SCHOOL OF GRADUATE STUDIES

California State College

1980 — 1982

THE GRADUATE DEGREE PROGRAMS

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1980 - 1982

MASTER OF EDUCATION PROGRAMS

Administration
(Elementary Principal and Secondary Principal)
Biology
Chemistry
Counselor Education
(Elementary Guidance and Secondary Guidance)
Early Childhood Education
Elementary Education
English
Geography
Industrial Arts
Mathematics
Mentally and/or Physically Handicapped
Reading Specialist
Social Science
Speech Pathology and Audiology

MASTER OF ARTS PROGRAMS

Communication
English
Geography
History
Mathematics
Political Science

MASTER OF SCIENCE PROGRAMS

Biology
Earth Science
School Psychology

SUPERVISION CERTIFICATES

Industrial Arts
Reading

CALIFORNIA STATE COLLEGE
California, Pennsylvania 15419

CONTENTS

CALIFORNIA STATE COLLEGE
IS A MEMBER
OF THE
AMERICAN ASSOCIATION OF COLLEGES
FOR TEACHER EDUCATION
AND IS FULLY ACCREDITED BY
THE MIDDLE STATES ASSOCIATION OF COLLEGES
AND SECONDARY SCHOOLS
AND
CERTAIN PROGRAMS ARE ACCREDITED BY
THE NATIONAL COUNCIL
FOR THE ACCREDITATION OF TEACHER EDUCATION

California State College is committed to affirmative action to assure equal opportunity for all persons regardless of race, color, religion, national origin, ancestry, or sex.

REGULATIONS SUBJECT TO CHANGE

The educational process necessitates change. This bulletin must be considered as informational and not binding on the college.

Each step of the educational process, from admission through graduation, requires continuing review and appropriate approval by college officials. The college, therefore, reserves the right to change the requirements and regulations contained in this document.

I The College

The College

California State College is a state-owned multipurpose institution offering degrees in teacher education and arts and sciences. The College was founded in 1852 and became a state normal school in 1914. In 1929 the school became a four-year degree-granting institution under the name of California State Teachers College. In 1959, the college assumed its present name as a reflection of its expanded purposes. Graduate studies were initiated in 1961. The Arts and Sciences Program was initiated in September, 1962. Further expansion of the college's missions and goals occurred in 1974, when the schools of Science and Technology and Continuing Education were begun.

The college is in the Borough of California, a community of approximately six thousand residents located in Washington County on the west bank of the Monongahela River, approximately a one-hour drive south of Pittsburgh. The college is accessible from the north via Interstate 70 and State Route 88, and from the south by U.S. Route 40 (the old National Pike) and State Route 88. A new (currently under construction) limited access highway will eventually link the campus directly with Interstate 70 and other limited access highways. The college is approximately one hour from Pittsburgh's International Airport.

The existing campus consists of thirty-three buildings situated on 148 acres. A stadium, tennis courts, baseball diamonds, and track and picnic facilities are located at the College Farm approximately two miles south of the main campus. A new library was officially opened in the Fall of 1979.

The geographic location of the college gives the resident student opportunities to explore and pursue a wide variety of activities. Located in the Appalachian Plateau, an area of low rolling hills, the college is a short drive from camping, hiking, fishing, hunting, white water rafting, canoeing, and skiing activities in the Laurel Mountains. In addition to cultural activities provided on campus, the student has easy access to the Pittsburgh metropolitan area. This easy access provides the student an opportunity to enjoy the Pittsburgh Symphony, the Pittsburgh Ballet, the Civic Light Opera, the Pittsburgh Steelers, Penguins, Pirates, various museums and all of the excitement and attractions of a major metropolitan area.

II Graduate Study

Graduate Study

HISTORY OF THE GRADUATE PROGRAM

Graduate work leading to the degree of Master of Education was inaugurated at California State College in the Fall Trimester of 1961. The initial program included graduate study in the Elementary and Industrial Arts Curriculums.

Beginning with the Summer of 1964, the Master of Education programs were extended to include the following areas of specialization: English (Summer, 1964), Biology (Fall, 1964), Social Studies (Spring, 1965), Speech and Hearing and Mentally Retarded (Fall, 1966), Socially and Emotionally Maladjusted (Summer, 1967), Chemistry and Mathematics (Spring, 1967), Elementary Guidance, Geography, and Reading Specialist (Fall,1968).

In the Fall of 1968, the following Master of Arts programs were inaugurated: English, History, and Political Science. Also in the Fall of 1968, the Master of Science program in Biology was added to the Graduate Studies program. In the Fall of 1970 the Master of Science degree and certification program in School Psychology was initiated.

In the Fall of 1971 the Reading Supervisor and Industrial Arts Supervisor Certification programs were added. The Master of Arts in Mathematics and Geography were inaugurated in the Summer of 1973.

Programs leading to the Master of Education degree and certification in Administration (Elementary Principal and Secondary Principal) and Secondary Guidance were inaugurated in the Fall of 1976.

The Master of Education program in Early Childhood Education was initiated in the Summer of 1977, and the Master of Arts in Communication and the Master of Science in Earth Science were inaugurated in the Fall of 1977.

OBJECTIVES FOR SCHOOL OF GRADUATE STUDIES

The California State College School of Graduate Studies offers a variety of programs leading to the Master of Arts, Master of Education, and Master of Science degrees and, in some cases, to certification beyond the master's degree. The departments and programs involved stress flexibility both in approaches to the subject matter and the means for students to satisfy requirements.

The objectives of the School of Graduate Studies are:

1. To offer opportunities and resources for students to increase their competence in and basic understanding of their disciplines;
2. To provide opportunities to attain professional growth;

3. To assist students to develop modes of inquiry and substantive understandings that will promote a more critical and creative attitude toward humanistic and scientific principles;
4. To encourage the development of research skills;
5. To enable students to develop responsible leadership roles and an ability to relate effectively to others;
6. To stimulate students to pursue academic growth beyond the master's degree.

REQUIREMENTS FOR ADMISSION TO SCHOOL OF GRADUATE STUDIES

The following policy established by the Graduate Council governs admission to graduate classes:

1. The applicant shall present a bachelor's degree from a college or university that is accredited by the National Commission on Accreditation or the appropriate regional accrediting agency.
2. The applicant shall present an official transcript of his work showing at least a 2.5 quality point value of his undergraduate work as determined by a grading system based on a four-point scale. (Some programs require a higher Quality Point Average and/or additional requirements.)
3. Applicants who fail to satisfy the foregoing requirements may be admitted conditionally upon the basis of the Miller Analogies Test.
4. Graduate study does not carry with it admission to candidacy for the Master's degree. Admission to candidacy for the degree can be made only after six semester hours of graduate work have been successfully completed at California State College.
5. For the Master of Education degree in most programs, the applicant must have a teaching certificate with certification in the field in which he wishes to enroll for graduate study.
6. For the Master of Arts and Master of Science degrees, a major or evidence of adequate undergraduate preparation in the field in which the applicant expects to pursue graduate work is required. The adequacy of preparation will be determined by the individual department.

NON-DEGREE APPLICATION INFORMATION

Persons who are non-degree seeking applicants to the Graduate School at California State College must be a graduate of an accredited institution. Applicants who have been admitted as a non-degree seeking student may take courses in a given department provided the student has the necessary background (to be determined by the department). A student is not limited in the number of graduate courses taken but is cautioned to note that only six (6) credits are transferable to a degree

program PROVIDED the courses are applicable to the degree program and that the student makes application for and is accepted into a degree granting program. Students making application for a degree program must meet ALL the standards for admission to that program.

Courses pursued under non-degree status are usually taken for personal growth and/or certification, with no plans to obtain a master's degree.

FOREIGN STUDENTS

The School of Graduate Studies welcomes the opportunity to accept applications from students from foreign countries. All foreign students who apply for graduate studies are expected to meet the same entrance requirements as any other student. The following items must be completed:

1. Submit a complete application and fee.
2. Submit an official transcript of all college work. (Must come from institution)
3. Submit an official copy of your teaching certificate. (If applying to certain Master of Education Programs)
4. Submit official TOEFL scores. (Must come from testing agency)
5. Submit a statement of ability to finance your education.
6. Health/accident insurance is strongly recommended.
7. Submit any other needed forms.

ADMISSION TO CERTIFICATION PROGRAMS BEYOND THE MASTER'S DEGREE

California State College offers the following certification programs which require additional experiences and credits beyond the Master's degree for developing appropriate competencies in the specific areas of specialization: (1) Administration (Elementary Principal and Secondary Principal), (2) Industrial Arts Supervisor, (3) Reading Supervisor, and (4) School Psychologist.

