1969

Bulletin - Western Michigan University: The Graduate Catalog 1969-1970

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Spring, 1969

Final Registration ........................................ April 26, 1969
Classes Begin ............................................. April 28, 1969
Final Day to Add Classes .............................. See Spring Class Schedule
Final Day to Drop Classes .............................. See Spring Class Schedule
Diploma Applications Due for August Commencement ............ May 15, 1969
Applications for Admission to Graduate School
Due for the Summer Session .......................... May 15, 1969
Memorial Day Recess .................................. May 30, 1969
Applications for Admission to Graduate School
Due for the Fall Semester ............................. June 15, 1969
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
Final Day to Drop Classes .............................. See Summer Class Schedule
Independence Day Recess ............................... July 4, 1969
Approved Theses, Projects and Dissertations Due in Graduate Office for Fall Commencement .... August 1, 1969
Session Ends ............................................ August 15, 1969
Commencement .......................................... August 15, 1969

Fall, 1969

Drop-Add Weekdays (Administration Building) .. August 11-25, 1969
Drop-Add (Fieldhouse) ................................. September 2, 1969
Classes Begin ............................................. September 3, 1969
Drop-Add (Fieldhouse) ................................. September 4, 5, 6, 1969
Diploma Applications Due for December Commencement ........ September 20, 1969
Applications for Admission to Graduate School
Due for Winter Semester .............................. November 1, 1969
Thanksgiving Day Recess Begins ...................... November 26, 1969
Classes Resume .......................................... December 1, 1969
Approved Theses, Projects and Dissertations Due in Graduate Office for Fall Commencement .... December 5, 1969
Semester Ends ........................................... December 20, 1969
Commencement .......................................... December 20, 1969
Winter, 1970

Final Registration ............................................. January 3, 1970
Classes Begin .................................................. January 5, 1970
Final Day to Add Classes ................................. See Winter Class Schedule
Final Day to Drop Classes ................................. See Winter Class Schedule
Diploma Applications Due for April Commencement .......................... January 17, 1970
Applications for Admission to Graduate School
   Due for Spring Session ................................ March 15, 1970
Approved Theses, Projects and Dissertations Due in
   Graduate Office for Winter Commencement ................ April 3, 1970
Semester Ends ................................................. April 18, 1970
Commencement ............................................. April 18, 1970

Spring, 1970

Final Registration ............................................. April 25, 1970
Classes Begin .................................................. April 27, 1970
Final Day to Add Classes ................................. See Spring Class Schedule
Final Day to Drop Classes ................................. See Spring Class Schedule
Applications for Admission to Graduate School
   Due for the Summer Session ......................... May 15, 1970
Diploma Applications Due for August Commencement ................ May 15, 1970
Memorial Day Recess ................................... May 30, 1970
Applications for Admission to Graduate School
   Due for the Fall Semester ......................... June 15, 1970
Session Ends ................................................. June 17, 1970
Approved Theses, Projects and Dissertations Due in
   Graduate Office for Summer Commencement ........ July 31, 1970

Summer, 1970

Final Registration ............................................. June 22, 1970
Classes Begin .................................................. June 24, 1970
Final Day to Add Classes ................................. See Summer Class Schedule
Final Day to Drop Classes ................................. See Summer Class Schedule
Independence Day Recess ................................. July 4, 1970
Approved Theses, Projects and Dissertations Due in
   Graduate Office for Summer Commencement ........ July 31, 1970
Session Ends ................................................. August 14, 1970
Commencement ............................................. August 14, 1970
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Term Expires
December 31, 1970
December 31, 1970
December 31, 1972
December 31, 1972
December 31, 1974
December 31, 1974
December 31, 1976
December 31, 1976

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Associate Dean

SID DYKSTRA,
Assistant Dean

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, Modern and Classical Languages, Mathematics, Medieval Studies, Occupational Therapy, Physics, Political Science, Psychology, Sociology, Speech 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 Master of Social Work program will begin in 1969.

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 Specialist in Arts degrees in Business Education, English, History, International and Area Studies, Librarianship, Mathematics and Science Education.

Programs leading to the Doctor of Philosophy are offered in Chemistry, Mathematics, Sociology, and Science Education. A program leading to the Doctor of Education is offered in Educational Leadership.
SECTION I

Procedures and Degree Requirements

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 March 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. For further information see admission requirements for the type of program desired.

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.

3. Dual Enrollment Admission. Senior students at Western Michigan University with acceptable academic records, 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 any 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.

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. The request should 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, dissertation, Doctoral Research Seminar or doctoral level research (Grad. Stud. 735).

"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 and 730, Doctoral Dissertation. Accordingly, the permanent record will indicate "CR" when the course is passed and "NC" when the course is incomplete or 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 $4 \times 3$, or 12 honor points. Honor points are not involved in courses in which the pass-fail grading system is used.

COURSE NUMBERING SYSTEM

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.

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 —
   a. A permanent program which will constitute an application for admission to candidacy must be submitted during the first semester or session of enrollment.
   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. Normally, 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 session (5 semester hours minimum) or one semester (9 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 5 or 9 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 in Muskegon or Grand Rapids. 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, Specialists 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 aptitude and advanced tests of the Graduate Record Examination or a prescribed substitute. Students admitted with an advanced degree are not required to take the English entrance examination.
2. Candidacy
   a. A permanent program which will constitute an application for admission to candidacy must be submitted during the first semester or session of enrollment.
   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. (Approved for students in educational administration programs only.)

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 approved residence centers (Muskegon and Grand Rapids) 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. An 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. This requirement is waived for students with advanced degrees.
   
   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 20 semester hours of graduate work beyond those accumulated at the time of admission, whichever comes first. Students should present this request to their advisor who will submit a recommendation to the Graduate Office.

2. Students admitted with more than 20 hours of graduate study must request status as an applicant after completing one full semester of graduate work on campus or 40 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 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.

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.

Changes in Enrollment: Any changes in a student's schedule must be made in accordance with the procedures announced in the Schedule of Classes. A student may drop graduate courses through the midpoint of each semester and session.
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 three or four courses (9-13 hours).
2. The normal load for graduate students is two courses (5-8 hours) during the spring and summer sessions.
3. Students who are employed should reduce their loads accordingly. The normal load for students employed full time is one course per semester or session. The normal load for students with Graduate Assistantships, Program Fellowships and Associateships is two or three courses (6-9 hours).

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>Fall/Winter Semesters</th>
<th>Spring/Summer Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 90% Period</td>
<td>Through the final day for adding a course as established by the Registrar.</td>
</tr>
<tr>
<td></td>
<td>Through the final day for adding a course as established by the Registrar.</td>
</tr>
<tr>
<td>2. 60% Period</td>
<td>Final day above through the 21st day after the last established registration day.</td>
</tr>
<tr>
<td></td>
<td>Final day above through the 10th day after the last established registration day.</td>
</tr>
<tr>
<td>3. 40% Period</td>
<td>22nd through 35th day after the last established registration day.</td>
</tr>
<tr>
<td></td>
<td>11th through 17th day after the last established registration day.</td>
</tr>
</tbody>
</table>

*Fall semester refunds may not exceed the amount of fees paid minus $50.

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 involuntarily 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 $2,600 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 past three commencements.

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 Achievements 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:** Western Michigan University, through its Health Service, provides medical, surgical and psychiatric care that may be needed by students. These services are available to both undergraduate and graduate students.

Scheduled for opening in the Fall of 1969 is a three-level Health Service facility, located on the West campus near Goldsworth Valley. The new building includes an expanded out-patient clinic, X-ray and laboratory facilities with the third level having a 72-bed capacity.

Graduate students who intend to use the Health Service while at the University must have a physical examination report on file at the Health Service. If a student should have an illness which will require further treatment while attending the University, such information should accompany the physical examination report and a letter from the family physician is advisable.

The Health Service is open 24 hours a day, seven days a week during the Fall, Winter and Spring terms for treatment of such illnesses and injuries. Clinics are held daily, Monday through Friday, from 8 A.M. to 4:30 P.M. with a physician present to advise medical care and treatment. Saturday morning clinics are held from 9 A.M. to 12 noon for only emergency or urgent cases. Students who are found to be more seriously ill and require medical care and laboratory examinations which cannot be performed at the Health Service will be transferred to a local hospital. Admission to a hospital is not the financial responsibility of the University nor of the Health Service, but is the financial responsibility of the student or parent. Where a student is transferred to a local hospital, it is expected that the parents will be notified at the earliest possible convenience. No admissions or operative procedures will be performed on these students without permission of the parents, except in cases of extreme emergency or life-threatening situations. In addition, if consultation is sought from other physicians who are not directly employed by the University, such expense for their consultation is the responsibility of the student or parents. It shall not be the responsibility of the University to pay for such hospitalization or consultation. To cover such expenses, it is advisable that the student apply for the accident and illness insurance policy at the University on enrollment or that insurance benefits be carried by the parents through the parent's employer. Minimal charges are made by the Health Service for medication, X-rays, laboratory examinations, and inpatient care.

Students who are receiving allergy injections may have their vaccine stored at the Health Service and may have the vaccine administered as scheduled by their family physician. The allergy vaccine is administered by the nurses and can only be given when the doctors are in attendance. A minimum fee of 50¢ is charged for allergy injections.

The fees which are charged by the Health Service for out-patient clinic visits are based on the number of hours the student is taking. Graduate students with seven semester hours or more a semester or
four hours or more a session are charged no fee for out-patient clinic visits. Graduate students with one to six semester hours a semester or one to three hours a session are charged a minimum fee per office call.

**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.

Through the counseling process, graduate advisers will help the students choose courses to meet their individual needs. Courses and experiences should be chosen so that the graduate student becomes 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 accountancy major requirements, the student must complete a minor of six to nine credits outside of the Department of Accountancy.

**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. Students are required to have completed at least three semester hours of statistics. This requirement can be satisfied by the student's undergraduate program.
4. 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)

23
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 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.

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  
Fred V. Hartenstein, Associate Dean  
Leo Niemi, Director of Admissions

The Master of Business Administration degree program is designed to meet the need for well trained generalists and specialists for leadership roles in business, industrial, financial and all levels of governmental organizations. It is a professional degree program which aims to develop in the participants a background and working level of skills, knowledge and attitudes which will prepare them for responsibilities in decision making. 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 is earned by completion of a program approved by the candidate's graduate advisor. Programs consist of two parts: (1) prerequisites, and (2) coursework of 30 hours or 24 hours and a thesis.

Prerequisites: include subject matter in Accounting, Economics, Finance, Law, Management, Marketing and Statistics. The prerequisite
requirement may be met by (1) waiver (in case of prior completion of appropriate undergraduate courses — BBA core courses or equivalent), (2) examination, or (3) completion of coursework specified by the appropriate department.

Courses completed to meet prerequisite requirements, whether or not taken on the graduate level, will not count towards meeting any other coursework requirements.

Coursework: usually includes (1) the area of concentration, (2) other areas of business that meet the student's educational objectives, and (3) areas outside the School of Business with special emphasis on economics and the behavioral sciences.

Results of the Admission Test for Graduate Study in Business must be submitted prior to consideration for admission to the program.

For the part-time student, residence requirements may be fulfilled by taking one or more courses during four consecutive semesters.

Chemistry

Don C. Iffland, Adviser

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 27, 1969—9:00 a.m.—Analytical; 1:00 p.m.—Organic
August 28, 1969—9:00 a.m.—Physical
January 3, 1970—Any
April 24, 1970—Any
June 19, 1970—Any
August 26, 1970—9:00 a.m.—Analytical; 1:00 p.m.—Organic
August 27, 1970—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 30 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. The election of either 30 hours (with thesis) or 33 hours (no thesis) is to be made in consultation with the major adviser and the department head.

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 the Culturally Deprived, 5) Teaching of Reading, 6) Teaching at the Junior College Level, 7) Special Education, 8) School Psychologist, 9) Visiting Teacher, 10) Audiovisual Media, and 11) 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; the Teaching of the Culturally Deprived; the Teaching of Reading; and Audiovisual Media, 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

Advisers: Daniel Moore, David Curl

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. Eight or nine hours of professional education courses including Introduction to Research, Social, Philosophical and Psychological Foundations in Education and Curriculum.
3. Sixteen 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 TEED 648, Instructional Medio Seminar, or, in 710, Independent Research.
5. Five or six hours of approved elective courses outside the School of Education.

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, Methods and Techniques for Teaching the Disadvantaged, and 712, Professional Field Experience.
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

Advisers: Owen Middleton, Cameron Lambe

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 (required), 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 Arts 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, Sara Swickard, Bruce Lloyd, James Burns, Richard Harring, Chalmers Means

Teaching in the Junior High School
Advisers: Clara Chiara, Sarah Jane Stroud

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

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.
Counseling and Personnel Services


Prerequisite:
The curriculum for Counseling 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, Charles Laufer

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, 604, 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, Morvin Wirtz

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.

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 with a major in the behavioral 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.

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

The clinical training of Rehabilitation Teachers prepares students to teach blind adults personal management, skills in communication, home making 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 during one session and one semester 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, thereby permitting improved instruction of the comprehensive subject of earth science in secondary schools.

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

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. Completion of 2-6 hours at the 700 level; the minimum requirement thus is a 2-hour research paper.

4. Demonstrated competence in:
   a. General physical and cultural patterns
   b. Documentary analysis
   c. Philosophy of Geography
   d. Cartagraphic 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

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 (10) Africa.

4. Choose one of the three options listed below:
   (1) Complete two seminars, one of which must be in the desig-
nated 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

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: a) Foods and Nutrition, b) Textiles and
Clothing, 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 Econo-
   mics 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 Association 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 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.

Completion of this program requires that the student complete 30 semester hours of course work beyond the B.A. degree and pass an oral examination administered by personnel of the Institute of International and Area Studies. In addition to a core of required interdisciplinary seminars, students are expected to select—in consultation with their graduate adviser—a program of courses which deal either generally or specifically with the problems of economic, social and political development in the non-Western World as offered mainly by the departments of Anthropology, Economics, Geography, History, Political Science, Religion and Sociology.
Modern and Classical Languages

Clifford J. Gallant, Chairman of Advisers

The Master of Arts degree in French, German, Latin and 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 in 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-six 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, 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 the following courses: Lib. 510, 512.

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 full-time summer session (five semester hours minimum) or one full-time semester (nine semester hours minimum).

