationships.

677 Seminar in Sociology of Education 3 hrs.
Deals with selected sociological aspects of education. Among the topics that might be selected in any given semester are: 1. sociological theory and education, 2. social class and education, 3. social control and education, 4. socialization in the school system, and 5. sociological problems in the education of exceptional children. Prerequisite: Soc. 200, 576 or equivalent.
678 Seminar in Industrial Society in the Far East 2 hrs.
Trends and problems in growth of industrial society in China, Japan, Korea, and Okinawa. Relation of industry change to change in other social institutions. Comparison of social organization under Communist and non-Communist systems. Prerequisite: 9 hours of sociology or consent of instructor.

680 Seminar in Research Methodology 2 hrs.
A seminar on advanced theoretical and methodological problems which are important to systematic research in sociology. Specialized topics will be considered in this course which may be taken more than one semester for credit. Suggested topics include: the philosophy of the social sciences, the relationship between theory and research, model building and testing, etc. Prerequisite: To be set by instructor.

681 Data Collection Techniques 2 hrs.
Sources and procedures for data collection in sociological research including such topics as: instrument construction, interviewing, observation, content analysis, and the use of documents, records, census data and other published materials of interest to sociologists. Prerequisite: Sociology 582 or equivalent.

682 Design and Analysis in Social Research 2 hrs.
A study of research designs and associated techniques of analysis, including principles of measurement, scaling, systems and change analysis. Prerequisite: Sociology 582 or equivalent.

683 Supervised Research 2-1 hrs.
All entering graduate students must register for this course. Purpose is to assist student in selecting, formulating, designing, conducting and reporting the thesis or essay. Includes continuing reports by students of their research progress. Those who plan to do a thesis may, with permission of the instructor and the graduate adviser, continue with Graduate Studies 700 Thesis in Sociology.

684 Sociological Statistics II 3 hrs.
A second course in statistical techniques of special importance to sociology. The emphasis is on procedures designed for analyzing problems involving a large number of variables. Included among the topics studied are multiple and partial correlations and regression, analysis of variance and factor analysis. Prerequisite: Sociology 580 or equivalent.

The study of advanced statistical techniques which are important to systematic research in sociology. Specialized topics will be considered in this course which may be taken more than one semester for credit. Suggested topics include: factor analysis, advanced non-parametric techniques, path coefficient analysis, regression analysis, etc. Prerequisite: Sociology 684 or equivalent.
688 Research Internship Seminar 3 hrs.
The internship combines field research experience with seminar procedures in research design, data collection, and analysis. May be repeated for a total of 9 hours credit. Prerequisite: Major in sociology and consent of graduate adviser.

689 Seminar in Research Methods in Sociology of Education 3 hrs.
A study of techniques of research particularly appropriate to research in the sociology of education and not normally included in more general methods courses. Topics will include research designs and instruments for investigating consequences of categorization of students as retarded, deaf, blind, etc., and special procedures for the investigation of learning and social interaction of exceptional students. Special attention will be given to the design and analysis of longitudinal investigation and cohort analysis within the educational system. Prerequisite: Sociology 582 and 684.

690 Seminar in Marriage and the Family 3 hrs.
Advanced study of the interactional or institutional aspects of marriage and the family. Emphasis upon any one or two of the following areas during the semester: the social psychology of the family; the family and social structure; comparative family systems; current family research; family problems; social change and the family; or pertinent issues within the sociology of the family. Can be repeated without duplication of material. Class sizes limited to 15 students. Prerequisite: One course in the family or consent of instructor.

692 Family Analysis 2 hrs.
An introduction to major theoretical frameworks by which family behavior can be studied and analyzed. It is intended to familiarize students with selected approaches to understanding and studying family behavior and organization, and to introduce research based upon these major frameworks. Prerequisite: Soc. 200 or 600.

Speech

Open to Graduates and Upperclassmen

510 Studies in Oral Interpretation 3 hrs.
Projects in reading and analysis of literature designed to intensify the student’s application of the theory and principles of oral interpretation.