Applicants for the above certification programs must have completed all the prerequisites for the program and all Special requirements. Applicants for the Administration Programs must have their graduate work and experiences evaluated in order to prescribe the necessary learning experiences for fulfilling the competency standards of the programs. Applicants for the Industrial Arts Supervisor must have completed the Master's degree in Industrial Arts, and applicants for the Reading Supervisor must have completed the Master's degree and must have a Reading Specialist Certificate. For the School Psychologist certification the applicant must have completed a Master's degree in School Psychology or related fields and must obtain a minimum of thirty

(30) additional credits in special experiences and courses in the School Psychology program.

The applicant must file an application with the Graduate Office before beginning any of the above certification programs. The Graduate Office consults with the department concerned. Based on the department's evaluation of the applicant's background and the availability of faculty and facilities, the department and the Graduate Office render a decision concerning the possible admission of the applicant to the requested certification program.

PROCEDURE FOR ADMISSION TO GRADUATE CLASSES

1. Each applicant will file with the Graduate Office an application for admission to graduate classes as early as possible and preferably not later than three weeks prior to the session in which he wishes to begin his graduate program. Application forms may be obtained by writing to the Dean of Graduate Studies.
2. At the same time the applicant should have official transcripts sent to the Dean of Graduate Studies by the institutions at which he has taken undergraduate and graduate work. It is not necessary to submit a transcript of work taken at California.
3. An applicant may request an appointment with the Associate Dean of Graduate Studies or the Dean of Graduate Studies.
4. For detailed information pertaining to particular programs the applicant should contact the chairman or coordinator of the department responsible for the program.

APPLICATION FORMS AND ADDITIONAL INFORMATION

Application forms and additional information concerning the graduate program may be obtained by writing to the Office of the Graduate School, California State College, California, Pennsylvania.

REQUIREMENTS FOR ADMISSION TO CANDIDACY FOR THE MASTER'S DEGREE

In order to complete a program of graduate study, leading to the Master's degree, the student must apply for and be admitted to candidacy for the degree. The following policy governs admission to candidacy.

1. The applicant shall file with the Dean of Graduate Studies an official application and a letter applying for admission to candidacy.

2. The applicant shall have completed not less than six (6) semester hours nor more than (12) semester hours of graduate credit at California State College at the time of making application for degree candidacy. Credits completed in excess of twelve (12) semester hours before applying for degree candidacy will not be accepted for inclusion in a degree program.
3. The applicant shall have maintained a grade point average of not less than 3.0 (equivalent to an average of B) in graduate courses.
4. Approval for admission to candidacy for the Master's degree will be determined by individual departments. Special requirements such as interviews and test vary from department to department. For particulars, the applicant should consult with his/her department.
5. Admission to candidacy requires the approval of the Dean of Graduate Studies. The college reserves the right to refuse the applicant's request for admission to candidacy for the Master's degree.

III General Information

General Information

STUDENT RESPONSIBILITY

RESPONSIBILITY FOR KNOWING AND FOLLOWING THE ACADEMIC RULES AND REGULATIONS,INCLUDING REQUIREMENTS FOR GRADUATION, RESTS WITH THE STUDENT. FACULTY ADVISERS ASSIST STUDENTS IN PLANNING THEIR ACADEMIC PROGRAM AND RESEARCH REQUIREMENTS, BUT ARE NOT EXPECTED TO RELIEVE THE STUDENTS OF THEIR RESPONSIBILITY.

PLANNING A PROGRAM

As soon as applicants have been admitted to the Graduate Studies Program, they will be referred to the appropriate department for advisement. Students' programs will be planned specifically for them in conference with their scheduled advisers. Research advisers will be assigned to aid students with research after they have been admitted to candidacy for the Master's degree. Candidates may request a research adviser in their area of study with the approval of the department head.

Students are required to consult with their advisers throughout their graduate programs on a regularly scheduled program basis. Programs of studies must be approved by students' advisers prior to registration.

COURSE LOAD

Part-time graduate students will be limited to six (6) semester hours of graduate work per semester.

During the summer sessions a graduate student may earn a maximum of credits equal to the number of weeks in a session.

A full-time student may carry nine (9) to fifteen (15) semester hours of graduate work within a semester.

RESIDENCE REQUIREMENT

A total of thirty — thirty-six (30-36) semester hours of work, depending on the option selected, in addition to the fulfillment of other requirements and conditions stipulated in this bulletin, will be required for the Master's degree. A total of twenty-four (24) semester hours must be earned in residence at California State College. (Programs are either thirty (30) or thirty-six (36) semester hours.)

Students will be expected to complete part of their degree programs during the summer sessions when full time could be devoted to graduate study under conditions most conducive to study. The final six (6) hours in any program must be completed on the California campus.

TRANSFER OF CREDIT

A maximum of six (6) semester hours of resident (on main campus) graduate work done at another accredited graduate school **may** be transferred to the Graduate Program at California State College. Transferred credits must represent courses that fit the program of California State College and which have been passed with a grade of at least "B." Transfer credits to be acceptable must fall within five years of the date of the application for admission to Graduate Studies. Extension credits are not accepted for transfer.

Students already enrolled at California State College, who wish to take work at another institution for transfer to California, must have program approval by the adviser and by the Dean of Graduate Studies before enrolling at the other institution. Applications for transfer of credits, which should be completed and returned to the Graduate Office prior to taking course work elsewhere, are available in the Graduate Office.

FEES*

Application Fee $10.00

Enrollment Fee (Pa. residents) $51.00
(per graduate credit)

Enrollment Fee (Out-of-state) $51.00
(per graduate credit)

Enrollment Fee ..... 9 - 15 credits
(Pa. residents) ..... $475 (per semester)
(Out-of-state) ..... $475 (per semester)
(Plus $51.00 for each additional credit beyond 15)

Student Association Incorporated Fees ..... Varies

Graduate Degree Fee $5.00

Late Registration $10.00

Assessment of Commonwealth Student Union Building Fee
9 or more credits $10.00
7-9 credits 5.00
1-6 credits 2.50

Graduate students are also required to pay any fees (activity fee, library fines, etc.) required of undergraduate students.

Checks or money orders must be written in the exact amount of the payment. Make checks or money orders payable to the Commonwealth of Pennsylvania for the following:

Application Fee

Enrollment Fee

Graduate Degree Fee

Commonwealth Student Union Building Fee

*Changes in College Fees may be made without notice.

Cap and Gown Fee

Candidates who have been approved for the Master's degree are required to purchase or rent from the College Book Store a Master's cap, gown and hood to be worn at the graduation exercises.

Binding Fee

Three (3) bound copies of the Master's Thesis, Research Project, or Research Paper must be submitted to the College. Additional copies may be bound for the students. Arrangements for binding must be made with the Graduate Office.

Transcripts

Transcripts of one's graduate work may be obtained by contacting in writing the Registrar's Office. The fee for this service is $1.00 per transcript; there is no charge for the first transcript.

Refunds

When students register they should be careful not to overload themselves because refunds and credit are given only as indicated. Students who enroll for nine (9) to fifteen (15) credits will pay a full-time fee as shown under the Schedule of Fees. If part of the schedule is dropped, NO CREDIT OR REFUND will be given.

If a student withdraws from the college, or from individual courses, the following schedule of refunds and credit have been established.

WITHDRAWAL REGULATIONS

Students who find it necessary to leave the college during a term should, before discontinuing attendance at classes, confer with the Dean of Graduate School. If after such conference it is found that the student should not continue, official withdrawal forms must be filed in the Graduate Office. Students who leave the college without following this routine, especially the processing of withdrawal cards, jeopardize their status.

Withdrawal forms must be properly completed by students who desire to discontinue part of their schedules. When students merely stop attending classes without officially withdrawing, F (failing) grades are recorded on the permanent records.

Withdrawal from Individual Courses:

Students are permitted to add courses the first week of a term after registration day. The permission is granted by the Dean of Graduate School or the Associate Dean of Graduate School.

Students may drop courses during the first six (6) weeks without penalty. Permission is granted by the Dean of Graduate School or the Associate Dean of Graduate School.

After the first six (6) weeks, withdrawals from individual courses are permitted with a grade of "WP" or "WF"; "WP" carries no penalty — "WF" carries penalty.

Complete Withdrawal:

Students are permitted to withdraw completely from college up to the week of the final examination. Permission is granted by the Dean of Graduate School or the Associate Dean of Graduate School. "WP" or "WF" grades are assigned for all courses.

All withdrawals are subject to the policy established for credit and refunds.

The student desiring permission for withdrawal must complete the regular withdrawal forms which are available in the Graduate Office. Students who desire a refund must also write a letter to the President of California State College. If the money is to be credited to another semester, the letter to the President is not necessary.