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 School Media Center Specialist**

The Department of Librarianship now offers a graduate curriculum in administration of the School Media 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 Master of Arts in the Teaching of Mathematics, The Specialist in Arts in Mathematics, and the Doctor of Philosophy.

The degree of Master of Arts in Mathematics extends the student's knowledge in the areas of algebra, real and complex analysis, applied mathematics, combinatorics, geometry, statistics, and topology. The program permits specialization in preparing for advanced study, and provides additional training for teachers of mathematics and students seeking employment in industry.
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 or equivalent. 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 to include at least 24 hours of Mathematics, including 630, Abstract Algebra I; 670, Measure and Integration; and an approved 600-level sequence.

3. Pass a final comprehensive examination.

Requirements 1 and 2 are modified somewhat for students seeking a Masters degree with specialization in Applied 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.

Administration and Supervision of Occupational Therapy

Rosalie A. Kiss, Adviser

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 Ex-
perience (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.

Graduate students are expected to attend the Graduate Colloquium which 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 specialities.

Graduate students are also expected to attend the Physics Seminar: 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 in Political Science, the student, in addition to satisfying the general requirements of the Graduate School, must:

1. Complete thirty hours of work in Political Science. With the written approval of the Graduate Admissions and Candidacy Committee, a student may substitute up to six hours of cognate work which is appropriate to his program.

2. Satisfactorily complete the course: 590 Research Methods.

3. Satisfactorily complete at least three hours in each of the four fields listed below:
   a. American Political System
   b. International Relations
   c. Political Theory and Methodology (except 590 or 591)
   d. Foreign and Comparative Political Systems

4. Complete a Thesis (6 hours credit).

5. 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 Political Science.

Petitions for waiver of requirements, which are granted only under special circumstances, must be submitted in writing to the Graduate Admissions and Candidacy Committee of the Department.

Psychology

John Michael, Adviser

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. In addition to the 12 hours specified in 2 and 3 above there are further requirements 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 students who plan to engage in professional work at a master's degree level of proficiency or those interested in continuing graduate studies for a doctorate in the clinical area.

c. Industrial Psychology—eighteen credit hours in psychology courses in the areas of personnel selection, training, statistical analysis, learning or perception, and human motivation in industry. In addition to the required eighteen hour block, six hours must be selected from courses and seminars available in the areas of programmed learning, human factors in engineering, psychometrics, consumer behavior, and research design. This program is designed to prepare the student for sub-doctoral research positions in government and industry and for doctoral programs at other universities.

SOCIAL WORK

The Social Work curriculum is structured as an integrated and sequential set of conceptual and practicum type educational experiences which are organized as a problem solving matrix and focused around alternative approaches to the solution and amelioration of contemporary social problems. Social work practice is examined as a problem solving response to emerging and extant social conditions which have negative consequences for individuals, the family, special groups, the local community and the society at large.

The are six major content areas in the curriculum:
1. The Profession in Society
2. Social Policy
3. Social and Behavioral Theory
4. Social Welfare Research, Planning and Administration
5. Social Work Practice
6. Field Education
Sixty credit hours will be required for the Master's Degree in Social Work. This will include the following course credits:

 Semester courses — 16 @ 2 hours ............. 32 hours
 Semester Field Education — 4 @ 4 hours .......... 16 hours
 Field Studies in Practice and Research ............ 8 hours
 Graduate Seminars and Project .................. 4 hours

Total: 60 hours

In addition, the student will be required to demonstrate research proficiency by the end of the first year. This can be accomplished by either passing an examination or by taking a course in research methodology. Finally, he will be required to pass a comprehensive examination at the end of the second semester of the first year in order to qualify for degree candidacy.

**Sociology**

Milton J. Brawer and Lewis Walker, Advisers

The Master of Arts degree program in Sociology is designed to (1) give students an advanced understanding of the significant factors and processes of human society, (2) further the preparation of those planning to teach in secondary or higher education, (3) prepare students for doctoral study in Sociology, and (4) provide professional training for a variety of occupational opportunities in government, industry, education, research organizations, social agencies and correctional systems. (Beginning graduate students who plan to obtain the Ph.D. in Sociology may be admitted directly into both the M.A. and Ph.D. programs. See Ph.D. program for details.)

**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 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 in their first semester.
4. Complete an original thesis or essay, using approved methods for investigation of a sociological topic. The thesis is recommended 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.

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. Additional information and application forms may be obtained from the departmental secretary.

Speech

W. E. Buys, Adviser

The Master of Arts degree in Speech is intended for both those students wishing a terminal degree or those intending to continue graduate work. Students may take the degree with emphasis in a particular area of speech or as a generalist. Present areas for degree specialization include: speech education, radio and television, public address, communication, theatre, and oral interpretation.

Eligibility for Admission

1. The primary criterion for admission is upon whether or not the applicant has a clear understanding of his educational objectives and whether or not the graduate curriculum and staff can provide a satisfactory educational experience. Undergraduate records, letters of recommendation, evidence of academic interest and ability, and interviews may be requested depending upon the individual applicant. Undergraduate work in Speech is expected of all applicants; however, it is not a requirement. Academic deficiencies or reservations may be determined at the time of application to the program.

Degree Requirements

1. Complete at least thirty hours in speech and cognate courses selected in consultation with the master's adviser. Fifteen hours must be 600 level or higher courses.

2. Thesis is optional.

3. A consultation must be carried on each term with the candidate's adviser.

Speech Pathology and Audiology

Robert Erickson, Harold Bate, Advisers

The Master of Arts degree program in Speech Pathology and Audiology is designed to provide academic and practicum experiences basic to
the development of clinical competence in the management of language, speech and hearing disorders. 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, Audiology, 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 departmental graduate speech pathology courses specified by the department, with reference to the student’s intended emphasis.
   (g) Completion of at least one graduate seminar registration.

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; and work with a variety of disorders.

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.

Statistics

Gerald Sievers, Michael Stoline, Advisers

The Masters program in Statistics is offered through the Department of Mathematics. The resulting degree is a Master of Arts in Mathematics with concentration in Statistics.

Two types of programs are available in this area:

Option I. This option combines a regular Masters program in Mathematics with substantial work in statistics. A graduate from this option is well prepared to proceed into a doctoral program in statistics, to teach basic statistics at the college level, or to use statistics professionally.

In this option the student must complete the regular M.A. in Mathematics requirements with a program including the following courses:

Mathematics 560, 561, and 3 of the following: 660, 661, 662, 664, 667.

Admission requirements for this option are the same as for the regular M.A. in Mathematics program.

Option II. The supply of professional statisticians is extremely limited, while the demand is great. This option will give students a combination of: knowledge of statistical techniques, experience with using these techniques in applied situations, and understanding of the theoretical principles behind these techniques. Students receive excellent training for professional employment in industry or government, and at the same time obtain sufficient theoretical background to qualify them to teach elementary Statistics, or to continue into more advanced degree programs. Part of this program involves experience in Applied Statistics carried out in cooperation
with a local industry or a related department. The requirements in pure mathematics are not as extensive as in Option I.

In this option the student must complete 30 hours of approved graduate work, with at least 24 hours of Mathematics courses, to include Mathematics 506, 530, 572, 562, 662, 663, 664 and one cognate course.

For admission to this option, candidates must have completed an undergraduate program containing a substantial amount of mathematics, including a complete calculus sequence, but a mathematics major is not required.

Technology

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 a minimum of thirty semester hours of graduate work, including the course AAS-600, Introduction to Technology, three semester hours.
4. Complete, with the approval of his adviser, (a) twelve to fifteen hours in a major field of study representing his specialty in either industrial technology, industrial supervision, electrical engineering technology or mechanical engineering and (b) five to eight hours in a related technical or engineering field.
5. 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 semester (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

Counseling and Personnel Services

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 in Arts Programs

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 Specialist in Arts students must complete one semester or two consecutive sessions in residence on the campus.

The professional preparation for those students preparing to teach in the Community College 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 Arts in Business Education

Darrell G. Jones, Adviser

The Specialist in Business Education 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 Arts in English

Ralph Miller, Adviser

The English Specialist in Arts degree program is intended to prepare the candidate for teaching in the community and the four-year college. The student's program of studies is planned in consultation with the advisor to serve the student's needs and interests. The first year of the program encompasses the M.A. in English, and the student may apply for that degree when he has completed the requirements. The second year of the program allows for a concentration of studies in literary history, in literary theory, or in special literary problems. At the end of his work the candidate presents a substantial essay and takes a comprehensive examination. During the latter part of his studies he engages in a teaching internship under the supervision of a member of the English faculty or in a community college under appropriate supervision.

Specialist in Arts 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 and 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 Arts in Librarianship

Jean E. Lowrie, Adviser

The Specialist in Librarianship program is designed to prepare librarians for administering School Media 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 School Media 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 Arts in Mathematics
Anthony Gioia, Adviser

The Specialist in Arts in Mathematics program is designed to prepare community college and liberal arts 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 will be named to guide his study, conduct the final examination and advise him on thesis preparation.

Specialist in Arts in Science Education
Paul E. Holkeboer, Adviser

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 thirty-nine to forty-four hours of graduate level work from a science area (physical science, life science or earth science), including supporting mathematics where necessary. The Specialist project may be done in either the major science area or in Science Education. Students in this program are required to make an oral presentation of their project and to pass an oral examination. 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.

Specialist in Arts in International and Area Studies
Fred Mortimore, Adviser

This program is in the planning stage.
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 calendar 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. The decision regarding the specific research tools must be made by the student's doctoral committee. If the committee wishes to recommend research tools other than languages, computer programming or statistics they must identify their recommendation and the standard of proficiency expected for the approval of the Graduate Dean. Appropriate competency in language, statistics and computer programming has been established by the Graduate Studies Council and is administered 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

Don C. Iffland, Adviser

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 Education 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 dis-
tinct 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
   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 personnel.
      3) Educational program administration, including directors of primarily non-school educational programs in business, industry, trade unions, government, armed forces, and professional associations.
      Courses are selected from offerings of appropriate departments, 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 relation 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.
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 Department 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.
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. 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.

The program leading to the Ph.D degree in Science Education requires the equivalent of 90 hours of graduate credit. This course work is divided into the following categories:

Sciences: 20 hours of graduate credit in one science: biology, chemistry, geology or physics
20 hours of graduate credit in two other sciences

Professional Education: 21 hours of graduate credit
Dissertation: 15 hours

The remainder of the program will consist of independent research, seminars in science education and additional work in science and/or mathematics.

The two research tools required for the completion of this degree are:
1. Reading knowledge of a foreign language.
2. Competence in either statistics or computer programming.

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 in addition to the other requirements for all doctoral degrees.

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, including 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 adviser.
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.
SECTION IV

Description of Graduate Courses

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 1-1 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

Fitch, Chairman; Professors Beukema, Nantz, Scott, Wilcox; Associate Professors Day, Gill, Groulx, Haynes, Hesselberth, Johnson, King, Rayl, Watmough, Weeks; Assistant Professors Hamelink, Klein, Patton, Fridgeon, Urich

ELECTRICAL ENGINEERING TECHNOLOGY

Open to Graduates and Upperclassmen

541 Electrical Fields 3 hrs.

Electrostatics, covering such topics as Coulomb's Law, Gauss's 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.

542 Advanced Circuits 3 hrs.

Advanced circuit analysis covering both steady state and transient responses, writing and solving integrodifferential 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.

545 Electrical Power Systems 3 hrs.

Economic and engineering considerations concerning power plants, generating equipment, transmission 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 instructor.
612 Network Synthesis 3 hrs.
Synthesis of passive networks in the frequency and time domain; Foster and Cauer 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.

644 Microwave Techniques 3 hrs.
Coaxial lines, wave guides, oscillators, mixers, amplifiers, test equipment, and measurement. 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

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

502 Industrial Supervision 3 hrs.
Supervisory duties and responsibilities of foremen, engineers, and technicians in industry.

504 Industrial Safety 2 hrs.
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 studied.

506 Work Simplification 3 hrs.
Methods improvement applied to two actual cases in local industry. Administrative problems encountered in initiating methods improvement in industry. Prerequisite: 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 uses of statistics as applied to quality control. Prerequisite: ET 308 or equivalent.

Open to Graduates Only

602 Industrial Project Engineering 3 hrs.
The functions and responsibilities of the project engineer relative to plant facilities. Feasibility studies. Preparation of plans and specifications, engineering progress reports, analysis of bids, shop testing and inspection, equipment installation, and inspection, equipment installation, and acceptance testing. Prerequisite: ET 404 or equivalent.
603 Supervision of Industrial Training 3 hrs.

The philosophy and responsibilities of the Industrial Training Director. Techniques and methods of evaluating training in industry. Administrative procedures to develop training programs in apprenticeship, presupervisory training, supervisory training, on-the-job training and other concepts of industrial training.

604 Linear Programming for Engineers 3 hrs.

The formulation of linear mathematical models as applied to engineering problems. Solutions to linear programming problems are obtained by using appropriate algorithms. Sensitivity analysis techniques are presented and the significance of changes in the model are studied. Prerequisite: Math 123.

MECHANICAL ENGINEERING TECHNOLOGY

Open to Graduates and Upperclassmen

550 Product Engineering 3 hrs.

The application of engineering concepts to technical design. Scope of design, analysis and synthesis of design parameters, evaluation of performance, and other factors related to product development. Prerequisites: ET 230, ET 353.

551 Welding Design Analysis 3 hrs.

Production methods and designs using 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 analyzed. Prerequisite: ET 251.

552 Technical Illustrations 3 hrs.

Techniques of illustrating for technical publications such as engineering reports, technical and service manuals, parts catalogs.

553 Industrial Drafting Practice 2 hrs.

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.

Conceptual design and development of a product. Production of a working model in the laboratories. Product proposal, engineering documentation and engineering analysis of product. Prerequisite: ET 430.

556 Engineering Analysis 3 hrs.

Application of vector analysis, differential equations and Laplace transforms to the solution of complex engineering problems. Prerequisite: Math 223 or equivalent.

558 Mechanical Vibrations 3 hrs.

A study of oscillatory motion of physical systems with emphasis on
effects of vibrations on the performance and safety of mechanical systems. Prerequisites: ET 355, ET 360, and Math 223 or equivalent.

562 Numerical Control of Production 3 hrs.
Elements of design of numerically controlled production processes including the machine programming and control of input-output using appropriate gauging and AQL techniques. Prerequisites: ET 151, Math 106, and permission of instructor.