520 Studies in Theatre 3 hrs.
Selected study within the range of the several aspects of theatre including backgrounds, theory and production. Emphasizes concepts rather than skills.
530 Studies in Public Address 3 hrs.
Selected areas of detailed study within the total range of public address.

531 Public Speaking 3 hrs.
The intensive study of speech organization, audience adaptation, and delivery. Includes practice in speaking. Research project required.

532 Persuasion 3 hrs.
Study of factors of human behavior and their ethical implications as related to oral communication. Class activities include research, experimentation and discussion.

540 Studies in Broadcasting 3 hrs.
Analysis in depth of specific issues affecting broadcasting.

541 Broadcasting Regulations 3 hrs.
The role of self-regulation and governmental regulation of the broadcasting industry.

545 Broadcasting Criticism 3 hrs.
Analysis and criticism of programs and programming. Study of writings of major radio and television critics.

550 Television Production 3 hrs.
Study of television as a creative visual medium. Exploration of all elements involved in producing the televised studio program. Practical experience in production, direction of various programs units, such as the interview or teleplay. One lab per week. Limited enrollment. Prerequisite: Speech 240, or consent of instructor.

560 Studies in Speech Education 3 hrs.
Selected studies in background, methods, materials and procedures in any one of the several speech areas.

561 Teaching Speech in the Elementary School 4 hrs.
Examination of the linguistic development of pre-school and elementary school children, the functions of language, study of the nature of the emotional and physical development of children as related to symbol using behaviors, study of materials and methods for effecting desired behaviors in children's thinking, communicating and enjoyment.

562 Teaching Speech in the Secondary School 4 hrs.
In this course, the student planning to teach is assigned to a Master Teacher in the Department of Speech and works with that instructor in teaching a beginning college general speech course. For the graduate student the teaching assignment is related to the teaching of speech in college. Students enrolled should try to keep class hours free on Mon., Wed. and Fri. so they can be assigned. In addition to this learner-teacher assignment, the student meets one day a week with the
course instructor for discussions and lectures on materials, methods and educational philosophies related to teaching speech.

561 Creative Dramatics for Children 4 hrs.

Study of the principles, materials and techniques of dramatics with children as a classroom activity in elementary grades. Observation of demonstration groups. Emphasizes creative dramatics and includes the creative approach to formal dramatics.

570 Studies in Communication 3 hrs.

A consideration of various theories of communication and study of research methodology related to the communicative process. Specialized topics will be considered in this course which may be taken more than one semester for credit. Suggested topics include: interpersonal communication theories, personality and communication, general semantics, language and thought, measurement techniques in communication.

Open to Graduates Only

600 Problems in Listening 3 hrs.

Explores the role of listening in learning. Research in the field is examined and appraised. Listening tests are taken and discussed. Class members design listening projects or research projects. Focus increases sensitivity to the impact of speech.

610 Seminar in Oral Interpretation 3 hrs.

Oral interpretation as related to techniques and materials of individual and group readings. Provides opportunity to explore problems of various forms and practices in oral interpretation.

620 Seminar in Theatre 2-6 hrs.

Provides study of broad inter-related aspects of historical and contemporary theatre. Topics include acting, directing, design (scenery and costume) and criticism.

630 Seminar in Public Address 3 hrs.

Explorations into rhetoric, public address, argumentation, and discussion developed from historical and topical perspectives.

631 Group Problem Solving 3 hrs.

Study and practice of the dynamics of groups of various kinds, as well as the methods of arriving at group decisions. Includes the understanding of leader and participant roles.

640 Seminar in Broadcasting 3 hrs.

Exploration of topics and problems in broadcasting, such as the evolution of radio and television, or the services and responsibilities of the media to non-specialists.