COLLEGE POLICY ON REFUNDS

Partial refunds, or credit, will be granted to students who have made an official withdrawal from college. They will be based upon a percentage of the fees paid according to the following schedule:

SEMESTER WITHDRAWAL

1st and 2nd Week	**80% refund**
3rd Week	**70% refund**
4th Week	**60% refund**
5th Week	**50% refund**
After the 5th Week	**No refund**

5-WEEK SESSIONS

1st Week	**80% refund**
2nd Week	**60% refund**
After 2nd Week	**No adjustment or refund**

10-WEEK SESSION

1st Week	**80% refund**
2nd Week	**70% refund**
3rd Week	**60% refund**
4th Week	**50% refund**
After 4th Week	**No adjustment or refund**

1. A refund, or credit, will not be allowed unless the withdrawal is properly made in the Graduate Office. Except for emergencies, the date of notification will be considered the effective date of withdrawal.
2. Refunds are not granted on an automatic basis. A student eligible for a refund must submit a written request to the President without delay. No action will be taken until this has been done.

STATUTE OF LIMITATIONS

All requirements for the Master's degree must be completed within six (6) years after the date of initial registration for graduate studies at California State College.

SCHOLARSHIP REQUIREMENT

The graduate student will be required to maintain a "B" average in all work after receiving the bachelor's degree. Only grades of "A," "B," "C," "P," "F," and "I" grades are issued in the School of Graduate Studies. Marking system: Grades of "A," 4 quality points; "B," 3 quality points; "C," 2 quality points. An incomplete grade (I) is issued only if because of personal illness (covering two or more consecutive weeks) the student is unable to complete the requirements of the course at the end of the session. The incomplete grade is issued only when circumstances warrant it and when proper evidence is presented. Work for the incomplete grade must be completed during the academic year immediately following the semester when the grade was issued. After the lapse of one year, if the work is not satisfactorily completed, the incomplete grade automatically becomes an "F" grade, and it cannot be removed without repeating the course.

GRADE APPEAL

In appealing a grade, a student should contact the instructor to discuss the grade which was assigned. If the student is not satisfied with the explanation, the student should then contact the department chairman. If accord is not reached at this level, the student may then appeal to his/her school dean. The final source of appeal is the Vice President of Academic Affairs. This step should be taken only if there is no possibility for a resolution at an earlier stage and only if the student is convinced that arbitrary and/or capricious standards were applied.

It must be understood that it is not the policy of the administration to change a grade duly assigned by an instructor. It is the policy of the administration and the faculty to provide students with an opportunity to voice their concerns on all matters, including grades.

COMPREHENSIVE EXAMINATION

Each student who is a candidate for the Master's degree will be required to pass a comprehensive examination. The type of examination may vary in different departments. The purpose of the examination is to evaluate the student's ability to demonstrate the achievements of the objectives and/or competencies prescribed for the student's program.

THIRTY (30) OR THIRTY-SIX (36) CREDIT OPTION

Students have an option in certain degree programs to choose the thirty (30)-credit degree program, which includes the Research Project or Thesis, or the thirty-six (36)-credit program which permits the student to complete six (6) credits in research related courses in lieu of the Research Project or Thesis. For details concerning the options, the

applicant is requested to communicate with the appropriate departments or with the Graduate Office.

RESEARCH REQUIREMENTS FOR OPTION I — Thirty (30) Credits

One of the requisites for fulfilling the requirements for Option I of the Master's degree at California State College is the preparation of a research project or thesis. The research project and the thesis may be distinquished in the following manner:

The research project should make a contribution to the graduate student; it should make him a more understanding and competent teacher. The project may pertain to the teacher's own classroom situation or to some other type of limited research. The project needs the approval only of the adviser, but the adviser may request the meeting of a special committee who would also review and evaluate the proposed study. Two (2) credit hours are given for the research project.

The thesis should make a contribution to the student and to his field; it treats a problem to a deeper degree. Better controls, wider sampling, and further basic research techniques must be employed for a thesis. Before a research proposal can be accepted for a thesis, it must be approved by a committee of three graduate faculty members — the candidate's adviser, a faculty member of the candidate's department, and a member of another department. Four to six (4-6) credit hours are given for a thesis.

The research project and thesis may differ in the nature of research and in details, but they should follow the same format and regulations as prescribed in the bulletin, *Preparation of Theses and Research Projects*, which is available in the Graduate Office.

A research paper (1 credit) is another research option available in some departments.

A Manual for Writers of Term Papers, Theses, and Dissertations by Kate L. Turabian is the adopted style sheet for the graduate program at California State College except as special requirements of individual departments demand the use of another style sheet.

Any letters or questionnaires concerning the proposed research project or thesis which are sent for the purpose of seeking information and data from off-campus sources must be approved by the adviser and by the Graduate Office.

STEPS IN SATISFYING THE RESEARCH REQUIREMENT

1. Admission to Candidacy for the Master's degree.
2. Selection of an adviser.
3. Completion of the course, "Methods of Research."
4. Overview for the proposed research project or thesis.
5. Rough draft of the research project or thesis.

6. Final draft of the study.
7. Presentation of three copies of the final draft of the research study for committee's evaluation.
8. Oral examination on the research study.
9. Preparation of an abstract of the study.
10. Binding of the final approved copies of the study.

(The detailed procedures and deadline dates for the completion of the preceding steps are available in the Graduate Office.)

The Graduate Council reserves the right to modify the requirements for graduate study without notice.

NOTICE OF ANTICIPATION FOR GRADUATION

It is the responsibility of the student to check with the Graduate Office at least three months before the date of his anticipated graduation. The Graduate Office prepares a list of prospective graduates several months before each commencement. It is the student's responsibility to see that his name is included on the graduation list and to indicate the way his name should appear on the diploma. If the degree candidate fails to check with the Graduate Office and fails to complete the application for graduation, it will be neccessary to postpone his graduation until the next regular commencement. The application for graduation must be signed by the student's adviser, indicating that all requirements have been completed.

UNDERGRADUATE CREDIT FOR GRADUATE COURSE

Undergraduate students may enroll in graduate courses for undergraduate credit if they meet the necessary requirements for those courses. Individual departments shall decide what the prerequisites for each course shall be. Graduate status may be a prerequisite for admission to some courses.

GRADUATE CREDIT FOR SENIORS

Undergraduate students in their last term **on campus** who have completed or are completing all the requirements for an undergraduate degree may enroll in a limited number of (usually one (1) or two (2) classes in graduate courses for graduate credit. With exception of the undergraduate degree and teaching certification requirements, they must meet all other Graduate School entrance requirements. There can be no double counting of credits.

HOUSING FACILITIES

Housing in the College dormitories is available to graduate students. Students desiring housing facilities are requested to write to the Director of Housing for further information.

PERMANENT CERTIFICATION

A student may enroll in the graduate program and complete the required number of semester hours for permanent certification while concurrently pursuing the Master's degree.

THE LIBRARY

The new Louis L. Manderino Library, recently completed at a cost of approximately 7.1 million dollars, provides a more than adequate facility for the academic community of California State College. Approximately 144,000 square feet in size, it has a capacity of 500,000 book volumes and seating for over 1,500 students. The collection is in excess of 434,000 volumes of which 211,000 are in microform carefully selected to meet and support the needs of the graduate and undergraduate programs offered by the college. Currently, the library subscribes to over 1,200 periodical and serial titles.

Research potential is enhanced with the microform editions of both current and out-of-print material contained in the library's 643,000 unit microform collection. In addition to major sets of books in microform, the Micromedia Area encompasses the Educational Resources Information Center (ERIC) document collection of current resource and research material in education. The library also subscribes to the United States Government Document Collection of both depository and non-depository items which the library receives monthly in microform.

For the convenience of students and faculty, photocopying machines and microform readers/printers have been installed in the library to provide copies at nominal cost to the student. Available for microform usuage are several microform viewers to accommodate the microform collection including several portable microfilm and microfiche readers for home and dormitory use.

The Curriculum Library, on the ground floor, contains an excellent collection of some 20,000 books and over 17,000 non-print materials for use by students enrolled in the School of Education as well as student teachers involved in their professional laboratory experiences.

Library resources are interpreted to the academic community through a competent library faculty consisting of 3 Reference Librarians; Liaison Librarians to the Schools of Education, Arts & Sciences, Science & Technology, and Graduate School; as well as librarians to coordinate the Periodicals Department, Curriculum Library Collection, Interlibrary Loan and Technical Services.

The library at California State College receives several benefits which are passed on to the academic community through membership in various cooperatives. Through membership in the Pittsburgh Regional Library Center, the college has access to the resources of some 52 academic, public and special libraries through interlibrary loan. This regional consortium includes major institutional libraries such as the University of Pittsburgh, Pennsylvania State University and the Carnegie Library of Pittsburgh. Computerized cataloging services from OCLC,

Inc. in Columbus are utilized in Manderino Library through participation in the Pittsburgh Regional Library Center.

The library at California is one of 7 academic libraries participating in the Western Pennsylvania Buhl Network (WEBNET). The purpose of this consortium is to provide cooperative acquisitions, cataloging, reference, and interlibrary loan services in all subject fields.

Being a state-owned institution, California also has access to the material holdings of our 13 sister institutions as well as the State Library in Harrisburg.

THE COMPUTER CENTER

Computer services are available for graduate students who are conducting research studies. A full-time staff member is employed to assist students in utilizing the computer facilities for educational purposes.