570 Metal Fabrication 3 hrs.
A study of mechanical forming methods and special processes of fabricating metals. Includes rolling, forging, extrusion, drawing, bending, shearing, powder metallurgy, and explosive forming. Special emphasis is given mechanical variables in fabricating. Prerequisite: ET 373, or 351 and 354.

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 103 or ET 252.

573 Physical Metallurgy III 3 hrs.
Material selection with respect to both resistance to load and environment. Design parameters for material selection and various metal systems. The theoretical and practical aspects of corrosion in individually assigned laboratory problems. Galvanic series, Pourbaix diagrams and electrolysis is studied. Prerequisite: ET 351 or ET 373.

574 Casting Design 3 hrs.
A course emphasizing the relationship of casting design to foundry processes and economical production. The foundry is considered from various aspects such as organizational and equipment requirements, and responsibilities to customers, employees, and the community. Instruction will include classroom lectures and laboratory exercises. Prerequisites: ET 252, 254, 353.

575 Die Casting 3 hrs.
A course dealing with the production of die castings, including design, melting, casting and finishing processes. Instruction will include classroom lectures and laboratory exercises. Emphasis will be directed toward the production of quality casting economically. Prerequisites: ET 252, 254, 352.

579 Studies in Cast Metals Technology 1-3 hrs.

Open to Graduates Only
650 Advanced Physical Metallurgy 3 hrs.
Classification and selection of metal alloy systems and heat treat-
ments for engineering applications. Special emphasis on cost and the metallurgical factors that govern the mechanical and fabricating properties of engineering alloys.

651 Advanced Strength of Materials 3 hrs.

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. 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.
Advanced topics in conduction, convection, and radiation heat transfer with emphasis on industrial applications. Prerequisites: ET 451, ET 556 or equivalent.

656 Advanced Fluid Dynamics 3 hrs.
Modern developments 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.

Home Economics
Herald, Head; Professors Brennan, Savage and Taylor; Associate Professor Gates

Open to Graduates and Upperclassmen

500 Advanced Textiles 2 hrs.
The study of the composition, construction, finishing, and care of textiles. Prerequisite: 200.

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 ex-
pression 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. Prerequisites: 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 2 hrs.
Food preparation with special emphasis on individual problems related to school food teaching units. Study of commercial food preparation.

518 Advanced and Experimental Foods 4 hrs.

520 Equipment and Demonstration Techniques 4 hrs.
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 2 hrs.
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 2-4 hrs.
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 2 hrs.
Planned to meet the needs of the advanced student in clothing construction techniques.

602 Tailoring Techniques 2 hrs.
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 2 hrs.
A concentrated study of specifics within these fields dependent on the interests of the students.

606 Seminar in Home Management 2 hrs.
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 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.

610 Studies in Foods and Nutrition 2 hrs.
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.
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**

Feirer, Head; Professors Bendix, Lindbeck and Risher; Associate Professors Bruce and Stegman; Assistant Professor 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 jointer, 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, and 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.

524 Commercial Architectural Design 2 hrs.
A course designed to give basic experience in designing light commercial structures. Emphasis will be placed on planning, traffic flow, exterior design, materials, and structural details. Prerequisite: IE 520 or equivalent.

525 Architectural Perspective and Rendering 2 hrs.
An intensive study of angular and parallel perspective. Emphasis will be placed on entourage and rendering techniques in preparing architectural presentation drawings. Prerequisite: IE 520 or equivalent.
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.

545 Safety Education for Industrial Teachers  2 hrs.
A basic course covering the fundamentals of accident prevention in Industrial Education laboratories, treating legal responsibility of teachers, safety requirements in relation to equipment, safe guarding, and safe operation. Accident statistics and resource information are studied.

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.

552 Estimating  3 hrs.
A study of the methods used in estimating the price of printed matter before manufacture and in the final pricing of that matter after production.

553 Printing Production Control  2 hrs.
A study of various systems used in the printing industry for planning and controlling the flow of work through the plant in order to maintain equalized work loads and meet delivery schedules.

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, bodel 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.

575 Mechanics and Conditioning of Equipment  1-2 hrs.
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 em-
phasis will be given the relationship between proper installation and condition to efficient machine operation.

575 General Industrial Arts Laboratory Organization 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. Prerequisite: 15 hours in Industrial Education.

578 Plastics Technology 2 hrs.

A comprehensive study of plastic materials and processes encompassing applications of thermoplastic, thermostetting, and other selected synthetic materials. Product development with emphasis on vacuum forming, compression, extrusion, injection, and blow molding, lamination, casting, reinforcing, foaming, coating, and general fabrication.

582 Applied Fluid Power 2 hrs.

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.

584 Automotive Technology for Teachers I 3 hrs.

A course designed to extend the depth of knowledge in technical areas for automotive teachers, to acquaint them with recent developments in the field, and to explore instructional problems unique to the automotive area.

585 Automotive Technology for Teachers II 3 hrs.

Continuation of 584.

588 Power Laboratory Techniques 2 hrs.

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 2 hrs.

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 Aerospace for Classroom Teachers 2 hrs.

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 2 hrs.
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 2 hrs.
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 1-3 hrs.
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.

646 Teaching Problems in Industrial Education 2 hrs.
Special attention will be given to teaching methods and the tech-
niques useful to experienced industrial education teachers. Emphasis
will be placed on problem solving in industrial education, pupil plan-
ning and the demonstration technique. Each student will be required to
work out a program of teaching methods useful in his particular school.

647 Modern Technological Practices—Foundry, Power Mechanics,
Machine Shop, Welding, Electronics, etc. 2 hrs.
This in-service course for industrial teachers will provide oppor-
tunities to learn the latest in technological practices in industry. When-
ever possible, cooperation of an industrial group will be utilized in plan-
ning 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.

648 Modern Technological Practices—Foundry, Power Mechanics,
Machine Shop, Welding, Electronics, etc. 2 hrs.
Continuation of 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. Ad-
vanced 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 informa-
tion related to them. Prerequisites: 160, 560.
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 instructional 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.

521 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 volun-
teer 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 Supervision 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; Professors Diehm and 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

FRED HARTENSTEIN, 
Associate Dean

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

The School of Business includes the departments of Accountancy, 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.

Accountancy

Burke, Head; Professors Everett, Neubig, Welke, Wetnight; Assistant Professors Morris, Newell, Schaeberle, Mitchell

Open to Graduates and Upperclassmen

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.

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.

522 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: Accounting 312.

524 Studies in Tax Accounting 3 hrs.

Special studies related to tax problems of individuals, partnerships and corporations. Emphasis on corporation taxes, trusts and estate tax
problems. Gift and estate taxes and an introduction to tax planning are included. Prerequisite: Accounting 314.

598 Readings in Accounting 1-4 hrs.
Directed individual study of bodies of knowledge not otherwise treated in department courses. Prerequisite: Written consent of instructor.

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.

605 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. Not open to students with credit in accounting.

606 Advanced Financial Accounting 3 hrs.
An intensive study of asset valuation, liabilities, corporate capital, and their relationship to income. Prerequisites: Accounting 211 or 605, Administrating Accounting.

608 Advanced Accounting Theory 3 hrs.
A study of the underlying concepts and principles of corporate accounting. Prerequisite: 606 or equivalent.

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.

617 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. Prerequisites: Will vary with topic.

622 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. Prerequisite: Accounting 312 or written consent.
624 Business Tax Planning
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 studies will be used and research in taxation will be emphasized. Prerequisite: Accounting 314 or written consent.

Business Education
Open to Graduates and Upperclassmen

583 Coordination Techniques in Office Education
A study of the role and responsibilities of the office education coordinator in his educational system. Surveys the organization of the office education program, the course content of the related class, supervision of on-the-job trainees, the establishment of working relationships among the school, business and home; examines latest pertinent research. Prerequisite: Dist. Ed. 573 Coordination Techniques in Cooperative Education.

584 Improvement of Instruction in Shorthand and Secretarial Subjects
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
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
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
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
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.

General Business

Schneider, Head; Professors Adams, Burdick, Grossnickle, Morrison and Niemi; Associate Professors Austin, Casey, Edwards and Healey; Assistant Professors Bliss and Wiseman

Open to Graduates and Upperclassmen

504 International Business Seminar 1-6 hrs.
A foreign study seminar designed for qualified and capable under-
graduate 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 or 621 Investment Analysis and Management.

526 Advanced Life and Health Insurance 3 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 3 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.

541 Law of Sales and Personal Property 3 hrs.
The study of law as it applies to the sale of goods emphasizing the legal aspects of marketing a product. Prerequisite: 340 Business Law.

542 Law of Real Property 3 hrs.
The study of land ownership, sales agreements including the legal duties of the real estate broker, mortgages, land contracts, leases, zoning, condemnation and urban land development problems. Prerequisite: 340 Business Law.

544 Law of Business Organizations 3 hrs.
Study of business organizations including partnerships and corporations. Prerequisite: 340 Business Law.

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. Prerequisite: Written permission of instructor.
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.
605 **Administrative Finance** 3 hrs.

Surveys financial principles and investigates applied technique practiced in performing the financial management function of the business enterprise. Basic to understanding financial principles, studies are made of financial tools, terminology, financial instruments, and analysis instruments, and analysis through problem solving. Not open to students with earned undergraduate credit in Business Finance 320 or its equivalent.

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.

621 **Investment Analysis and Management** 3 hrs.

A detailed analysis of the investigation of corporate securities as long-term investment media, largely from the standpoint of the individual investor. Investigates the techniques for security valuation and portfolio management, with some discussion of financial institution investment procedure. Considers mechanics, markets, institutions and instruments important to the investment process. Not open to students with credit earned in 326 Investments or its Equivalent.

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 man-
agement’s role in the total management effort. Prerequisite: 605 Administrative Finance, 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; analysis 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.

Management
Keenan, Chairman; Professors Schneider, Booker, Hartenstein and Niemi; Associate Professors Leader, Couch; Assistant Professor Klatt

Open to Graduates and Upperclassmen

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.

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 3 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. Prerequisites: Principles of Economics, Statistics 244.

554 Introduction to Management Science 3 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 3 hrs.
Examination of current literature in electronic data processing with
special emphasis on systems analysis, applications of computers to business problems and feasibility studies. Programming computers in PI/1 and COBOL languages.

556 Office Management 3 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 3 hrs.
The development of a model to integrate management principles, administrative behavior, small group research and individual psychological theory. Both static and dynamic models are analyzed.

564 Industrial Dynamics 3 hrs.
Development of a model for the integration of the functional areas of business to create more successful management policies and organizational structures. Prerequisite: Statistics 244 or equivalent.

598 Readings in Management 1-4 hrs.
Directed individual study of bodies of knowledge not otherwise treated in departmental courses. May be repeated for credit by permission 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.

612 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 includes 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.

650 Managerial Aspects of Labor Law 3 hrs.
Background and consequences for business policy of law governing collective relationships between employers, employees, and their representatives 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 individual 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

Open to Graduates and Upperclassmen

572 Advertising: Media/Campaigns and Strategies 3 hrs.
Evaluation of media and advertising through communications research, analysis and preparation of advertising as a communication tool. Includes theory and practice of media research, media plans, schedules, and strategies. Case Studies. Prerequisites: Advertising 374 and 474.

573 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. Prerequisites: Marketing 370, Statistics 244.
571 Marketing Logistics

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. Prerequisites: Marketing 370, Statistics 244.

575 International Marketing

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 370 or permission of instructor.

576 Marketing Problems

Analysis of current marketing problems utilizing the case method of study. Prerequisite: Marketing 370 or permission of instructor.

598 Readings in Marketing

Directed individual study of bodies of knowledge not otherwise treated in departmental offerings. Prerequisite: Consent of instructor.

Open to Graduates Only

605 Marketing Analysis

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.

671 Market Measurement and Behavior

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.

675 Marketing Management

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.

678 Seminar in Marketing

Intensive problem solving in the primary business fields. Consent of instructor required.

679 Market Programming

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

MORVIN A. WIRTZ,
Assistant 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 Adams, Ansel, Buelke, Chiara, Curl, Giovatos, Johnson, Kanzler, McGinnis, Moore, Schaly, Swickard; Associate Professors Bergeson, Boscoe, Caine, Erickson, Frank, Heinig, Inselberg, Lambe, Lloyd, Martin, Means, Middleton, Miller, Mortimore, L. Schlack, Snow, Stroud, Walker; Assistant Professors Bladt, Borr, Brail, Burns, Chapel, Coleman, Crowell, Dickie, Harring, Hessler, Kilty, Miller, Smidchens, Taylor

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.

601 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. Prerequisite: TEED 601 or equivalent.

CURRICULUM AND INSTRUCTION

Open to Graduates and Upperclassmen

502 Curriculum Workshop 2-4 hrs.

Opportunity is provided for teachers, supervisors and administrators in selected school systems to develop programs of curriculum improvement. 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.

506 Adult Education 2 hrs.

This course will include such topics as organizing and financing formal public school adult education programs, promoting informal adult education programs, leadership training, program planning, and adult education group techniques. Students will be permitted to select special areas of interests for research and study.

507 Teaching of Social Studies in the Elementary Schools 2 hrs.

This course is designed to help teachers understand the role of the social studies in the elementary school, gain insight into important considerations in the selection of content, and discover how to guide and assess the learning of children in this field. Planning social studies experiences and ways of working with children in classroom setting will be emphasized.

508 Parent Education 2 hrs.

Places major emphasis on home problems which have educational implications for the child. Parent-teacher relationships, council programs 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, curriculum and teaching procedures recommended for this age group.

525 Rural Life 2 hrs.
Critical study of recent books in rural social life. Consideration is given individual problems related to social aspects of community life. Special problems are selected for study by each student. Field work is encouraged. Prerequisite: 220.

535 Introduction to Teaching the Disadvantaged 3 hrs.
Designed for teachers and administrators who are presently working 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 teaching and learning. Extensive use is made of consultants from social, governmental and educational agencies working with the disadvantaged.

542 Administration and Methods of Driver Education 2 hrs.
History, Philosophy, and Psychology of Driver Education. Emphasis on organization and administration of high school Driver Education programs. Laboratory work in dual control cars and driving range programs. Prerequisites: T.Ed. 442, 21 years of age, and valid driver's license.