660 Seminar in Speech Education 3 hrs.

Each student selects an area of interest which he pursues independently during the term and reports his findings periodically to his class
and instructor. In addition, the history of the profession, ethics and professional practices, research in psychology and speech related to teaching speech, are studied.

664 Seminar in Creative Dramatics 3 hrs.
Considers relationships of theory, materials and techniques of Creative Dramatics to child development and creative teaching in the elementary school.

Speech Pathology and Audiology

Robinson, Head; Distinguished University Professor Van Riper; Associate Professors Erickson, Bate, Platt and Willis

Open to Graduates and Upperclassmen

551 Language Disorders in Adults 2 hrs.
Orientation to the clinical management of communication problems associated with neurological impairment in adults.

554 Speech and Hearing Therapy in the Schools 2 hrs.
Study of the problems related to the clinical work in speech and hearing therapy in the school setting.

556 Aural Rehabilitation 2 hrs.
Orientation to the clinical management of communication problems associated with auditory impairment.

598 Readings in Speech Pathology and Audiology 1-4 hrs.
Arranged on an individual basis to provide students the opportunity to pursue independently the study of special areas of interest in depth.

Open to Graduates only

600 Graduate Study in Speech and Hearing 2 hrs.
This course is designed to acquaint the entering graduate student with advanced study in speech pathology and audiology. Research in normal and disordered communication is studied with reference to the scientific method, principles of measurement, instrumentation, and experimental techniques. The course requires that either a laboratory or a clinical research proposal be formulated by each student. Required of all students of Speech Pathology and Audiology.

650 Seminar in Speech Pathology 2-4 hrs.
Selected topics in speech pathology are systematically explored through critical analyses of literature and through individual study projects. Voice disorders, articulation disorders, language disorders, cleft palate, and stuttering are among the possible areas of study. Topics vary from semester to semester and are announced in advance. May be repeated.

651 Seminar in Speech and Hearing Science 2-1 hrs.
Selected topics in speech and hearing science are systematically ex-
explored through critical analyses of literature and through individual study projects. Instrumentation, procedures and techniques employed in perceptual, physical and physiological analyses of normal speech and hearing are among the areas considered. Topics vary from semester to semester and are announced in advance. May be repeated.

652 Seminar in Audiology 2-4 hrs.
Selected topics in audiology are systematically explored through critical analyses of literature and through individual study projects. Pediatric audiology, geriatric audiology, hearing aids, residual hearing, and aural rehabilitation are among the possible areas of study. Topics vary from semester to semester and are announced in advance. May be repeated.

653 Diagnosis and Appraisal 3 hrs.
This course is intended to provide basic information needed in the examination of persons with communication disorders. Interviewing techniques, examination procedures, standardized testing, and clinical assessment techniques are the basic content of the course.

654 Clinical Methods in Speech Correction 2 hrs.
Designed for advanced students and practicing speech therapists, this course provides supervised therapy experiences with a variety of speech disorders. Emphasis will be placed upon the intensive study, application and evaluation of diagnostic and therapeutic procedures.

655 Diagnostic Procedures in Audiology 4 hrs.
An advanced course in audiology dealing with hearing disorders and medical techniques of treatment; the significance of certain hearing tests in otologic diagnosis; and a study of hearing aids and hearing aid evaluations. Clinical experience in hearing evaluation also included.

656 Speech Therapy 2 hrs.
This course includes a historical and philosophical survey of the profession of speech pathology as it is practiced in different settings and as it relates to other helping professions. Theories and treatment of major communication disorders are studied systematically with particular reference to interprofessional cooperation in therapeutic processes. Not open to majors except with consent of instructor.

658 Theoretical Bases for Therapy 3 hrs.
In this course disorders of communication are examined in terms of servo-system theory, learning theory, and personality theory.

659 Organization and Administration of Clinical Programs 3 hrs.
This course is intended to acquaint the student with the specific problems involved in the organization and administration of speech and hearing services in various clinical settings; hospital clinics, college speech and hearing clinics, special education programs and rehabilitation centers.