The computer center is open daily (Monday through Friday) from 7:00 a.m. to 11 :00 p.m. but students who want staff assistance should make arrangements with the Director of the Center.

Students desiring special training in the fundamentals of the use of the computer may register for a graduate course, GEE 537 Computer Science.

GRADUATE STUDENT ASSOCIATION

The Graduate Student Association was officially organized with the recognition of the college administration in the fall of 1977. A constitution was drafted and endorsed by the graduate students at a general referendum in which over 400 students participated.

The purpose of the Association is to serve as a representative body to all full-time and part-time graduate students enrolled at California State College. The organization appoints graduate student representatives to various college committees, addresses graduate student grievances, interacts with other graduate student organizations at other colleges, and acts as a forum for graduate students at California State College. The association also serves as an allocated account organization of the Student Association, Inc., prepares and receives a budget from the S.A.I. and elects a graduate student representative to the S.A.I. Board of Directors.

All regularly enrolled graduate students are members of the Graduate Student Association and are welcome to all meetings.

GRADUATE ASSISTANTSHIPS

A limited number of graduate assistantships have been established by the Commonwealth of Pennsylvania. Assistants are awarded with the one-half (1/2) time or the one-fourth (1/4) time stipend plan. On the one-half (1/2) plan the assistant receives a stipend of $2705 for the fall and spring semesters. On the one-fourth (1/4) plan the assistant receives a stipend of $1352.50 for the two (2) semesters. Course fees are waived for graduate assistants. The maximum number of credits permitted for a

graduate assistant is nine (9) or ten (10) credit hours. Students planning to carry less than six (6) credits must receive approval from the department concerned and the Graduate Office. The graduate assistant is expected to devote full time to his studies and to his work related to the assistantship. Recipients of graduate assistantships on the one-half (1/2) time plan will be required to assist in the department to which they are assigned for twenty (20) hours per week. Assistants on the one-fourth (1/4) time plan will be required to assist in the department to which they are assigned for ten (10) hours per week.

The graduate assistants are assigned to various offices to assist in research, instruction, and other professional duties. They work under the direct supervision of full-time professional staff members.

Only full-time graduate students are eligible for assistantships. Applications and information concerning graduate assistantships are available in the Graduate Office.

VETERANS' AFFAIRS

The office of Veterans' Affairs is located in Room 229 of the Learning-Research Center. Office hours are 8:00 a.m. to 4:00 p.m. daily Monday through Friday; evening hours are by appointment.

All matters pertaining to veterans and eligible persons entitled to veterans benefits are initially dealt with in this office. VA Forms and Enrollment Certifications for all eligible students applying for benefits are processed by the Director of Veterans' Affairs.

Additional services are provided veterans through the Veterans' Administration representative on Campus. The Veterans' Representative is on campus every Monday and Wednesday in Room 229 which adjoins the Veterans' Affairs Office. He provides guidance and assistance to veterans and eligible persons who have pay problems, complaints, or who desire information on the full range of Veterans' benefits.

All veterans/eligible persons applying for graduate school should contact Veterans' Affairs at an early date so that necessary VA paper work can be processed to assure timely payments of educational benefits.

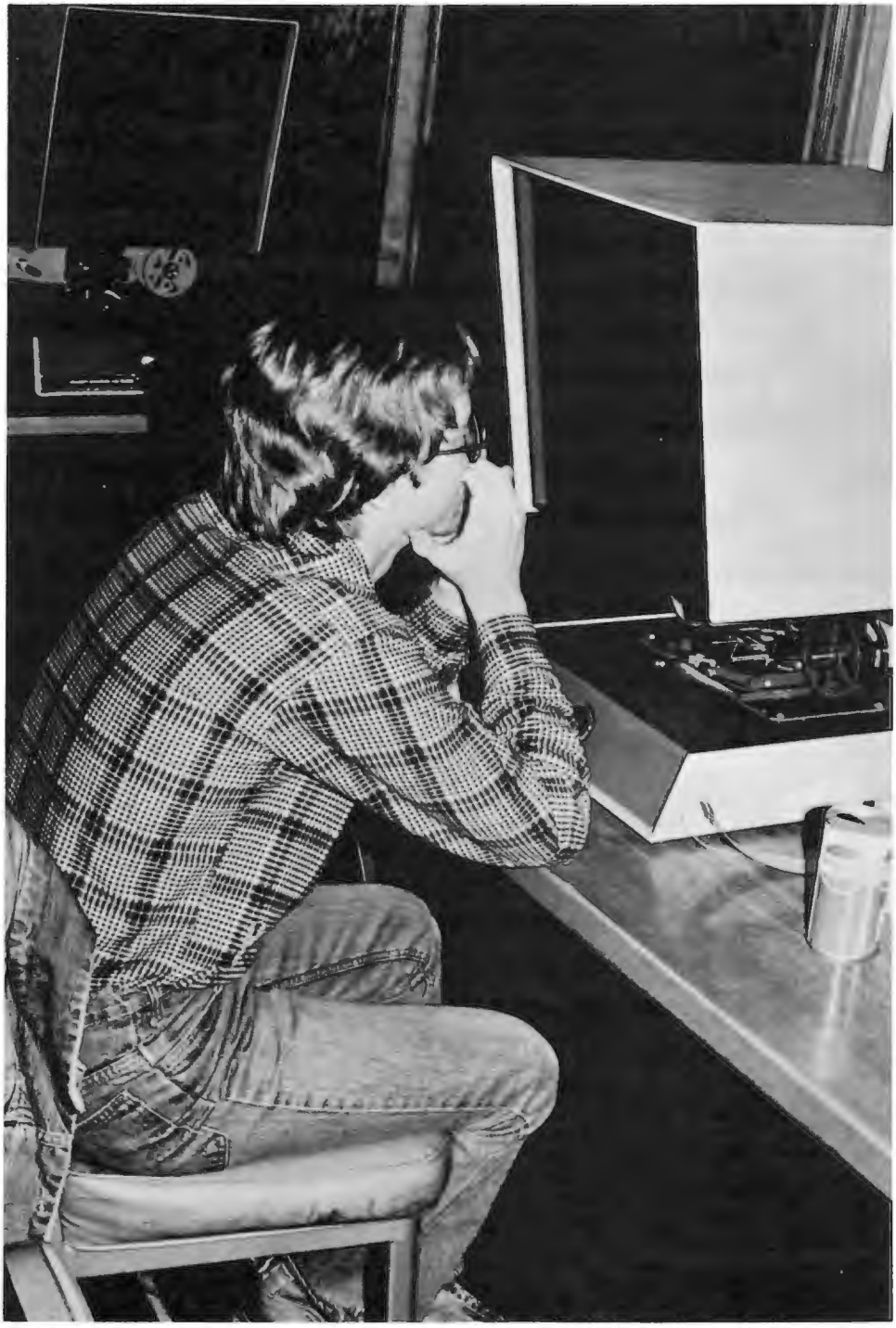
Questions on financial matters and deferments may be discussed with the Director of Veterans' Affairs prior to or at time of registration.

The Graduate Office welcomes all veterans for consultation on admission to the Graduate School and available programs of study.

CHANGE OF ADDRESS OR NAME

It is the responsibility of the graduate student to file with the graduate office the change of address or name. Appropriate forms are available in the graduate office.

IV The Graduate Programs



The Graduate Programs

INTRODUCTION

The Graduate Division of California State College offers three advanced degrees: Master of Education (M.Ed.), Master of Arts (M.A.), and Master of Science (M.S.)

The Master of Education program is intended primarily for qualified in-service teachers and other applicants who meet the standards of graduate study which were established by the Graduate Council. The following Master of Education Programs are offered: Administration (Elementary Principal and Secondary Principal), Biology, Chemistry, Counselor Education (Elementary and Secondary Guidance), Early Childhood Education, Elementary Education, English, Geography, Industrial Arts Education, Mathematics, Mentally and/or Physically Handicapped, Reading Specialist, Social Science, and Speech and Hearing.

The areas of specialization for the Master of Arts Program are Communication, English, Geography, History, Mathematics, and Political Science.

The areas of specialization for the Master of Science Program are Biology, Earth Science, and School Psychology.

The Master of Arts and the Master of Science degrees are offered for applicants who have a major or adequate background preparation in the area in which they wish to matriculate. The students have an opportunity to study in depth in their areas of specialization and become more proficient in their discipline.

In those graduate programs that lead to initial certification, individual departments will determine the competency of the student for certification. It should be noted that receiving a Master's degree is not synonymous with initial certification. The areas for which certification is given on the graduate level at California State College are: Administration (Elementary Principal and Secondary Principal), Counselor Education (Elementary Guidance and Secondary Guidance), Mentally and/or Physically Handicapped, Reading and School Psychology.