544 Psychology of Driver Education 2 hrs.
Psychological and perceptual aspects of the driver and traffic safety. The role of the teacher in influencing driver behavior. Research in traffic safety. Prerequisite: T.Ed. 442.

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 overhead 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 3-6 hrs.
The initial course required of all students in the MA program for teaching the disadvantaged. 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.

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 1-4 hrs.
Designed for highly qualified students who wish to study in depth some aspect of their field of specialization under a member of the departmental staff. Prerequisite: Written consent of departmental advisor and instructor.

Open to 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. Prerequisite: TEED 312 or equivalent.

621 The Secondary School Curriculum 2 hrs.

Covers modern practices and recent emphasis and trends in subject areas of the secondary school curriculum. Prerequisite: 502 The School Curriculum or equivalent.

622 Junior High School Curriculum and Instruction 3 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.

 Applies 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 and 549 or equivalent experience.

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 causal 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 affect 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: Methods and Techniques in 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 adaption 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. Prerequisite: At least 21 hrs. completed in MA program for teaching the disadvantaged.

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 teachers, 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 junior and senior high school 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, Engle, Faunce, Manske, McCuskey, Misner, Seay, Strolle, Viall, and Weaver; Associate Professors Betz, Carlson, Davenport and Lamper; Assistant Professors Coats, Mazer, Tosi and Urbick

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 written consent (C-card signed by 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 written consent of instructor. (C-card)

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 School Principalship 3 hrs.
A study of the school as one of many interacting social systems; of leadership in improving instruction; of administering personnel at the building level; and of administering school facilities, services, activities, and materials. Emphasis is on the principal’s role as a leader. Recommended for teachers and principals. No prerequisite.

623 Supervision of Instruction 3 hrs.
The improvement of learning for all those who take part in educa-
tional 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.

625 Administration and Supervision of Adult Education 3 hrs.

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 fields of Administration and Student Personnel Services of Higher Education. The workshop approach will be used to introduce students to such areas as Admissions, Registration, Staff Personnel, Administrative Organization, Financial Aids, Societal and Economic Student Population Levels, Foreign Student Programs and other areas of Higher Education.

653 Principles of Community School Organization 3 hrs.

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

660 Principals 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, and recommended for teachers. No prerequisite.

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 1½ 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, and a new emphasis is given each time.

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. Recommended for anyone interested in planning and building. No prerequisite.

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 non-teaching personnel, materials, plant, pupil services, and funds. Includes securing, handling and accounting for general, capital outlay and internal funds. No prerequisite.

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 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, particularly for non-residents.

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 2 hrs.
Focuses 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 Leadership 3 hrs.
A critical study of the philosophy of the administrative process in relation to the solution of practical problems. Concepts, generalizations, and theories of leadership are developed and evaluated in light of recent research in the behavioral sciences and in management.

671 Internship and Seminar (Flint) 4 hrs.
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 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 3 hrs.
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 written permission of instructor. (C-card)

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 3 hrs.
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. 677 or equivalent.

COUNSELING AND PERSONNEL SERVICES

Open to Graduates and Upperclassmen

580 Principles and Philosophy of Guidance 2 hrs.
(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  
(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  
(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  
(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  
(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  
(Open to Graduates Only)  
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.

680 The Personnel Worker and His Role  
(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 units 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 for either a field project or an internship, and may be registered for in 2 hr. blocks; grade to be “im-
complete" until the full 6 hrs. are satisfactorily completed and the written report accepted by the School of Graduate Studies.

725 Doctoral Research Seminar 2-6 hrs.

See “School of Graduate Studies” heading in this Bulletin. To be used by Ed.D. candidates when developing the dissertation prospectus and research. May be registered for in 3 hr. blocks; credit to be “incomplete” until the full 6 hrs. are satisfactorily completed and the prospectus approved by the student’s committee. Prerequisite: Concurrent registration in 730 in any semester when registered in this seminar.

730 Doctoral Dissertation 3-15 hrs.

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.

735 Graduate Research 2-10 hrs.

See “School of Graduate Studies” heading in this Bulletin. Credit to be “incomplete” until research project is approved.

Special Education

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

Open to Graduates and Upperclassmen

512 Workshop in Special Education 2-4 hrs.

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 2 hrs.

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 counselor, psychologists, social workers and other ancillary personnel. Course objectives include an understanding of 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 program 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 discipline in meeting these needs. Prerequisite: Education of Exceptional Children 530 or consent of instructor.

585 Mental Hygiene of Childhood and Adolescence 2 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 conferences, 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 2 hrs.

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 3-6 hrs.

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 2 hrs.

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 2 hrs.

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 2 hrs.

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 3 hrs.

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.
591 Principles of Orientation and Mobility 3 hrs.

An examination, and application, of the fundamental principles underlying the acquisition of sensory information by severely visually impaired individuals.

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 (Field) 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, Roell; Associate Professors Chambers, Doolittle, Gill, Hetherington, Means, Ray, Slaughter; Assistant Professors Brown, H. 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. Prerequisites: 342, 343 or consent of instructor.

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.

545 Philosophies of Physical Education 2 hrs.

A study of the ideas and concepts of various philosophical schools as they apply to 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 education programs, including scheduling, facilities, personnel problems, and public relations.

586 Dance and the Related Arts 3 hrs.

The study of the common principles and elements of dance, drama, music, art and television. Dance majors and minors, Aquatics majors and Swim minors.

590 Exercise Physiology 2 hrs.

The mechanics of muscular contraction, nerve impulse conduction, and circulatory efficiency are discussed. Basic principles concerning the adaptation of the human body to stress in the form of strenuous physical exercise are applied to the training and conditioning of competitive athletics. Prerequisites: Biol. 210 and 219.
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 super-
visory responsibility and function in city, county, and state school systems.

670 Community Recreation  
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  
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  
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)  
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:
Graduate Studies
Librarianship
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 prior to the election of the thesis. The “Format for Master’s Thesis, Specialist in Education Projects, and Graduate Reports” is available in the bookstore.

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 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 2-12 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 advisor, a faculty sponsor and the Director of Professional 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. Applications must be submitted prior to the election of the course.

715 Seminar in College Teaching 2 or 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. Permission of the School of Graduate Studies on a “C” card is required.

720 Specialist Project 2-6 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, the original and two copies of the project reports of papers must be prepared for binding and submitted to the School of Graduate Studies for acceptance. The “Format for Master’s Thesis, Specialist in Education Projects, and Graduate Reports” is available in the bookstore.
725 Doctoral Research Seminar 2-6 hrs.

Units offering doctoral programs may use this number to designate their research seminars. Such seminars may be taken more than once by the student. Permission of Instructor on “C” card is required.

730 Doctoral Dissertation 15 hrs.

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 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. The “Format for Master’s Thesis, Specialist in Education Projects, and Graduate Reports” is available in the bookstore.

735 Graduate Research 2-10 hrs.

Doctoral level students. Units offering doctoral programs may use this number to designate their research projects. Such a project may be taken more than once by the student. Permission of instructor on “C” card is required.

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 Building Library Collections 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

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 required of graduate students. (This must precede the undergraduate Directed Teaching program.) Prerequisite: Written permission of instructor.

530 Cataloging Principles

Introduction to basic cataloging principles and procedures. Includes theoretical study and practical applications of descriptive cataloging, rules for determining main and secondary entries, subject cataloging, and objectives of library catalogs and their formation.

542 Reading Interests of Young Adults

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

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

Offers a program for the advanced student for independent study in his special area of interest; arranged in consultation with a graduate adviser. Prerequisite: Written permission of instructor.

Open to Graduates Only

600 Foundations of Librarianship

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

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 Administration and Management 4 hrs.

An inter-disciplinary approach to administrative theory and principles of management. General sessions plus seminars will provide relevant application to public, academic, school and special libraries.

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 written permission of instructor.

628 Survey of Special Libraries 3 hrs.

Development of specialized library services to organizations in such fields as science and technology, fine arts, business, etc. Lectures 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: Written permission of instructor.

630 Classification of Materials 3 hrs.

Theory and structure of classification and its application in current library practice. Various methods and schemes of classification are studied and compared, including in-depth studies of both the Dewey Decimal and Library of Congress classifications. Prerequisite: Librarianship 530 or equivalent, or written permission of instructor.

631 Technical Services for School Media Centers 3 hrs.

Organization and objectives of the school processing center. Theory
and application of the Dewey Decimal classification and other techniques in the organization of book and non-book materials. Special emphasis on technical services administration in individual libraries and systems with centralized processing. Prerequisite: Librarianship 530 or equivalent.

632 Technical Services Seminar 3 hrs.
Seminar in current trends in technical services. Includes the application and adaptation of basic cataloging and classification to specialized collections. Prerequisite: Librarianship 630 or 631.

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.

636 Introduction to Abstracting and Indexing 3 hrs.
Theory and structure of abstracts and indexes with attention to the role of classification, thesaurus indexing and problems of evaluation. Experience in preparing various forms of abstracts, indexing from source documents and developing relevant procedures.

644 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

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 Social Work

CORNELIUS LOEW,
Dean

JAMES H. POWELL,
Associate Dean

PHILIP DENENFELD,
Associate Dean
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 Loffler, Maples

Open to Graduates and Upperclassmen

500 Topics in Archeology 3 hrs.
A consideration of the prehistory of a particular geographic area (e.g. the southwestern United States, the Circumpolar) or of selected theoretical problems (e.g. artifact typology prehistoric ecology.) The topic to be studied will be announced each semester. (May be repeated for credit.)

501 The Rise of Civilization 3 hrs.
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: 200.

510 Field Methods in Archeology I 3 hrs.
Instruction in the archeology of a particular area (e.g. Great Lakes, southwestern United States, Aleutians), with particular attention to prehistoric cultural developments and ecological relationships as these appear in the process of excavation. (May be repeated for credit.)

511 Field Methods in Archeology II 3 hrs.
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 510. Prerequisites: 200, 300, 341 or consent of instructor.

520 History of Anthropological Theory 3 hrs.
A systematic examination of the evolution of the significant theoretical problems and contributions in anthropology over the last two centuries. Developments are examined in relation to the prominent figures in the discipline and their times. Prerequisites: 200 and 220 or consent of the instructor.

531 Medical Anthropology 3 hrs.
An examination of anthropological techniques and findings relating to medical beliefs and practices on a cross-cultural basis. Concern with the sociocultural aspects of health, illness, and folk and scientific systems of medical care. Prerequisite: 220 or consent.

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: 220.
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. Prerequisites: 220 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: 220 or consent of instructor.

536 Cultural Evolution 3 hrs.
An inquiry into the dynamics of culture through a study of selected theories of cultural change and their application to empirical situations such as the rise of complex civilizations and the reactions of non-Western societies to contact with the West.

537 Political Anthropology 3 hrs.
Theoretical and descriptive analysis of the political aspect of social organization, ranging from primitive complex societies; the relationship of politics to technological development, habitat, symbolic systems and other aspects of social organization.

538 Legal Anthropology 3 hrs.
A study of law through the theory and method of comparative legal dynamics. The relation of law to the whole of culture; the function of law as revealed in the comparative study of societies ranging from simple to complex.

539 Economic Anthropology 3 hrs.
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 3 hrs.
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: 100 or 220 or consent of instructor.

545 Topics in Ethnology 3 hrs.
An intensive study of the cultures of an area of the world (e.g.
Japan, Philippines, Caribbean, East Africa) or of selected problems (e.g. kinship systems, millenarian movements). Topic will be announced each semester. (May be repeated for credit.)

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. 220.

550 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.

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 Drawing 3 hrs.
Continuation of Art 410.

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 1, 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
The fundamentals and procedures of graphic design for sequential, three-dimensional, and serial forms. Problems in design continuity and coordination are explored through editorial, corporate identity, campaign, product, and packaging design. Incorporates investigation of graphic processes and papers. Prerequisite: Graphic Design 445.

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
Selected topics from the art and architecture of ancient Egypt, the ancient Near East, the Aegean proto-Greek, Classical and Hellenistic Greece, Etruria and Rome to the Early Christian period. Prerequisite: Art 220 for Art majors and 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, Titan, 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
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. Repeatable for credit.
659 Advanced Art Education 3 hrs.

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, Buthala, Duncan, Dulin, Hinds, Steen, VanderBeek, Van Deventer; Associate Professors Brewer, Engemann, Erickson, Friedman, Holt, Inselberg, Josten, Lawrence, Pippen, Schultz, Sud and Wood; Assistant Professors: Eisenberg, Ficsor, Fowler

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. Prerequisites: 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 or 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 3 hrs.
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, evolutionary 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 relationships 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 important compounds. Prerequisites: 12 hours of biology; one year of chemistry.

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: 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: At least 12 hours of biology or consent of instructor.
529 Biology of Vascular Plants

A detailed study of the morphology, life cycles, and evolution of vascular plants. Individual research required. Prerequisite: at least 12 hours of biology or consent of instructor.

530 Conservation Education

Survey of the whole field of conservation through lecture, laboratory, library, and field experience. Consideration will be given to ways of including conservation in the elementary and secondary curricula. Students will have contact with personnel of local, state, and federal conservation agencies. Designed primarily for teachers in service. Will not be counted for Biology major or minor. Prerequisite: Consent of instructor.

538 Field Natural History

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. Prerequisite: At least 12 hours of biology or consent of instructor.

541 Invertebrate Zoology

A study of the anatomy, physiology, embryology, and life history of representatives of the major groups of invertebrate animals. Prerequisite: at least 12 hrs. of biology or consent of instructor.

542 Entomology

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

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

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

A study of the microscopic structure of tissues and organs. Prerequisite: Biology 210 or equivalent.

547 Ornithology

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: At least 12 hours of biology or consent of instructor.

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.

556 Immunology 3 hrs.
A study of the biological and biochemical mechanisms of the immune response and the chemical nature of antibodies, antigens and their interaction. Prerequisite: Biology 412.

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. Prerequisites: 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 Holkeboer; Associate Professors Anderson, Berndt, Cooke, Foote, Harmon, Howell, Lowry, Nagler and Stenesh; Assistant Professors Brown, Houser, Kanaan, Kanamueller, McCarville and Steinhaus
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 literature searches in analytical, inorganic, biological, organic and physical chemistry fields. Prerequisite: 24 hours of chemistry.

510 Inorganic Chemistry 4 hrs.
The course includes descriptive and theoretical inorganic chemistry as well as preparation of different types of inorganic compounds. Prerequisite or corequisite: 531.