Graduate work at California is especially designed to include classroom, laboratory, clinical, and research experience that will add breadth and depth to the educational background of the students. The program for each person admitted to the graduate division will be planned in cooperation with the adviser and will be based upon the previous training and experience of the student.

A minimum of thirty (30) or thirty-six (36) semester hours is required of all degree students, depending on the option chosen by the student. The curriculum pattern differs for the various areas of specialization.

Since standards of proficiency described elsewhere must be met, it should be understood that the requirements listed in the preceding paragraph constitute a minimum requirement and do not guarantee graduation.

The graduate program is not merely an extension of work at the undergraduate level. More vigorous standards are applied and a degree of independence in the pursuit of knowledge and special competencies is required. Special emphasis is placed on the cultivation of scholarly attitudes and methods of research.

ADMINISTRATION PROGRAM FOR PRINCIPALS

The Administration Program for Principals at California State College provides graduate students with an opportunity to obtain a Master's degree in elementary or secondary school administration and/or certification as an elementary or secondary school principal. The program is competency-based and utilizes a variety of instructional modes. Previous professional experience and academic background are assessed to prescribe the program of studies and field experiences.

The principal trainee will develop cognitive and affective competencies in the following generic areas:

Competency Credit Equivalent

		Competency	Total Credit Assigned	Master's Degree Competency Credit	Certification Competency Credit
APP	701	Curriculum	8	8M*	8
APP	702	Child Growth	4		4
APP	703	Administration/Supervision	8	8M**	8
APP	704	Group Process	6*	6M**	6
APP	705	Rights, Responsibilities, Ethics	2***		2
APP	706	Laws/Regulations	3***		3
APP	707	School-Community	4***		4
APP	708	Related Disciplines	4***		4
APP	759	Research	4M	4M**	4
APP	711	Co-Curricular Activities	2***		2
			TOTAL	26 (required) 4 (elected)	45

*APP 741 Assessment/Orientation (3 credits of Group Process)
**To be taken by all candidates
***Any four of these credits can be used for the Master's degree

In many ways the program is unique, and unlike the traditional course-oriented program because the modes of instruction consist primarily of supervised field experiences, learning contracts, seminars and workshops, computer assisted instruction, independent study, learning activity packets, and case studies. Some courses may also be prescribed.

Admission Requirements to the Administration Program for Principals

In addition to the general admission requirements of the graduate school, students enrolled in the Administration Program for Principals must complete the following requirements:

1. All candidates must be approved for admission to the program by the Administration Program for Principals faculty committee.
2. Master's degree candidates must be approved for candidacy after receiving no less that six (6) credits and no more than twelve (12) credits at California State College.
3. Certification candidates must have completed:
   a. a Master's degree from an accredited college or university that is accredited by the National Commission of Accreditation or the appropriate regional accrediting agency.
   b. five (5) years of professional experience in Elementary and/or Secondary Schools.
   c. the recommended program as prescribed by the Administration Program for Principals faculty.
4. Applicants who did not complete the Master's degree at California State College must submit the following:
   a. a transcript for undergraduate and graduate degrees.
   b. a letter of recommendation from a school administrator in the school where the candidate is currently employed or recently employed.

BIOLOGY

MASTER OF EDUCATION

The Master of Education degree is a professional one designed primarily to improve biology in the public schools. In-service biology educators are encouraged to become more effective in their chosen profession by taking coursework and/or experiences in the graduate program of the Department of Biological Sciences and in several other departments of the Graduate School. This program offers a broad variety of academic, pedagogical, and research opportunities for the biology teacher.

The graduate student, in close consultation with the department graduate committee, and adviser, selects academic courses he feels will best broaden his scope of understanding in biology. Certain other courses are aimed at updating curriculum and instruction methodologies and are part of all students' programs. Research opportunities are provided to all individuals, either in an academic or practical educational area.

The Department of Biological Sciences of California State College is housed in the Frich Biology Building, an ultra-modern, multi-million dollar teaching and research facility equipped with the latest in design, materials and instrumentation. Specialized areas for student and faculty research, a herbarium, a museum, live aniamal colonies, a greenhouse, electron microscope and a radiation laboratory all complement this fine classroom-laboratory structure.

The student's record is reviewed by a departmental committee, who may require additional courses in biology or related fields to remedy deficiencies. After taking 9 to 12 credits with a 3.0 minimum Quality Point Average a comprehensive candidacy examination covering general biology must be passed.

At least one course in Organic Chemistry is required for the Master of Education program and deficiency must be remedied as undergraduate credit before the candidacy examination is taken.

Ancillary graduate level courses up to 6 credits in fields closely related to the major program may be substituted for biology courses upon approval of the adviser and a majority vote of the department faculty.

Three options are available under the Master of Education.

Option A Thirty (30) credits, with thesis
Option B Thirty (30) credits, with research project
Option C Thirty-six (36) credits, with research-oriented courses

After twenty (20) credits are accumulated, a change in option requires permission of the department faculty.

I. PROFESSIONAL EDUCATION — Ten (10) credits (Option A, B, or C)

A. Required:

EDP	600	Statistical Methods	2
EDP	620	Curriculum and Methods of Teaching Biology in High School	2

B. Electives (Choose 4 credits from the courses listed below):

EDP	605	Philosophy of Education	2
EDP	606	General History of Education	2
EDP	607	Advanced Educational Psychology	2
EDP	608	Comparative Education	2
EDP	610	Educational Sociology	2
EDP	637	Development and Organization of the Curriculum for Secondary School	2

C. Electives (Choose 2 credits from courses listed below):

EDP	607	Advanced Educational Psychology	2
EDP	617	Psychology of Growth and Development	2
EDP	628	Psychology of the Disadvantaged Child	2
EDP	636	Advanced Psychology of Learning	2

II. BIOLOGICAL SCIENCE

Field of Specialization: Credits to be selected from the biology courses:

Option A 14 credits
Option B 16 credits
Option C 20 credits

BIO	700	Cellular Ultrastructure	3
BIO	701	A Process Approach to Environmental Education	2
BIO	705	Cellular Physiology	4
BIO	706	Bacteriology	4
BIO	707	Mycology	4
BIO	708	Microbial Ecology and Physiology	4
BIO	713	Applied & Theoretical Concepts in Modern Biology	3
BIO	715	Tissue Culture	4
BIO	716	Cytogenetics	4
BIO	717	Population Genetics	3
BIO	718	Advanced Problems in Genetics	3-8
BIO	720	Human Genetics	3
BIO	721	Biochemistry I	4
BIO	722	Biochemistry II	4
BIO	725	Molecular Biology	4
BIO	730	Animal Systematics	4
BIO	735	Comparative Vertebrate Anatomy	4
BIO	736	Embryology	3
BIO	737	Animal Behavior	3
BIO	738	Herpetology	4
BIO	740	Ornithology	4
BIO	741	Advanced Research Studies	1-4
BIO	742	Scientific Photography	2-4
BIO	745	Entomology	4
BIO	746	Parasitology	4
BIO	747	Limnology	4
BIO	750	Terrestrial Ecology	4
BIO	751	Plants and Man	4
BIO	755	Field Botany	4
BIO	756	Field and Laboratory Techniques in Botany	4
BIO	757	Plants Systematics	4
BIO	758	Plant Anatomy and Morphogenesis	4
BIO	760	Advanced Plant Physiology	4
BIO	766	Biometry	4
BIO	767	Lab Instrumentation for Biology	4
BIO	768	Techniques in Electron Microscopy	4
BIO	770	Conference on Electron Microscopy	4
BIO	775	Radiation Biology	4
BIO	776	Radioisotope Techniques	4
BIO	778	Organic Evolution	3
BIO	795	Seminar in Biology	2
BIO	800	Methods of Research in Science	2
MSC	700	Marine Science Consortium — Graduate Biology Courses	V/A

III. RESEARCH — Six (6) credits for Options A and C, four (4) credits for Option B

Option A	BIO	800	Methods of Research in Science	2
	RES	849	Master's Thesis	4
Option B	BIO	800	Methods of Research in Science	2
	RES	829	Research Project	2
Option C	BIO	800	Methods of Research in Science	2
	BIO	795	Seminar in Biology	2
			Statistics beyond EDP 600 or Gee 537 Computer Science	2

BIOLOGY

MASTER OF SCIENCE

The Master of Science is a program designed for post baccalaureate students who desire more intensive training in specialized areas of biology and related sciences. A student entering this program is expected to have completed extensive coursework in biology, mathematics and the physical sciences. Once a student is admitted to the program, he/she is given the opportunity to select a faculty adviser and a research problem to meet his/her educational and professional needs. Students completing the program are prepared to enter biological careers in research, allied health, teaching as well as advanced degree programs.

The Department of Biological Sciences of California State College is housed in the Frich Biology Building, an ultra-modern, multi-million dollar teaching and research facility equipped with the latest in design, materials and instrumentation. Specialized areas for student and faculty research, a herbarium, a museum, live animal colonies, a greenhouse, an electron microscope and a radiation laboratory all complement this fine classroom-laboratory structure.

The student's record is reviewed by a departmental committee, who may require additional courses in biology or related fields to remedy deficiencies. After taking 9 to 12 credits with a 3.0 minimum Quality Point Average, a comprehensive candidacy examination covering general biology must be passed. Thirty credits with a thesis involving experimental work are required.

At least two courses in Organic Chemistry are required for the Master of Sciences program, and deficiency must be remedied as undergraduate credit before candidacy examination is taken.

Ancillary graduate level courses up to 6 credits in fields closely related to the major programs may be substitued for biology courses upon approval of the adviser and a majority vote of the department faculty.

I. BIOLOGICAL SCIENCE — 24 credits to be selected from the biology courses:

BIO	700	Cellular Ultrastructure	3
BIO	701	A Process Approach to Environmental Education	2
BIO	705	Cellular Physiology	4
BIO	706	Bacteriology	4
BIO	707	Mycology	4
BIO	708	Microbial Ecology and Physiology	4
BIO	713	Applied & Theoretical Concepts in Modern Biology	3
BIO	715	Tissue Culture	4
BIO	716	Cytogenetics	4
BIO	717	Population Genetics	3
BIO	718	Advanced Problems in Genetics	3–8
BIO	720	Human Genetics	3
BIO	721	Biochemistry I	4
BIO	722	Biochemistry II	4
BIO	725	Molecular Biology	4
BIO	730	Animal Systematics	4
BIO	735	Comparative Vertebrate Anatomy	4
BIO	736	Embryology	3
BIO	737	Animal Behavior	3
BIO	738	Herpetology	4
BIO	740	Ornithology	4
BIO	741	Advanced Research Studies	1–4
BIO	742	Scientific Photography	2–4
BIO	745	Entomology	4
BIO	746	Parasitology	4
BIO	747	Limnology	4
BIO	750	Terrestrial Ecology	4
BIO	751	Plants and Man	4
BIO	755	Field Botany	4
BIO	756	Field and Laboratory Techniques in Botany	4
BIO	757	Plant Systematics	4
BIO	758	Plant Anatomy and Morphogenesis	4
BIO	760	Advanced Plant Physiology	4
BIO	766	Biometry	4
BIO	767	Lab Instrumentation for Biology	4
BIO	768	Techniques in Electron Microscopy	4
BIO	770	Conference on Electron Microscopy	4
BIO	775	Radiation Biology	4
BIO	776	Radioisotope Techniques	4
BIO	778	Organic Evolution	3
BIO	795	Seminar in Biology	2
BIO	800	Methods of Research in Science	2
MSC	700	Marine Science Consortium — Graduate Biology Courses	V/A

II. RESEARCH — 6 credits

*BIO	800	Methods of Research in Science	2
*RES	849	Master's Thesis	4

*Required

CHEMISTRY

MASTER OF EDUCATION

The prospective graduate student should meet all the general requirements for admission to the graduate school. In order to complete a program of study leading to the Master of Education Degree, the student must apply for and be admitted to candidacy for the degree. The student must apply for candidacy for the Master's Degree immediately after completing six (6) hours of successful graduate work.

Successful completion of the program provides for an opportunity for those who wish to pursue advanced degrees in Science Education, to prepare for supervisory positions or for those who will consider the Master of Education as a terminal degree.

(30 Credit Option)

I. PROFESSIONAL EDUCATION — Eight to eleven (8-11) semester hours to be selected from the following courses: CHE 736, 737, 780 and EDP 600 are required:

*CHE	736	Foundations of Science Education	2
*CHE	737	Science in the School Curriculum	2
*CHE	780	Seminar in Science Education	2
*EDP	600	Educational Statistics	2
CHE	738	Junior High School Programs in Science	2
CHE	746	Supervision of School Science Programs	2
CHE	747	Supervision of Student Teachers in Science	2
CHE	790	Individual Studies in Science Education (May be repeated for a maximum of 3 credits)	1-3
EDP	605	Philosophy of Education	2
EDP	607	Advanced Educational Psychology	2
EDP	610	Educational Sociology	2
EDP	646	Contemporary Trends in Secondary Education	3
EDP	647	The Middle School	3
EDP	648	Legal Decisions Affecting Secondary Education	3
EDP	685	Seminar in Audio-Visual Techniques	2

II. CHEMISTRY AND COGNATE FIELDS — Fifteen to eighteen (15-18) semester hours to be selected from the following courses: Two of four courses (CHE 701, 711, 721, 731) are required.

**CHE	701	Advanced Inorganic Chemistry I	3
**CHE	711	Advanced Analytical Chemistry I	3
**CHE	721	Advanced Organic Chemistry I	3
**CHE	731	Advanced Physical Chemistry I	3

CHE	702	Advanced Inorganic Chemistry II	3
CHE	703	Physical Chemistry I	3
CHE	704	Physical Chemistry II	3
CHE	705	Inorganic Preparations	2
CHE	712	Advanced Analytical Chemistry II	3
CHE	722	Advanced Organic Chemistry II	3
CHE	732	Advanced Physical Chemistry II	3
BIO	721	Biochemistry I	4
BIO	722	Biochemistry II	4
CHE	735	Quantum Mechanics	3
CHE	745	Mathematics for Chemists	3
CHE	748	Environmental Chemistry for Science Majors	2
CHE	754	Astronomy for Teachers	2
CHE	755	Physico-Chemical Principles	2
CHE	756	Basic Concepts of Physics	2
CHE	757	History of Chemistry	2
CHE	758	Literature of Chemistry	2
CHE	795	Individual Studies in Chemistry	1-3
CHE	796	Individual Studies in Physics	1-3

III. RESEARCH — Four to six (4-6) semester hours are required. Research Project (RES 829) or Master's Thesis (RES 849) is required.

	RES 800	Methods of Research	2
***	RES 829	Research Project	2
***	RES 849	Master's Thesis	4

*Required
**2 of 4 required
***Either required

(36 Credit Option)

I. PROFESSIONAL EDUCATION — Ten to thirteen (10-13) semester hours are to be selected from the following courses: CHE 736, 737, 780 are required.

*	CHE 736	Foundations of Science Education	2
*	CHE 737	Science in the School Curriculum	2
*	CHE 780	Seminar in Science Education	2
	CHE 738	Junior High School Programs in Science	2
	CHE 746	Supervision of School Science Programs	2
	CHE 747	Supervision of Student Teachers in Science	2
	CHE 790	Individual Studies in Science Education (May be repeated for a maximum of 3 credits)	1-3
	EDP 605	Philosophy of Education	2
	EDP 607	Advanced Educational Psychology	2
	EDP 610	Educational Sociology	2
	EDP 645	Issues and Innovations in Secondary Education	2

EDP	646	Contemporary Trends in Secondary Education	2
EDP	648	Legal Decisions Affecting Secondary Education	3
EDP	647	The Middle School	3
EDP	685	Seminar in Audio-Visual Techniques	2

II. CHEMISTRY AND COGNATE FIELDS — Seventeen to twenty (17-20) semester hours are to be selected from the following courses: CHE 701, 711, 721, 731 are required.

**CHE	701	Advanced Inorganic Chemistry I	3
**CHE	711	Advanced Analytical Chemistry I	3
**CHE	721	Advanced Organic Chemistry I	3
**CHE	731	Advanced Physical Chemistry I	3
CHE	702	Advanced Inorganic Chemistry II	3
CHE	703	Physical Chemistry I	3
CHE	704	Physical Chemistry II	3
CHE	712	Advanced Analytical Chemistry II	3
BIO	721	Biochemistry I	4
BIO	722	Biochemistry II	4
CHE	722	Advanced Organic Chemistry II	3
CHE	732	Advanced Physical Chemistry II	3
CHE	735	Quantum Mechanics	3
CHE	745	Mathematics for Chemists	3
CHE	748	Environmental Chemistry for Science Majors	2
CHE	754	Astronomy for Teachers	2
CHE	755	Physico-chemical Principles	2
CHE	756	Basic Concepts of Physics	2
CHE	757	History of Chemistry	2
CHE	758	Literature of Chemistry	2
CHE	795	Individual Studies in Chemistry	1-3
CHE	796	Individual Studies in Physics	1-3

III. RESEARCH — Six (6) semester hours required. RES 800 and EDP 600 are required.

*RES	800	Methods of Research	2
*EDP	600	Statistical Methods	2
EDP	656	Computer Oriented Research	2
GEE	537	Computer Science	2

*Required
**2 of 4 required

COMMUNICATION

MASTER OF ARTS

The Master of Arts in Communication Program (36 credits) at California State College provides graduate students with an opportunity to obtain a Master's degree in Communication or Communication

Certification or both. The program is competency based and utilizes a variety of instructional modes, consisting principally of seminars, independent study, directed study, and internships. In some cases, courses may also be prescribed.