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 or corequisite: 531.

530 Physical Chemistry 4 hrs.
Lectures and laboratory work in kinetic theories of gases, liquids, solids, thermodynamics, phase rule, equilibrium, solutions, etc. Prerequisites: 120, Physics 210 and 211 and Math. 222. Prerequisite or corequisite: 222 may not be used as credit on graduate programs in chemistry.
531 Physical Chemistry 4 hrs.
Lecture and laboratory studies of kinetics, electrochemistry, quantum theory, spectroscopy, surface chemistry, macromolecules and crystal chemistry, etc. Prerequisite: 530. May not be used as credit on graduate programs in chemistry.

536 Special Topics in Physical Chemistry 4 hrs.
The fundamentals of thermochemistry, thermodynamics, 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.)

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.
Photosynthesis, chemistry of respiration, membrane transport, metabolic regulatory mechanisms and biochemical energetics. Prerequisites: 551 or 553 and 530.

560 Qualitative Organic Analysis 3 hrs.
A course in the spectroscopic and chemical methods of identification of organic compounds in the pure state and in mixtures which has as a secondary goal 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 or 363.

580 History of Chemical Theory 2 hrs.
This course is taught from the point of view of the history of chemical theory in which the evidence for the theories is critically presented. Prerequisite: 16 hours of chemistry including at least one semester organic.

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, biological, inorganic, or physical chemistry. Prerequisites: 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 590. 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. Prerequisite: 531.

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: 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 or 611.

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 3 hrs.
A comprehensive treatment of those instrumental techniques which
are based upon either the emission or absorption of energy by matter.
Emission spectroscopy; Raman spectroscopy; mass spectrometry; 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 3 hrs.
The theory and application of electrochemical measurements are
discussed with particular emphasis on the theoretical aspects of polarog-
raphy, potentiometry, amperometry, conductometric titrations, and other
selected topics. Prerequisite: 520.

626 Chemical Instrumentation 3 hrs.
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 Topics in Analytical Chemistry 3 hrs.
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 Chem-
istry. Prerequisite: 3 hours of 400-level analytical courses.

630 Advanced Physical Chemistry 3 hrs.
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 3 hrs.
Includes a review of the three laws of thermodynamics, state func-
tions, activities, partial molal quantities, thermodynamics of solutions,
equilibrium and statistical thermodynamics. Prerequisite: 531.

635 Chemical Kinetics 3 hrs.
Measurement of reaction rates, reaction rate theory, mechanisms of
elementary processes, reactions in solution and on surfaces, complex
reactions, application of kinetics to mechanisms, and photochemistry.
Prerequisite: 531.

636 Spectroscopy and Molecular Structure 3 hrs.
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 ro-
tational 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 is 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. Prerequisite: 531.

650 Proteins and Nucleic 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 purification 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: 553.

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. The following types are considered: aliphatic substitution, oxidation, reduction, condensation, etc. Prerequisite: 361 or 363.

662 Stereochemistry 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 Mechanisms in Organic Chemistry 3 hrs.

Free radical, ionic and multicenter reaction types are considered.
The influence of structure and media on reactivity is included. Prerequisites: 361 or 363 and 531.

669 *Topics in Organic Chemistry* 3 hrs.

The course content will vary with needs of students and special competency of instructor. Prerequisite: 661 or 662 or 663 or consent of instructor.

### Economics

**Bowers, Head; Professors Carlson, Copps, Junker, Ross and Zelder; Associate Professors Beinhauer, Bradley, Gardner, Ho, Sichel and Wend; Assistant Professors Kripalani, Prodromidis and Saylor**

501 *Studies in Economic Theory* 3 hrs.

Study and research on various major economic theories, schools of thought, and theorists. Different topics will be considered from semester to semester and will be announced in advance. Students may repeat the course for additional credit. Prerequisites: Economics 201 and 202.

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. Prerequisites: Economics 201 and 202.

504 *Introduction to Mathematical Economics* 3 hrs.

This is an introductory course to acquaint the student with the application of the basic mathematical concepts and operations to economic analysis, including such topics as: revenue curves, cost curves, capital assets, and multipliers and accelerators. Prerequisites: Econ. 201 and 202; Math 122 or consent of instructor.

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. Prerequisites: Econ. 201 and 202.
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. Prerequisites: Econ. 201 and 202 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, influencing 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. Prerequisites: Econ. 201 and 202.

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: Econ. 201 and 202; 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. Prerequisites: Econ. 201 and 202.

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 workers 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. Prerequisites: Econ. 201 and 202.

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. Prerequisites: Econ. 201 and 202.

526 The Urban Economy 3 hrs.
The course will examine the economic structure and development of the urban complex. Among the topics to be considered are: the process of suburbanization, urban sprawl and urban blight, the pricing and production of public utilities in the local economy, economies of scale and the size of the urban area, the place of planning, the impact of public services and the tax structure on the location of economic activity, intergovernmental economic relationships. Prerequisites: Econ. 201 and 202.

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. Prerequisites: Econ. 201 and 202 or Economics of Consumption.

542 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 regulation, and to provide an analysis and evaluation of the various laws from the viewpoint of encouragement, subsidization and control. Special attention will be directed to certain aspects of concentration of economic power, public ownership and nationalization programs. Prerequisites: Econ. 201 and 202. 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. Prerequisite: Econ. 380 or consent of instructor.

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 production, investment, labor, consumption, monetary flows, prices and macroeconomic balances.

584 Comparative Economic Systems  
The economic institutions and conditions of capitalism, socialism, communism, fascism and the cooperative movement are critically examined as to ideology and actual operation. Prerequisites: Econ. 201 and 202.

585 The Economics of Sub-Saharan Africa  
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: Econ. 201 and 202.

586 The Economics of the Soviet Union and Eastern Europe  
A study of Soviet and East European planning practices including an examination of the development in commerce, agriculture and industry in these areas. Also trade among the several East bloc nations will be covered. Prerequisites: Econ. 201 and 202.

587 Studies in Asian Economics  
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  
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. Prerequisites: Econ. 201 and 202.

590 Contemporary Communism—A Survey  
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  
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.

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 Econ. 201 and 202.

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. Prerequisites: Econ. 201 and 202.

628 Applied Economics for Teachers 2 hrs.

Designed as a modern aid to in-service 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.

650 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. Prerequisites: Econ. 201 and 202.

680 Problems in International Trade and Finance 3 hrs.

An analytical understanding of contemporary issues in international trade and finance will be emphasized. Prerequisite: Econ. 380 or 580 or consent.

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. Prerequisites: Econ. 201 and 202.

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English

Sadler, Chairman; Professors Callan, Denenfeld, Galligan, Holaday, Limpus, Macrorie, Malmstrom, Miller, Nelson, Rogers and Woods; Associate Professors Bahlke, N. Carlson, W. Combs, Davis, Gianakaris, C. Goldfarb, R. Goldfarb, Phillips, Shafer, K. Smith, Stroupe; Assistant Professors Davidson, Falk, Gingerich, Hinkel, LaRue, Small, Stallman

Open to Graduates and Upperclassmen

519 Studies of Non-Western Literatures in Translation 4 hrs.
Studies in Indian, and other non-western literatures.

522 Topics in American Literary History 4 hrs.
Study of a movement, genre, period or theme. Prerequisite: Two literature courses.

529 Medieval English Literature 4 hrs.
Readings in Old and Middle English literature, excluding Chaucer. Prerequisite: 110.

530 Medieval Continental Literature in English Translation 4 hrs.
Readings, in English translation, in medieval European literature exclusive of England. Prerequisite: 110.

531 Chaucer 4 hrs.
Readings in Chaucer, with emphasis on Troilus and Criseyde and The Canterbury Tales. Prerequisite: 110.

532 Sixteenth Century Literature 4 hrs.
Selections from major works in both prose and verse, by such writers as Wyatt, More, Sidney, and Spenser. Prerequisite: 110.

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: 110.

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.
Reading's emphasizing Carlyle, Mill, Dickens, Thackeray, Tennyson, Browning, and Arnold. Prerequisites: two literature courses.

538 Modern Literature 4 hrs.
Reading's in major authors of the 20th century with some attention to their precursors. Prerequisite: 110.

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: 110.

554 Milton 4 hrs.
An intensive study of Milton's major poems, correlated with significant modern criticism. Prerequisites: two literature courses.

555 Studies in Major Writers 4 hrs.
Study of the works of a major writer. Prerequisites: 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 2-1 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.
611 Studies in Modern Poetry 3 hrs.
An intensive study of the writings of several modern poets. Prerequisite: a minor in English.

612 Studies in Drama 3 hrs.
Selected areas of drama from classical times to the present. Prerequisite: a minor in English.

614 The Novel: Form and Technique 3 hrs.
An examination of significant forms and techniques employed in the novel from its prototypes through its more recent development. Prerequisite: a minor in English.

615 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.

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 3 hrs.
A study of the major critical treatises. Prerequisite: a minor in English.

676 Early English 3 hrs.
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 3 hrs.
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 3 hrs.
A consideration of the philosophies underlying various courses in freshman English and of methods suited to teaching the communication skills.
Geography

Jackman, Chairman; Professors Helburn, Horst, Kirchherr and Vuicich; Associate Professors Eichenlaub, Erhart, Heller, Moore and Raup; Assistant Professor Dickason

COURSES IN SYSTEMATIC GEOGRAPHY

Open to Graduates and Upperclassmen

540  Political Geography  3 hrs.

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  3 hrs.

In contrast to the principles and concepts treated in Geography 540, this course takes up the applications of political geography to world power relationships; analyzes the components of national power in their physical and cultural relationships; concepts of autarky, national determinism, possibilism, and supra-nationalism will be studied.

543  Cultural Geography  3 hrs.

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  3 hrs.

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. Prerequisite: Geography 244 or consent.

545  Manufacturing Geography  3 hrs.

Studies in the specific location and general distribution of selected industries with particular consideration being given to the interplay of technological, economic, and political elements affecting spatial patterns of industry. Both the traditional and current theoretical approaches to geographic investigation of industries will be critically examined. Prerequisite: Geography 244 or consent.

546  Transportation Geography  3 hrs.

Study of the space-adjusting industries which link global production and consumption. Emphasis is placed upon (1) historical evolution of transport systems in developed nations, (2) problems focusing upon the creation of effective transport systems in the underdeveloped world,
(3) the role of transportation in location theory, (4) theory and technique in transport analysis, (5) the urban transportation problem—structure and alternatives, and (6) competitive and complementary characteristics of transport modes under differing political systems. Prerequisite: Geography 244 or consent.

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 urbanization, (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 research. 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 student will explore some aspect of the field in depth. Prerequisites: Geography 621 and 622, or consent.

621 Studies in Climatology and Meteorology 3 hrs.
Studies at an advanced level in climatology and meteorology. Examination 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 atmospheric circulation. Prerequisites: 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 241 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, neomercantilism 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.

650 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 economies, and sectional identities in North America.

550 Studies in Historical Geography 3 hrs.

Studies of geographic and related features which have combined to influence the course of historical development. This course will concentrate on a particular region and/or period of time during each semester in which it is offered. Each specialization will be designated in the class schedule.

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, or the Northlands. Regional concentration will vary from semester to semester, with the region being indicated at time of enrollment. Prerequisite: An appropriate introductory regional course at either the undergraduate or graduate level.

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, Northlands, 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. Prerequisite: An appropriate introductory regional course at either the undergraduate or graduate level.

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.

164
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 communication 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 4 hrs.
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) 3 hrs.
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) 3 hrs.
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) 3 hrs.
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 (Phy. Sci. Credit) 3 hrs.
The student will acquire proficiency in the fundamental techniques and skills of photogrammetry and photointerpretation during the first
part of the course. The remainder of the semester will be spent in interpreting photos dealing with such topics as geomorphology, archaeology, vegetation and soils, water 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.

665 Seminar in Geographic Education 3 hrs.

Designed for the advanced student interested in analyzing problems related to the teaching of geography. Prerequisite: Consent of instructor.

Geology

Schmaltz, Head; Associate Professors Davis, Kuenzi, McGeehee; Assistant Professor Straw

Open to Graduates and Upperclassmen

502 Special Problems in Earth Science 2-1 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.

531 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. Prerequisites: Geology 231 and consent.

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. Prerequisites: 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. Prerequisites: 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 2-4 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. Not to be used as credit for Earth Science M.A. or Teaching of Science M.A.

634 Research in Geology 1-4 hrs.
Advanced readings or research in an area to be selected after consultation with a supervising staff member. May be repeated for credit (for no more than a total of 6 hours).

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 Beech, Brown, Brunhumer, Castel, Dunbar, Elsasser, Hamner, Maier, Mange, Mowen and Sommerfeldt; Associate Professors Cordier, Gregory, Hahn, Hawks, Nahm, Nodel and Schmitt; Assistant Professors Carlson and Tao; Instructor Davis.

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 U.S. Constitutional History 3 hrs.
The development of constitutional theory and practice, with emphasis on the establishment of the governmental system, federal-state relations, federal regulation of the economy, and constitutional issues involving civil and human 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.

519 United States Military History 3 hrs.
A study of the development of American military policy and strategy. Military affairs will be examined within the broad context of social, economic, technological, political and intellectual factors. The role and influence of the military establishment in both peace and war will be analyzed.

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  
The causes, character, and consequences of the American Revolution.

522 The Early National Period, 1789-1814  
The establishment of the national government; political, social, and cultural development; Jacksonian democracy; westward expansion.

524 The Civil War and Reconstruction  
Causes and course of the Civil War; its significance and aftermath.

525 Recent United States History, 1877-1914  
Recent American history from the end of the Reconstruction period to the start of the First World War, with major emphasis on industrialization and its impact on society, overseas expansion and the Progressive movement. (History 532—Reconstruction to Great Depression, 1877-1929, 4 hours)

526 Recent United States History, 1914-1940  
Recent American history from the beginning of the First World War to the end of the New Deal, with emphasis on the war, 1920's, the Great Depression and the New Deal.

527 Recent United States History since 1940  
Recent American History from the beginning of the Second World War to the present, including such topics as the background to the war, American participation in the war and its impact on society, and recent foreign and domestic problems. (History 533—Recent U. S. History, 1929 to the present, 4 hours)

534 Medieval France  
History of medieval France from the Germanic invasions and settlement through the 15th Century, including the study of such topics as the Monarchy, rural and urban economic development, social classes, the church and French culture.

C. HISTORY OF EUROPEAN NATIONS

535 Medieval England  
English history from the 5th to the 15th centuries, with emphasis on governmental, religious, economic, and social institutions.

536 Tudor-Stuart England  
The history of England during the reigns of the Tudors and the Stuarts, 1485-1714.

537 Hanoverian England  
Britain during the reigns of the Hanoverian kings, 1714-1837.

538 Victorian England  
The character of Victorian England and its impact on the world.
539 Twentieth Century Britain  
British development since 1900 and the changing character of the Empire and Commonwealth.

540 Social and Cultural History of Tsarist Russia  
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  
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 the U.S.S.R.  
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.  
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  
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  
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  
A survey of man's endeavors in politics, thought, art and literature in Renaissance Europe.

555 The Reformation  
The break-up of the medieval church and its significance.

557 Seventeenth-Century Europe  
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  
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 emergency of new states; the growth of nationalism and liberalism.

562 Europe, 1914-1945 3 hrs.
The origins and nature of World War 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: Argentina, Paraguay, Uruguay 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 3 hrs.
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 3 hrs.
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 3 hrs.
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 3 hrs.
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 3 hrs.
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 Early African History 3 hrs.
The history of Africa from earliest times until the emergence of the slave trade as the dominant factor in African relations with the rest of the world.

588 Recent African History 3 hrs.
The history of Africa from the period when the slave trade became the dominant factor in African relations with the rest of the world until the successful imposition of colonial rule upon most of the continent. Brief examination of the interaction of traditional elements and colonialism and the resulting character of Africa during colonial, nationalist and independent periods.

II. GENERAL COURSES

592 The Literature of History 2 hrs.
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 2 hrs.
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 3 hrs.
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.

595 History of War since 1600 3 hrs.
An examination of the evolution of war in the modern era, the role of power, force and conflict in international relations, and the development of warfare in Asia, Europe and the Middle East.
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's individualized courses 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.
688 African History Studies 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.)
Seminar in Early American History 3 hrs.
Seminar in Recent American History 3 hrs.
Seminar in Ancient and Medieval History 3 hrs.
Seminar in Early Modern European History 3 hrs.
Seminar in Recent European History 3 hrs.
Seminar in Russo-Soviet History 3 hrs.
Seminar in Far East History 3 hrs.
Seminar in African 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

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 teaching 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.

CRITICAL LANGUAGES

505  Basic Critical Languages 4 hrs.
Independent learning, at the basic stage, of a spoken “critical” language by utilizing programmed laboratory resources under the supervision of a linguist. Prerequisite: Permission of Instructor.

506  Intermediate Critical Languages 4 hrs.
Independent learning, at the intermediate stage, of a spoken “critical” language by utilizing programmed laboratory resources under the supervision of a linguist. Prerequisites: 505 and Permission of Instructor.

507  Advanced Critical Languages 4 hrs.
Independent learning, at the advanced stage, of a spoken “critical” language by utilizing programmed laboratory resources under the supervision of a linguist. Prerequisites: 506 and Permission of Instructor.

508  Reading Critical Languages 4 hrs.
Independent reading of “critical” Language materials in the standard script by utilizing programmed materials under the supervision of a linguist. Prerequisites: 505 and Permission of Instructor.

509  Writing Critical Languages 4 hrs.
Independent study of writing a “critical” language in the standard script by utilizing programmed materials under the supervision of a linguist. Prerequisites: 505 and Permission of Instructor.

FRENCH

Open to Graduates and Upperclassmen

French 544  Seminar 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. GPA of 3.0 in major.
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. Thus, 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, préciosité, Descartes, beginnings of classical drama, and Corneille. Also, Classic period: significant works from the beginning of the reign of Louis XIV to his death.

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.

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French 601   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. Prerequisites: 316 or 317, and 326 or 327.

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. Prerequisite: one course at 500 level, preferably among 528, 529 and 560.

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 "300" level German or above.

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 327 or equivalent. Representative topics which may be treated in this area include:

The Novelle—Survey of the development with representatives 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.*

**German 601 Faust** 3 hrs.
*Goethes Faust.* Significant selections from parts I and II of the poem.

**German 620 Seminar** 2-4 hrs.
*Ausgewählte Gegenstände aus dem Gebiete der Germanistik.* Topic to be selected from a German literary or linguistic area.

**German 610 Basic Middle High German** 3 hrs.
*Einführung in die mittelhochdeutsche Sprache.* Introduction to MHG language and literature.

**German 611 Middle High German Literature** 3 hrs.
*Die mittelhochdeutsche Dichtung.* Literary selections. Prerequisite: German 610 or equivalent.

**LATIN**

**Open to Underclassmen and Graduate Students and Others by Permission of the Instructor**

**Latin 552 Latin Writing** 3 hrs.
Practice in the fundamentals of correct expression. Required for Latin majors. Prerequisite: Latin 326 or 327 or equivalent.

**Latin 557 Teaching of Latin** 3 hrs.
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 *Elegyces* and *Georgyces* 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

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

Readings and analysis of selected plays of Aeschylus, Sophocles, Euypides, and Aristophanes as dramas and as expressions of the Greek view of life. Some attention to Roman drama.

Latin 601 Roman Novel

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

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

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.

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 Ibañez.

The Romantic Movement.

Generation of '98—Thought and works of typical representatives as Unamuno, Ortega y Gasset, and Azorín.

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**

2-1 hrs.

Topic to be selected from a Hispanic literary or linguistic area.
Linguistics

Palmatier, Chairman; Assistant Professors Dwarikesh and Hendriksen

GENERAL LINGUISTICS COURSES

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.

510 Teaching English as a Foreign Language 4 hrs.
Study of the application of linguistics to the teaching of English to non-native speakers, with emphasis on current methods and materials for instruction and testing.

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.

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.

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: Linguistics 500 or equivalent. May be repeated for credit.

575 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). 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: Consent of instructor.

CRITICAL LANGUAGES COURSES

(See Department of Modern and Classical Languages for course descriptions.)

505 Basic Critical Languages 4 hrs.
506 Intermediate Critical Languages 4 hrs.
507 Advanced Critical Languages 4 hrs.
508 Reading Critical Languages 4 hrs.
509 Writing Critical Languages 4 hrs.

Mathematics

Clarke, Head; Professors Alavi, Hannon, Leja, McCully, Mrowka, Powell, Rothe and Seber; Associate Professors Chartrand, Gioia, Goldsmith, Hsieh, Lick, Meager, Petro, Schreiner, Stodart, Turner and Yang; Assistant Professors Blefko, Kapoor, Latil, Seivers and Stoline.

Open to Graduates and Upperclassmen

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 3 hrs.

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 332.

530 Linear Algebra
Finite dimensional vector spaces over a field, linear transformations, determinants, normal forms of matrices, quadratic forms. Prerequisite: Math 333.

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 332 (Math 333 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 332.

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 332 or equivalent.

561 Mathematical Statistics
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 1 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 Advanced Calculus I 3 hrs.
Elementary analysis on the real line: Bound properties of real numbers, convergence of sequences and series; continuous functions, differentiable functions, mean value properties; Riemann integration. Prerequisite: Math 332.

571 Advanced Calculus II 3 hrs.
Methods of calculus beyond those of Math I-IV; calculus of several variables, implicit functions, maxima and minima; line and surface integrals, vector differential calculus, Stokes' Theorem. Prerequisite: Math 570 (530 recommended).

572 Mathematical Analysis 3 hrs.
The real number system. Elementary topology and differentiation in Euclidean spaces. Uniform convergence. Prerequisite: Math 570 or consent of advisor.

574 Introduction to Ordinary Differential Equations 3 hrs.
Methods of solution, linear differential equations, ordinary and singular points, series solutions, Bessel and Legendre functions, boundary value problems, systems of equations, non-linear equations. Prerequisite: Math 223.

575 Introduction to Partial Differential Equations 3 hrs.
Quasi-linear equations of the first order, linear and quasi-linear equations of the second order, separation of variables, and Fourier series; solutions of Laplace equation and wave equation, as examples of elliptic, parabolic, and hyperbolic equations. Prerequisite: Math 574 or consent of instructor.

576 Introduction to Complex Analysis 3 hrs.
Complex numbers, elementary functions, differentiation of complex functions, integration, series, residue theory, conformal mappings. Prerequisite: Math 223.

580 Number Theory 3 hrs.
Diophantine equations, congruences, quadratic residues, and properties of number theoretic functions. Prerequisite: Math 332.

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 574 and 575. Prerequisites: Math 574; 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. Prerequisites: Math 574; 576 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 Set Theory and General Topology 3 hrs.
Sets, relations, functions, cardinal and ordinal numbers; topological spaces, continuous functions, compactness, product spaces, quotient spaces, connectedness, metric spaces, paracompact spaces. Prerequisite: Math 572.

621 Algebraic Topology 3 hrs.
Topics will include: Simplicial complexes, homology, and cohomology theories including singular homology theory. Prerequisite: Math 620.

623 Point Set Topology 3 hrs.
Complete metric spaces, local connectedness, Hahn-Mazurkiewicz theorem, continuum theory, fixed point theorems, dimension 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  
A general study of groups, rings, and modules. A specific study of finite groups, polynomial rings, and Euclidean domains. Prerequisite: Math 530.

631 Abstract Algebra II  
A continuation of 630. Homomorphisms of modules, structure of rings, and multilinear algebra. Prerequisite: Math 630.

632 Field Theory  
Algebraic and transcendental extensions of fields, Galois theory, and valued fields. Prerequisite: Math 630.

636 Homological Algebra I  
This course and Math 667 constitute a two semester study of homological algebra. Topics discussed include modules, homology of complexes, extensions and resolutions, categories and functors, adjoint functors, derived functors, and special sequences. Prerequisite: Math 631.

637 Homological Algebra II  
A continuation of Math 636. Prerequisite: 636.

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. Prerequisite: 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; nonparametric models; applications. Prerequisites: Math 562 or 561 and preferably some elementary matrix theory.

663 Sampling Theory and Applied Statistics 2-4 hrs.
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 3 hrs.
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 3 hrs.
Discrete and continuous Markov processes; transition and rate matrices; Chapman-Kolmogorov equations; Kolmogorov systems; transient and limiting behavior; examples and illustrations: random walks, birth-and-death processes, etc.; stationary processes. Prerequisites: Math 530, 560 and 572 (670 recommended).

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.

674 Theory of Ordinary Differential Equations 3 hrs.
Systems of equations, existence and uniqueness of solutions, analyticity with respect to parameters and initial conditions, linear differential equations, isolated singularities, asymptotic solution at infinity, stability. Prerequisites: Math 530, 574 (576 or 676 recommended).

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.

689 Studies in Number Theory 3 hrs.
Advanced work organized around topics related to the field of study indicated in the title. Students may take this course more than once.

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 1-3 hrs.
693 Seminar in Algebra 1-3 hrs.
694 Seminar in Geometry 1-3 hrs.
696 Seminar in Probability and Statistics 1-3 hrs.
697 Seminar in Analysis 1-3 hrs.
698 Journal Seminar 2 hrs.
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.

699 Reading and Research 1-6 hrs.
The following courses are primarily for teachers and ordinarily will not apply towards the M.A. in Mathematics.

610 Concepts of Mathematics 4 hrs.
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 4 hrs.
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 4 hrs.

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 4 hrs.

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 4 hrs.

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 4 hrs.

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 4 hrs.

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, Beloof, Carter, Matthews, Meretta and Stulberg; Associate Professors Faustman, Fink, Hardie, Lloyd, Osborne and Work; Assistant Professors Boucher, Heiles and Ryan

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.
541 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 (Vocal) 2 hrs.
Modal counterpoint as exemplified by the composers of the sixteenth century. Practical application through the writing of two-, three-, and four-part motets and madrigals. Prerequisite: 261 with a grade of C or better.

561 Counterpoint (Instrumental) 2 hrs.
Harmonic counterpoint as exemplified by the composers of the seventeenth and eighteenth centuries. Practical application through the writing of inventions, fugues, choral preludes, etc. Prerequisite: 261 with a grade of C or better.

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 combination of choirs, and for full orchestra. Prerequisite: 366.

568 Orchestration 2 hrs.
A continuation of 567.

570 Introduction to Musicology 3 hrs.
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.

571 Introduction to Musicology 3 hrs.
A continuation of 570.

572 Baroque Music (1600-1750) 2 hrs.
A survey of the choral and instrumental music of the Baroque masters such as J. S. Bach and G. F. Handel. Special attention to the development of style from monody through harmonic polyphony. Prerequisite: 370-371.
573 Classical Music (1750-1800) 2 hrs.
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.

574 Romantic Music (1800-1910) 2 hrs.
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.

575 Musicology and Research 3 hrs.
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.

576 Musicology and Research 3 hrs.
A continuation of 575.

591 Piano Pedagogy 2 hrs.
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.

598 Readings in Music 2 hrs.
Graduate students may enroll in this course after consultation with the graduate adviser.

Open to Graduates Only

617 Opera Workshop 2 hrs.
A production experience in the acting, singing, accompanying, and producing of musical theatre. The class is offered each semester and culminates in the performance of an opera or operatic scenes. Open to advanced singers, pianists, and persons interested in production techniques. Admission is by personal interview with the instructor.

Topics will be chosen from the following: Eighteenth Century, Nineteenth Century, Twentieth Century, and selected Chamber Literature. The course may be repeated for credit. Prerequisite: Admission to the Applied String curriculum or permission of the instructor.

640 Band Techniques and Organization 2 hrs.

641 Choral Techniques and Organization 2 hrs.
The study of choral activities in relation to organization, repertoire,
style, diction, singing technique, balance, blend, tone quality, phrasing, rehearsal technique, and conducting.

642 Philosophy and History of Music Education 2 hrs.
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.

650 Seminar in Music Education 2 hrs.
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.

658 Techniques of Research in Music Education 2 hrs.
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.

659 The Teaching of Applied Music (on demand) 2 hrs.
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.

660 The Teaching of Theory (on demand) 2 hrs.
Analysis of various techniques, philosophies, and materials used in teaching theory and their relative strengths and weaknesses. Application of what we know about the learning processes to theory and the practical application of theory to all musical study.