The program is divided into four generic competencies: The Philosophy and Design of Messages, Message Production and Delivery, Message Reception and Evaluation, and Message Storage and Retrieval. Each generic competency is further broken down into an inventory of exit competencies. The student and his advisor jointly determine the exit competencies to be mastered. Each competency must be completed satisfactorily before credit will be awarded.

COMPETENCY CREDIT DISTRIBUTION

Initial Phase	Assessment and Orientation	
Generic I	The Philosophy and Design of Messages	6-9 credits
Generic II	Message Production and Delivery	6-12 credits
Generic III	Message Reception and Evaluation	6-12 credits
Generic IV	Message Storage and Retrieval	6-12 credits
		The student will present a minimum of 36 credits

Students will also be required to participate in occasional seminars devoted to performance, group processes, evaluation, and other purposes as they develop during the administration of the program.

COUNSELOR EDUCATION

ELEMENTARY GUIDANCE
MASTER OF EDUCATION

The prospective graduate student in the Elementary Guidance Program should meet all the general requirements for admission to the Graduate School. Admission to the graduate school does not imply admission to candidacy for the Master's degree. The student entering the program must apply for candidacy for the Master's degree after completing not less than six (6) hours nor more than twelve (12) hours of graduate work at California State College. Within these twelve hours, the student must have successfully completed ELG 701 — Organization and Administration of Guidance in the Elementary School, ELG 702 — Counseling Theory, and be enrolled in or completed ELG 711 — Practicum I. Approval for admission to candidacy for the Master's degree will be determined by a majority of the Guidance Faculty. A meeting with the staff may be required.

The Elementary Guidance Program at California State College makes a distinction between the completion of the Master's Degree in

Education and the approval for certification in Elementary Guidance. A Master's Degree connotates the assimilation and understanding of the didactic requirements of the Elementary Guidance Program. Certification in Elementary Guidance is based on the ability to demonstrate competence in counseling and consulting in the practicum requirements of the guidance program. A student must maintain a minimum grade of "B" in each practicum, satisfactorily complete parts A and B of the comprehensive examination, and be recommended by a majority of the Staff before certification will be considered. Therefore, it is possible for a student in Elementary Guidance to obtain a Master's Degree in education without obtaining certification in Elementary Guidance.

The student majoring in Elementary Guidance has a choice of two options in obtaining the Master's Degree. Option A requires a minimum of thirty-two (32) hours of credit, with a research project or thesis required. Option B is a minimum of thirty-six (36) credit hours with no project or thesis required. The student is required to have an average of "B" in all guidance courses to complete the requirements for graduation.

I. HISTORICAL AND PHILOSOPHICAL FOUNDATIONS

Option A Two (2) credit hours
Option B Two (2) credit hours

EDP	605	Philosophy of Education	2
EDP	606	General History of Education	2

II. PSYCHOLOGICAL FOUNDATIONS

Option A Four (4) credit hours
Option B Six (6) credit hours

EDP	610	Educational Sociology	2
EDP	617	Psychology of Growth and Development	2
EDP	625	Advanced Mental Hygiene	2
EDP	628	Psychology of the Disadvantaged	2
EDP	636	Advanced Psychology of Learning	2
EDE	735	Psychology of the Exceptional Child	2

III. COUNSELING

Option A Sixteen to eighteen (16–18) credit hours
Option B Twenty (20) credit hours

*ELG	701	Organization and Administration of Guidance in the Elementary School	3
*ELG	702	Counseling Theory	2
*ELG	703	Consulting Theory	2
*ELG	705	Developmental Group Counseling	2
*ELG	711	Practicum I	2
*ELG	712	Practicum II	2
*ELG	713	Practicum III	2
ELG	715	Advanced Counseling Theory	2
ELG	716	Advanced Consulting Theory	2

ELG	785	Research Seminar in Counselor Education	2
ELG	786	Seminar in Career Information	2

IV. RESEARCH — Elective courses may be taken with approval of your adviser.

Option A Eight to ten (8–10) credit hours
Option B Eight (8) credit hours

*EDP	600	Statistical Methods	2
*RES	800	Methods of Research	2
*PSY	721	Advanced Tests and Measurements	2
**RES	829	Research Project	2
**RES	849	Master's Thesis	4
Elective			

Total Credits Required: Option A Thirty-two (32) credits
Option B Thirty-six (36) credits

*Required
**Either Required (Option A)

SECONDARY GUIDANCE
MASTER OF EDUCATION

In addition to the general requirements for admission to Graduate Studies, applicants who wish to be approved for admission to the Secondary Guidance Program must submit the following information: (A) Data Sheet, (B) Autobiography and, (C) three letters of recommendation. In addition to the above, the applicants for admission to the Program will be required to be interviewed by the Counseling Staff.

The Secondary Guidance program (36 credits) at California State College will provide graduate students with an opportunity to obtain a Master's degree in education and/or certification as a secondary school counselor. The program is competency-based and will utilize a variety of instructional modes. The modes of instruction will consist primarily of supervised field experiences, learning contracts, seminars and workshops, independent study and learning activities.

The program is divided into five (5) generic competencies, which center around the following areas: counseling, consulting, child growth and development, research and evaluation, and career planning. Each competency must be completed satisfactorily before the credits will be awarded. The competencies may be completed through the various modes of instruction as stated above. The main emphasis, however, is on the demonstration of the knowledge and performance of each enabling competency.

Awarding the degree requires the recommendation of the majority of the Guidance Faculty.

Initial Phase

Assessment and Orientation

The candidate will enroll in an assessment and orientation seminar (3 credits) at the beginning of the program. During this seminar, the students and staff will assess the competencies already acquired through the experiences one has lived. These competencies will be documented and demonstrated by the students and the results kept in an "Individual Assessment and Prescription Portfolio." The staff and student, at the end of the seminar, will then be able to write a "prescription," based on competencies not achieved which will then become the plan to complete the remaining of the required competencies. The five generic competencies are as follows:

(1) The Counselor-Trainee will demonstrate the ability to effectively counsel indivduals and groups.

(2) The Counselor-Trainee will demonstrate the ability to be an effective consultant.

(3) The Counselor-Trainee will demonstrate an understanding of how children grow and learn.

(4) The Counselor-Trainee will demonstrate a knowledge of research and evaluative procedures.

(5) The Counselor-Trainee will have an understanding of our changing culture, particularly as it relates to career planning.

COMPETENCY CREDIT EQUIVALENT

		Competency	Credits
SGU 741	Initial Phase	Assessment and Orientation	3
SGU 701	Generic #1	Counseling (Individual and Group)	7
SGU 702	Generic #2	Consulting	7
SGU 703	Generic #3	Child Growth and Development and Learning Theory	6
SGU 759	Generic #4	Research and Evaluation	6
SGU 704	Generic #5	Career Planning	7
		TOTAL	*36*
		TOTAL	36

EARLY CHILDHOOD EDUCATION

MASTER OF EDUCATION

The Master of Education degree in Early Childhood is a competency-based program which provides students with the opportunity to develop new skills and refine skills already possessed. Students will also enhance the capability to perceive and deal with problems that arise in working with young children and their parents. Instructional modes include seminars, learning contracts, field experiences, and some prescribed courses. Students are assessed and prescribed for individually.

Candidates for the degree must satisfactorily complete the six (6) following generic competencies before the degree is awarded:

1. The candidate will apply ethical cultural and democratic ideals when planning and implementing instructional goals for the young child.
2. The candidate will demonstrate instructional stategies in the learning process which meet the needs of the young child.
3. The candidate will demonstrate the ability to communicate effectively in verbal and non-verbal forms with both children and adults.
4. The candidate will develop curricula based on knowledge of child growth and development and the principles of human learning.
5. The candidate will demonstrate the ability to read and conduct research relevant to Early Childhood Education.
6. The candidate will demonstrate the ability to involve parents and the community in the framework of educational planning for the young child.

COMPETENCY CREDIT EQUIVALENT

		Competency	Credits
ECE	741	Orientation and Implementation of Instructional Goals	4
ECE	745	Instructional Strategies	5
ECE	747	Verbal and Non-Verbal Communication	5
ECE	748	Child Growth and Curriculum Development	5
ECE	759	Research in Early Childhood	6
ECE	749	Parent Involvement	5
		TOTAL	30

Candidates initially enroll in the orientation seminar which is conducted at the beginning of generic competency one. At this time, candidates are given the entire program and the procedures which are to be followed in completing their assessment folios to prove competency. Seminars and individual conferences combined with field experiences comprise the major part of the program. As competencies are completed, candidates may enroll in an uncompleted generic competency, or in one of the several courses in psychology, expressive arts, or research, that are recommended to assist the candidates in fulfilling competency.

REQUIREMENTS FOR ADMISSION TO THE MASTER OF EDUCATION DEGREE IN EARLY CHILDHOOD

1. The applicant shall present a bachelor's degree from a college or university that is accredited by the National Commission on Acreditation or the appropriate regional accrediting agency.