665 Band Arranging 2 hrs.
Instruction in scoring for small wind instrument ensembles and the band. Opportunity will be provided to hear the results of each student’s work.

672 Medieval and Renaissance Music 2 hrs.
Music of Western Europe from Gregorian Chant through sixteenth century polyphony.

673 Contemporary Music 2 hrs.
A survey of trends in European music and music of the Americas from about 1910 to the present day.

690 Graduate Recital 2 hrs.
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 2 hrs.

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 1-4 hrs.

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 1-2 hrs.

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

Open to Graduates and Upperclassmen

500 Seminar in Medieval Philosophy 4 hrs.

Medieval philosophical thought from Augustine to Ockham.

501 Seminar in History of Philosophy 4 hrs.

Topic to be announced. The topic selected may be either the concentrated study of an individual philosopher, or an identifiable philosophical 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 Bernstein, Derby, Kruglak, Nichols, and Zietlow; Associate Professors Carley, Dotson, DeWitt, Hardie, Kaul, Miller, Oppliger, Shamu, and Soga; Assistant Professors Herman 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 theorems of Stokes and Gauss are emphasized and Maxwell's equations are developed. Prerequisites: Physics 212, Math IV.

541 Electricity and Magnetism II 3 hrs.
This course is a continuation of 540 and is an elective for majors wishing advanced work in field theory. Maxwell's Equations and their applications to topics such as time-dependent fields, wave guides, and radiation will form the principal topics of the course. Prerequisite: Physics 540.
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, Math IV concurrently or consent of instructor.

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 1-4 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

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 Schroedinger-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.
623 Quantum Mechanics II 3 hrs.
This course is a continuation of 622. It employs state-vector formulation to study several problems of general interest such as time-dependent perturbation theory, systems of identical particles, and introductory relativistic quantum mechanics. Prerequisite: Physics 622.

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 Kaufman, Kim, Isaak, Klein, McAnaw, Ritchie and Ziring; Assistant Professors Dahlberg, Lewis, Rogers, Rossi and Wolpe

NOTE: Most seminars and 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 POLITICAL SYSTEM

501 Making of Public Policy in the U.S. 3 hrs.
A study of the formation of public policy at the local, state, and national levels with emphasis on the impact of decision processes upon policy outcomes.
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 and studies designed to understand or solve such problems. Topics will vary from semester to semester and students may repeat the course.

512 Legislative Process 3 hrs.
A study of the politics of legislative bodies. Attention is given to theories and practice of legislative behavior, representative systems, and democratic procedures in law making. The role of political parties and interest groups is emphasized. The executive, the bureaucracy and the courts are studied as influences on the development of public policy. Prerequisite: 310.

520 Constitutional Law 3 hrs.
Study of leading American constitutional principles as they have evolved through major decisions of the U.S. Supreme Court. Emphasis on judicial review, federalism, separation of powers, commerce and taxation.

522 Civil Liberties and Civil Rights 3 hrs.
Study of freedom of expression, religious liberty, rights of defendants, protection against discrimination. The social, political and legal frameworks of liberty are considered.

524 Judicial Behavior 3 hrs.
Role of the judiciary as policy maker. Study of judicial behavior and decision making processes utilizing modern research tools for analysis.

526 Administrative Law and Public Regulation 3 hrs.
A study of the requirements for, and the limits on, the exercise of administrative powers by public officials charged with regulating significant aspects of the social and economic life of the nation. Special attention is paid to the extent of governmental regulation and the means of safeguarding individual rights through fair administrative procedures and judicial control over administrative determination. Prerequisite: 200 or a course in Economics.

530 Problems in Public Administration 3 or 4 hrs.
Consideration of issues and problems of current interest in the field of public administration. The course is intended to provide advanced work for undergraduates and to serve as an introduction to the field for graduate students without previous training in public administration.

532 The Bureaucracy 3 hrs.
An analysis of the role of public bureaucracies in the decision process of government.

200
531 Administrative Theory 3 hrs.
A study of descriptive theories of organizational and administrative behavior relevant to governmental administrative agencies. Theories of complex formal organizations, decisional theories and systems theories will be analyzed.

600 Seminar: National Politics 3 hrs.
Research and study in selected topics in National politics. Topics will vary from semester to semester and students may repeat the course.

601 Seminar: State Politics 3 hrs.
Research and study of selected topics in state politics. Topics will vary from semester to semester and students may repeat the course.

602 Seminar: Urban Politics 3 hrs.
Examination of the literature on American urban politics and application of this literature to the development or refinement of some theories of community political behavior. The city will be used as a laboratory for the advancement of theoretical and empirical knowledge of politics.

620 Seminar: Public Law 3 hrs.
Study and research of major topics of interest in constitutional law, civil liberties or administrative law. Topics will vary from semester to semester and students may repeat the course.

622 Seminar: The Judiciary 3 hrs.
Study and research of major topics of interest in the judicial process, judicial behavior, decision making and judicial systems. Topics will vary from semester to semester and students may repeat the course.

630 Seminar: Public Administration 3 hrs.
Study and research of selected major topics in public administration. Independent reports will be made. Subject matter will vary and the course may be repeated.

FOREIGN AND COMPARATIVE POLITICAL SYSTEMS

540 Western Democratic Systems 3 hrs.
A comparative study of the established democracies of North America, Western Europe, and older Commonwealth states. Examines the conflict in western democracies between traditional ideology, structures, procedures and contemporary conditions. Analyzes comparatively and theoretically the constitutional and political party systems, political culture and behavior.

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.
543 Politics and Institutions of South Asia 3 hrs.

Twentieth century experiments in Asian democracy are analyzed in India and Pakistan. Consideration is given to historical origins and contemporary problems. Particular emphasis is on the dynamics of the political process, the place and nature of ideologies, patterns of leadership, the quest and adaptability of political parties, the quantitative and qualitative aspects of articulate interests, the limits of political communication, methods of decision-making the implementation of rules and the available devices for conflict resolution. Prerequisite: 342.

544 The Military and Political Systems 3 hrs.

Old states as well as new ones are confronted with problems of a military nature which have an important bearing on the operation and development of their respective political systems. This course is designed to study the role of the military in advanced and less developed countries. Attempts will be made to identify the advantages and disadvantages, the strength and weaknesses of the military nexus. Organized as a pro-seminar. Prerequisite: Course in 340 series.

545 Theories of Political Development 3 hrs.

Examines various theories of political development and analyzes their relevance to both underdeveloped and modernized states. Considers such problems as national integration, political socialization and communication. Organized as a pro-seminar. Prerequisite: Course in 340 series.

546 Governments of the Soviet Union and Eastern Europe 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 social and economic bases of the current system are stressed. Prerequisite: Junior standing.

547 Political Modernization of Japan and Korea 3 hrs.

Intensive analysis of the political systems of Japan and Korea with developmental perspective. Their different political styles will be compared. Their different rates of development will be compared in terms of performance of the various political functions. Prerequisite: 342.

548 Asian Communism 3 hrs.

Compares several communist states and communist parties in non-communist states of Asia in terms of their ideologies, revolutionary tactics, goals and achievements. Organized as a pro-seminar. Prerequisite: 342 or equivalent.

549 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.

202
610 Seminar: Foreign Political Systems 3 hrs.
Study and research on major topics dealing with the political systems of selected countries. Independent research and seminar presentations for each student are stressed. The country to be studied may be located in Europe, Asia, Africa or Latin America, and will be announced each semester. May be repeated.

612 Seminar: Cross-National Political Analysis 3 hrs.
Cross-National study and research on major topics of comparative interest. Independent research and seminar presentations for each student are stressed. The topic to be studied will be announced each semester. May be repeated. Prerequisite: Any course in 340 or 540 series or equivalent.

614 Seminar: Political Modernization 3 hrs.
Focusing on the developing areas and using an interdisciplinary approach, the process of political modernization is examined in selected countries or topically on a cross-national basis. The topic to be studied will be announced each semester. Each student will conduct independent research.

INTERNATIONAL RELATIONS

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.

553 United Nations 3 hrs.
A study of the United Nations in action. Attention is focused on significant political problems confronting world organization, i.e., functional and dysfunctional aspects of the UN Charter; nationalism vs. internationalism within the UN; conflict resolution and UN peacekeeping efforts; specific UN accomplishments in maintaining a dynamic international equilibrium; UN weaknesses and the future of world organization. Prerequisite: 250 or equivalent.

555 International Law 3 hrs.
The theory, sources, development, and general principles of international law, and the relationship of law to the dynamics of international politics. Decisions of international and municipal tribunals and the practices of states will be used to demonstrate the basic rights and obligations of states in time of peace and war. Such topics as recognition of states, diplomatic practice, treaties and neutrality will also be discussed. Prerequisite: 250 or equivalent.

556 Comparative Foreign Policy 3 hrs.
Analysis of foreign policy theories and practices in selected nations. Particular emphasis is given to the interactive process of conflict and competition, cooperation and compromise in the pursuit of national interests. Prerequisite: 350 or equivalent.
557 Studies in American Foreign Policy 3 or 4 hrs.

The course treats American Foreign Policy as a process and emphasizes both policy formation and policy execution through the vehicle of specific case problems, such as: the nature and role of foreign policy, Congress and foreign policy, the role of the military, the United Nations and American foreign policy, and changing American attitudes on the objectives of foreign policy. Prerequisite: 350 or equivalent.

650 Seminar: International Relations 3 hrs.

Study and research on a common topic of current international, political, organizational, or legal significance. Individual papers and reports will be presented. Prerequisite: A 500-level international relations course, or equivalent.

651 Seminar: Foreign Policy 3 hrs.

Study and research on a common topic of American or comparative foreign policy significance. Individual papers and reports will be presented. Prerequisite: 350, a 500-level course in international relations, or equivalent.

652 Seminar: Case Studies in Decision Making 3 hrs.

An analysis of specific international disputes. The course will consider how statesmen and diplomats negotiate, why certain instruments are employed in one situation and not another, and what factors are vital in given cases. Efforts will be made to understand the consequences of decisions and their continuing effect on related policy problems. Prerequisite: A 500-level international relations course.

POLITICAL THEORY AND METHODOLOGY

560 Comparative Political Ideology 4 hrs.

A consideration of the concept of ideology and significant classical and contemporary ideologies, including their nature, causes and functions in various political systems.

561 Contemporary Political Theory 4 hrs.

An examination of contemporary theories of politics. An attempt will be made to delineate the most important recent developments in the construction of theories of political systems.

562 Modern Democratic Theory 3 hrs.

The course consists of two parts. First, a consideration of traditional democratic theories, and the criticism of these theories emanating from modern elitists such as Mosca, Michels, Pareto and Ostrogorski. Second, an analysis of the attempts by contemporary economists, political scientists, and sociologists to meet these criticisms by revising democratic theory.

563 Theories of Revolution 4 hrs.

Examines significant classical and contemporary theories of revolu-
lution with reference to both their analytical and normative implications.

564 Political Inquiry and Analysis 4 hrs.
Analysis of the application of scientific method to the study of political phenomena; problems of concept formation; law; cause and explanation; theory construction; the place of values in political inquiry.

590 Research Methods 3 hrs.
Study of the formulation of research questions, the design of research, the methods of data collection, and the procedures for analyzing data concerning political institutions and behavior. The course is primarily designed for graduate students in political science, but it will open to undergraduates planning to pursue graduate studies. Undergraduates should obtain the permission of the instructor to enter the course.

660 Seminar: Political Thought 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.

SPECIAL STUDIES

598 Studies in Political Science 1 to 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.

Psychology

Mountjoy, Chairman; Distinguished University Professor Travers; Research Professor Ulrich; Professors Asher, Fatzinger, N. Kent, Koronakos, Kuffel and Schmidt; Associate Professors Anger, Farris, Hutchinson, Lyon, Malott and Nangle; Assistant Professors Hawkins, L. Kent 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. This a required methods course for students who plan to teach in the secondary 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.

514 **Animal Behavior II** 3 hrs.
Examination of the research on animal behavior and analysis of the various processes involved with an emphasis on learning processes.

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. 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.
A critical study of assessment techniques, such as testing, weighted application blanks and interviewing. Included is consideration of administrative procedures and the methods of measuring the functional adequacy of assessment methods.

595 History of Psychology 3 hrs.
The historical and philosophical foundations of contemporary American psychology.

597 Topical Seminar 1-5 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 1-5 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.

634 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 Training and Development 3 hrs.
The course emphasizes the principles of learning as well as techniques and administrative procedures used in the development of man-power at all levels.

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.

697 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 Earhart, Grundler Long and Siebert; Assistant Professors Auer, Bischoff and Kaufman

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.
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: Hermeneutics and Exegesis, Philosophical and Cultural Approaches to Religion, Psychological and Sociological Theological Method, etc.

530 Constructive Studies in Religion 2-1 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

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 undergraduated 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.

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.

598 Readings in Science 1-1 hrs.

To be used by students seeking work in topics not otherwise available. The student is limited to not more than four hours in all readings courses and work must be completed under a graduate professor.

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.
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.

Science Seminar  2 hrs.

The selection and integration of suitable topics from the physical and earth sciences into a coherent program of junior-high-school science. Some lectures will be given on meteorology and astronomy and the development of a cohesive laboratory program will be emphasized.

Studies in Physical Science (NSF)  2-4 hrs.

Designed for In-Service Programs for Teachers of Science at the elementary level or junior-high-school level. Contents selected mainly for concepts of physics and chemistry needed to teach science more adequately at these levels.

Studies in Chemistry I (NSF)  2 hrs.

The study of basic principles of Chemistry including atomic structure, chemical reactions and their quantitative relations, determination of atomic and molecular weights, solutions and their properties, electrolytes, chemical equilibrium, covalent and ionic bonds, and the use of conversion factors.

Studies in Chemistry II (NSF)  2 hrs.

A continuation of Chemistry 640 with further study of basic principles of organic chemistry.

Studies in Mathematics I (NSF)  2 hrs.

A study of the algebraic, geometric, and trigonometric concepts needed for the understanding of the physical and chemical concepts presented in junior-high-school science. Topics will include basic principles of arithmetic, functions, systems of equations, inequalities, introductory set theory, and graphical analysis.

Studies in Atmospheric Physics (NSF)  2 hrs.

An introductory study to meteorology including chemical and physical properties of the atmosphere, effect of solar radiation of the atmosphere, jet streams, and their relationships to weather and climatic phenomena.

Studies in Physics I (NSF)  2 hrs.

Study of basic principles of physics involving the solar system, graphing and interpreting relations, force and motion, mechanical and heat energy, power, electromagnetic energy, light and spectra, subatomic physics, radioactivity and nuclear energy.

Studies in Physics II (NSF)  2 hrs.

A continuation of Physics 661.
670 Studies in Geology I (NSF)  2 hrs.

Emphasis on mineralogy and petrology. The geochemical cycle will form the basis for prelating igneous, sedimentary, and metamorphic rocks. Study of physical and chemical properties of minerals will prepare the student for the study of rocks as mineral assemblages which reflect the physiochemical conditions for formation. A brief introduction to optical mineralogy will prepare the student for viewing mineral relationship in thin sections of rocks. Rocks will be studied both in hand specimen and thin section, and problems involving specimens and maps will be undertaken.

671 Studies in Geology II (NSF)  2 hrs.

A continuation of Geology 670 with emphasis on paleontology and stratigraphy with the evolution of life illustrated by fossil records. Paleoecology will be emphasized as well as the relationship of fossils to stratigraphic sequences. Geologic maps and fossils will be used in problem situations.

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 Foreign Studies Seminar: Social Science  1-6 hrs.

Seminars in the Social Sciences: Students who complete such a seminar may receive credit in the departments of Anthropology, Economics, Geography, History, Political Science or Sociology if the credit is approved by the Head of the Department prior to registering for the seminar.

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.

212
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, Robin, and Schellenberg; Associate Professors Bennett, Brawer, Erickson, Eshleman, Horning, D. Lewis, Smith, Wagenfeld and Walker; Assistant Professors H. Lewis, MacDonald and Ross

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: 9 hours of sociology.

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 substantive, as well as 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 3 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, causa-
tive 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.

520 Selected Topics in Social Psychology 3 hrs.

Further analysis of selected topics, as indicated in schedule of classes. May be repeated for additional credit with permission of instructor. Prerequisite: Soc. 320.

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.

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. 320, or equivalent.

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 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: 6 hours of sociology or consent of 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 3 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. 201, or consent of instructor.
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 or 600 or Anthro. 201.

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. Prerequisite: Soc. 200 or 600, or equivalent.

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.

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, or equivalent.

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.

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.

A comparative study of the structure and the functioning of selected aspects of culture in selected countries or areas. The courts, the educational system, the welfare state, class stratification, correctional institu-
tions, political organization and the basic structure of government are considered. Prerequisite: Soc. 200 or 600, or equivalent.

580 Sociological Statistics 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 majors in sociology with good scholastic records an independent program of study, arranged in consultation with the instructor. Prerequisite: 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  
An advanced, intensive study of certain selected theoretical topics of contemporary significance. Prerequisite: One course in social theory, and consent of instructor.

605 Seminar in Role Theory  
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 and consent of instructor.

610 Sociology of Deviance  
The course deals with theoretical and methodological issues in the sociological and social psychological study of deviance. The social basis of definitions, causation, and treatment of deviant behavior will be examined. Substantive topics, such as mental disorders, criminality and drug addiction will be discussed. Prerequisite: 6 hours of sociology.

612 Seminar in Corrections and Penology  
Study of correctional institutions, probation, parole, and other means of dealing with criminal behavior. Prerequisites: Soc. 200 and 312 and consent of instructor.

614 Seminar in Race Relations  
Advanced study of race relations problems and trends. Prerequisites: Soc. 200 and 314 and consent of instructor.

615 Patterns of Intercultural Adjustment  
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: Designated Topics  
A detailed study of social problems area through student reports and seminar discussion. Instructor will select specific topic. Course is intended to provide intensive joint exploration of sociological issues. Prerequisite: 15 hours of sociology and consent of instructor.

622 Publics and Propaganda  
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.

625 Advanced Social Psychology  
A study of major theoretical approaches in social psychology and their methodological and substantive implications. Prerequisite: Soc. 320.
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 3 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 interpretation 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, and consent of the 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 includes: 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 and consent of instructor.

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: Designated Topics 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. Prerequisites: Soc. 200, 576 or equivalent, and 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: Consent of 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 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. Prerequisites: 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. Prerequisites: 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. Prerequisites: One course in the family and 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

Brown, Chairman; Professors Becker, Buys, Helgeson and York; Associate Professors Fleischhacker, Grandstaff, Jaksa, Kuykendall, R. F. Smith and R. L. Smith; Assistant Professors Crane, Dieker and Rossman

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.
Selective study within a broad range of aspects of theatre. Emphasis is upon concepts, theory and advanced skills. Repeatable for 9 hours.
A. Studies in Acting
   Possible topics for study include Mime, Styles in Acting, Acting Theory.

B. Studies in Directing
   Possible topics for study include Theories of Directing, Advanced Directing.

C. Studies in Theatre Production
   Possible topics for study include History of Costuming, Costume Design, Theatre Management, Stage Lighting, Advanced Make-Up Design.

D. Studies in Dramaturgy
   Possible topics for study include Playwriting, Theory and Criticism of the Drama, Contemporary Theatre.

E. Studies in Creative Dramatics

F. Studies in Children’s Theatre

526 History of Theatre 3 hrs.
   From the beginning to the English Renaissance.

527 History of the Theatre 3 hrs.
   From the English Renaissance to the present day.

529 Stage Design 4 hrs.
   A course for students in design, including stage lighting and stage settings. Includes laboratory practice in staging University Theatre productions.

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.

544 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.

564 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.

625 Seminar in Summer Theatre 5 hrs.
For graduate students enrolled in the Summer Ensemble Theatre program. Theoretical considerations of all phases of theatre in conjunction with laboratory experiences in working with the production of a number of plays.

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.

670 Seminar in Communication 3 hrs.
This seminar explores various psychological, sociological and cultural variables as they relate to communication behavior. Specialized topics will be considered in this course which may be taken more than one semester for credit. Suggested topics include current issues in communication, small group communication, language and meaning, etc.
Speech Pathology and Audiology

Robinson, Head; Distinguished University Professor Van Riper; Associate Professors Erickson, Bate, Platt and Willis

Open to Graduates and Upperclassmen

550 Advanced Speech and Hearing Science 2 hrs.
Theories of speech production, reception and perception are considered in this course from the point of view of experimental phonetics and experimental audiology.

551 Neuropathologies of Speech 2 hrs.
This course is concerned primarily with surveying selected communication disorders associated with neuropathologies. Prerequisites: 200, 202, 203.

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.

555 Speech and Language Development of Hearing Impaired 3 hrs.
Prerequisite: 357. A detailed study of the problems of speech and language acquisition in the deaf and hard of hearing child; orientation to clinical management.

556 Aural Rehabilitation 2 hrs.
Orientation to the clinical management of communication problems associated with auditory impairment.

557 Psychosociological Aspects of Hearing Impairment 3 hrs.
Prerequisite: 357. This course is designed to acquaint the student with the educational, psychological, sociological and vocational problems and needs of the deaf and hard of hearing.

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.

610 Diagnostic Procedures in Audiology 4 hrs.
An advanced course dealing with those batteries of audiological
techniques used for assessing rehabilitative needs and for otologic diagnoses.

611 Hearing Aids 2 hrs.
Components, characteristics, evaluation, selection, use and maintenance of hearing aids are studied in detail.

612 Pediatric Audiology 3 hrs.
This course deals with the identification, measurement, and management of hearing impairment in infants and young children.

613 Rehabilitative Procedures in Audiology 3 hrs.
Specific procedures and techniques for the rehabilitation of individuals with impaired hearing are systematically and critically analyzed.

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 2-4 hrs.
Selected topics in speech and hearing science are systematically 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 Diagnostic Procedures in Speech Pathology 3 hrs.
In this course the student is introduced to instruments and techniques designed specifically for the appraisal and diagnosis of communication disorders and gains experience in their application. One hour per week of participation in out-patient diagnostic examinations is required.
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.

657 Disordered Language Development 3 hrs.
Procedures and techniques for the identification, diagnosis and clinical management of developmental disorders of language are explored intensively in this course.

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 Principles of Professional Practice 2 hrs.
Currently identifiable professional and philosophical questions are defined and studied with reference to the history of the development of the profession of speech pathology and audiology.

660 Voice Disorders 2 hrs.
Organic and functional disorders of laryngeal and resonator origin are studied in depth.

661 Articulation Disorders 2 hrs.
This course considers in detail the nature and treatment of functional misarticulations and of misarticulations associated with cleft palate.

662 Stuttering 3 hrs.
Theories and therapies applicable to the understanding and clinical management of stuttering are studied in depth.

663 Aphasia in Adults 3 hrs.
This course deals comprehensively with the identification and treatment of communication problems in the adult aphasic individual.

School of Social Work

600 Courses are Open to Graduate Students Only

SOCIAL POLICY

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. Prerequisite: Consent of instructor.

Examination of historical and contemporary inter-relationships among individual needs, social system requirements and conditions, institutionalized social welfare forms and social work actions. Examples of selected social problems are used to illustrate the development of social policy in this country as a changing set of responses for dealing with individual distress and social strains, and to evaluate the effectiveness of current social welfare policies and programs. Emphasis is placed upon the key role of social policy in shaping the field of action in social welfare for social work and related professions. Prerequisite: Consent of instructor.

611 Social Policy Analysis and Formulation 2 hrs.

Development of approaches for analyzing, formulating and changing social policies relative to selected issues and problems. National, state and local dimensions of social policy are considered, along with the problems in adaptation of national policy requirements to state and local conditions and of state development policies to local communities. Prerequisite: Social Work 610 or consent of instructor.

SOCIAL AND BEHAVIORAL THEORY

630 Social Change Theory and Community Analysis 2 hrs.

The community as a field of action for social welfare and social work is analyzed. Variations in community structures, dynamics and functions are considered. Social change theory is applied to problem prevention and to social welfare efforts to deal with problem consequences. The relation between larger social forces in the community and the dynamics of individual behavior and family interaction is considered. Prerequisite: Consent of instructor.

631 Family and Individual Functioning and Change 2 hrs.

Theoretical and empirical study of individual and family functioning. Descriptive models of both normal and deviant behavior are considered. Behavior is studied in the contexts of dyadic relationships, small groups, the family, and other institutionalized interaction systems. Implications are drawn for effecting improvements in individual and family situations. Prerequisite: Social work 630 or consent of instructor.

633 Dynamics of Race and Culture for Social Work Practice 3 hrs.

Racial and group cultural characteristics of social welfare consumer groups and social work clientele are examined. An extensive survey of social science and administrative research materials in this area. Implications are drawn for the planning, organizing, administration and provision of programs and services. Particular emphasis is placed on racial and cultural conflict. Prerequisite: Social Work 610 or consent of instructor.
SOCIAL WORK PRACTICE

660 The Profession in Contemporary Society  2 hrs.

The profession of social work, its values, traditions, current social action and service investments, and future opportunities are analyzed within the perspective of contemporary social conditions and issues. The premise is developed that the determination of relevancy and saliency for professional practice needs to be functionally related to the significant social problems extant in society at a given time. Special attention is given to recent events and trends in the human rights "revolution" and its influence upon the social institutions immediately relevant to social work practice. Prerequisite: Consent of instructor.

661 Social Welfare Problem Solving  2 hrs.

Theoretical and analytical study of social problems for the identification and evaluation of differential levels of intervention which can be applied to prevent or solve problems, or to mitigate or treat their consequences. Consideration will be given to the individual, family, group, community and larger social dimensions of problems for the development of "realistic" intervention models which are appropriate and feasible in terms of the goals and structures which are applicable under different circumstances. Professional roles and functions relevant for different intervention models will be examined. Prerequisite: Consent of instructor.

662 Social Work Intervention Models  2 hrs.

The social work methods of casework, groupwork, and community organization are examined within three major analytic frameworks: (1) their development as separate methods for different problem situations, (2) as a group of three methods based both on unique and generic concepts which can be combined and expanded to form social work approaches applicable to multiple problem situations, and (3) their reformulation into the two major professional concentrations of social treatment, and social action. Prerequisite: Social Work 661 or consent of instructor.

663 Social Work Concepts in Rehabilitation  3 hrs.

Application of social work problem solving concepts to social-psychological problems in the broad field of physical and mental rehabilitation. Both individualized services and programmatic implications are given consideration. Open to M.S.W. students and students from related professional departments, with consent of instructor.

664 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. Open to Blind Rehab. students only. Prerequisite: Consent of instructor.

FIELD EDUCATION

671 Field Education in Social Welfare Problem Solving 4 hrs.

The first six weeks, the students will engage in special tasks and projects focused on contemporary social problems. Intensive attention will be given to the social welfare system with emphasis on examination of alternative means of intervention in the problem solving approach. Content will be integrated through seminar and classroom discussion. Placement in a field unit within a complex providing opportunities for generic tasks will begin the seventh week. Campus or field based seminars weekly for six weeks; bi-weekly thereafter. Prerequisite: Consent of instructor.

672 Field Education in Social Work Intervention 4 hrs.

Continuation of placement in field unit within a complex providing generic tasks with emphasis on scientific method and consideration of alternatives in problem solving means. Campus or field based seminars. Prerequisite: Social Work 671 or consent of instructor.

SPECIAL SEMINARS AND PROJECTS

681 Graduate Seminar I

The first of four coordinating seminars for academic and field planning, integration and evaluation.

682 Graduate Seminar II

The second of four coordinating seminars for academic and field planning, integration and evaluation. Preparation of plan for professional concentration studies in second year program.

686 Field Studies in Research and Practice 8 hrs.

Special group projects in practice and research which are planned, organized and carried out by faculty and students during the spring session. The nature of specific projects will vary each year, but may include experiences in area communities, other national regions and in foreign countries. The field studies are designed to integrate learning which has taken place during the prior two semesters, provide students with diverse cultural and educational experiences and further the development of research and practice competency. Prerequisite: Consent of instructor.


Individual study in social welfare and social work topics which are not covered in the University's graduate course offerings. Prerequisite: Consent of major advisor and proposed instructor.
SECOND YEAR PROGRAM

The second year of the graduate-professional social work program will consist of study concentrations in Social Treatment and Social Action and supporting courses. The student may elect his study concentration and choose appropriate courses both within the School of Social Work and in other University departments which will support this concentration. Second year courses will be first offered in the 1970-71 academic year: They will be included in the 1970-71 Bulletin.