2. The applicant must have a teaching certificate in Elementary or Early Childhood Education.
3. The applicant shall present an official transcript of his work showing at least a 2.5 honor point value of his undergraduate work as determined by a grading system based on a four-point scale.
4. Applicants who fail to satisfy the foregoing requirements may be admitted conditionally upon the basis of the Miller Analogies Test. A raw score of 33 or better will be required.
5. Applicants will be interviewed by the faculty in the Early Childhood Education program.
6. Candidates for the master's degree must apply for candidacy after receiving no less than six (6) credit equivalents and no more than twelve (12) credit equivalents.

EARTH SCIENCE

MASTER OF SCIENCE

The master of science degree with a major in earth science is a program designed for those students who desire more intensive training in specialized areas of earth science. A student entering the program should have an undergraduate major in mathematics or one of the sciences. An advisor is assigned to the student once admission to the program has been approved. The student is expected to work closely with the adviser in designing a program of study.

The student must apply for candidacy for the master's degree immediately after completing six hours of successful graduate work. A student is required to take a comprehensive examination sometime after completing half of the requirements of the program. Thirty credits including either a thesis or research project are minimum requirements of the program. Further requirements are listed below.

CURRICULUM FOR THE MASTER OF SCIENCE DEGREE IN EARTH SCIENCE

I. REQUIRED COURSES — six semester hours

EAS	710	Recent Developments in Earth Science	3
EAS	800	Methods of Research in Earth Science	3

II. One course must be selected from the following:

EDP	600	Statistical Methods	2
EDE	706	Evaluation Measurements	2
GEE	537	Computer Science	2

III. One course must be selected from the following:

EAS	790	Seminar in Astronomy	3
EAS	792	Seminar in Geology	3
EAS	794	Seminar in Meteorology	3
EAS	796	Seminar in Oceanography	3

IV. EITHER REQUIRED

RES	829	Research Project	2
RES	849	Master's Thesis	4

V. A minimum of six credits are to be selected from the following:

EAS	711	Earth Science Workshop	3
EAS	712	Geology Workshop	3
EAS	720	Hydrology	3
EAS	725	Weather Analysis	3
EAS	730	Coal Technology	3
EAS	740	Sedimentology	3
EAS	741	Stratigraphy	3
EAS	742	Structural Geology	3
EAS	743	Micropaleontology	3
EAS	755	Geochemistry	3
EAS	760	Field Problems in Earth Science	3
EAS	762	Field Problems in Hydrology	3
EAS	780	Readings in Earth Science	3
EAS	781	Research in Earth Science	3
GEO	751	Geomorphology	3
GEO	752	Climatology	3
GEO	753	Physiography of the United States	3
GEO	767	Advanced Cartography	3
GEO	768	Map and Aerial Photo Interpretation	3
GEO	798	Seminar in Geography	3

VI. SUPPORTING COURSES
These are courses outside the department offerings which can be applied toward the degree with the approval of the adviser. Such a course might be CHE 754 Astronomy for Teachers — 2 credits.

VII. COMPREHENSIVE EXAMINATION — The student is required to pass a comprehensive examination.

ELEMENTARY EDUCATION

MASTER OF EDUCATION

The Master of Education Degree in Elementary Education provides the student with an opportunity to explore a broad spectrum of the elementary curriculum. Five categories broaden the student's opportunity to explore the facets of the Elementary Education Program: In order to complete a program of study leading to the Master of Education degree, the student must apply for and be admitted to candidacy for the degree. Admission to graduate study does not presume admission to candidacy for the Master's degree. The student entering the program must apply for candidacy for the Master's degree after completing not less than six (6) hours, nor more than twelve (12) hours for graduate work at California State College. Prior to the completion of the program, the student must satisfactorily complete a

written comprehensive examination. The student can select two options in working toward their degree: (1) A 30-credit graduate program including a research paper or thesis. (2) A 36-credit graduate program without a research project or thesis but including six hours in research related courses.

I. GENERAL AND PROFESSIONAL EDUCATION — Four to eight (4-8) semester hours to be selected from the following courses:

GEE	505	Great Works in Drama	2
GEE	500	Comparative Studies in Literature	2
GEE	506	Philosophy and Philosophers	2
GEE	507	Comparative Music	2
GEE	508	Science and Technology	2
GEE	510	History of Mathematics	2
GEE	515	Science Biographies	2
GEE	516	World Resources and Population Problems	2
GEE	517	American Civilization	2
GEE	518	Comparative Institutions	2
GEE	520	Language in Society	2
GEE	525	Community Problems in Health and Safety	2
GEE	526	Mass Communications	2
GEE	527	Community Resource Problems	4
GEE	537	Computer Science	2
GEE	588	Seminar on Creativity	2
EDP	600	Statistical Methods	2
EDP	608	Comparative Education	2
EDP	610	Educational Sociology	2
EDP	616	Guidance and Counseling	2
EDP	625	Advanced Mental Hygiene	2
EDP	627	Early Childhood Education	2
EDP	638	Selection and Use of Instructional Materials in the Classroom	2
EDP	640	Perception and Motor Development in the Education of Children	2
EDP	685	Seminar in Audio-Visual Techniques	2

At least one of the following courses is required (BEHAVIORAL)

EDP	607	Advanced Educational Psychology	2
EDP	617	Psychology of Growth and Development	2
EDP	618	Social Psychology	2
EDP	628	Psychology of the Disadvantaged Child	2
EDP	636	Advanced Psychology of Learning	2
EDE	735	Psychology of the Exceptional Child	2

At least one of the following courses is required (HUMANISTIC)

EDE	700	Historical Background of the Elementary School	2
EDP	605	Philosophy of Education	2
EDP	606	General History of Education	2

II. ELEMENTARY EDUCATION — Five to nine (5-9) semester hours of course work to be selected from the following courses:

EDE	706	Evaluation and Measurements in the Elementary School	2
EDE	707	Creative Activities in the Elementary School	2
EDE	708	Developmental Reading in the Elementary School	2
EDE	710	Teaching Reading in Content Subjects	2
EDE	739	Elementary Science Workshop (Environment)	2
EDE	717	Geography in the Modern Elementary School	2
EDE	718	Arithmetic in the Elementary School	2
EDE	720	Resource Materials in Elementary Science	2
EDE	725	The Creative Elementary Music Program	2
EDE	726	Art Education for the Elementary Grades	2
EDE	727	Guidance in the Elementary School	2
EDE	728	Problems in Health and Physical Education for the Elementary School	2
EDE	730	Teaching Kindergarten and the Primary Grades	2
EDE	736	Organization and Administration of the Elementary School	2
EDE	787	Seminar in Elementary Art Education	2
EDE	738	Children's Literature and Reading	2
EDE	745	Topics in Algebra for the Elementary Mathematics Teacher	2
EDE	746	Topics in Geometry for the Elementary Mathematics Teacher	2
EDE	748	Materials, Recreational Mathematics and Evaluative Techniques in Elementary School Science	2
EDE	750	Classroom Diagnostic Procedures for Reading	3
EDE	785	Seminar: Current Issues and Innovations in Elementary Education	2
EDE	790	Independent Study (Small Scale or Action Research)	1-3
EDE	780	Seminar in Reading and Language Arts	2

III. PROFESSIONAL CORE — A minimum of nine (9) hours to be selected from the following courses (EDE 705 is required):

EDE	705	Development and Organization of the Curriculum for the Elementary School	3
EDE	715	Recent Trends in Language Arts	3
EDE	716	Special Problems in Elementary Social Studies	3
EDE	740	Recent Trends in Elementary School Science	3
EDE	747	Trends and Current Research Findings in Elementary Mathematics	3

IV. COGNATE AREAS — A minimum of six (6) semester hours to be selected from the Graduate School Catalog in consultation with the student's adviser.

V. RESEARCH — 36-credit requirement only — minimum of six (6) hours selected from the following courses (RES 800 is required):

RES	800	Methods of Research	2
EDP	600	Statistical Methods	2
EDE	706	Evaluation and Measurements in the Elementary School	2
GEE	537	Computer Science	2

RESEARCH — 30-credit requirement only — Four to six (4-6) hours to be selected from the following courses (RES 800 is required, and either RES 829, **Research Project,** or RES 849, **Master's Thesis.**)

RES	800	Methods of Research	2
RES	829	Research Project	2
RES	849	Master's Thesis	4

ENGLISH

MASTER OF EDUCATION

A candidate to the program should have a certificate to teach English or Communication, and have completed at least twelve (12) semester hours in upper-division courses in English.

Upon satisfactory completion of six (6) hours of graduate work in the English Department, the student may apply for Admission to Candidacy.

The Comprehensive Examination for the Master of Education will be based on the individual's course work and will concern particular problems of teaching language and literature.

Apart from the sequence of two (2) required courses in methodology and research (see below), no thesis or research project is required. The Master of Education degree requires a minimum of thirty-six (36) hours of credit.

The Master of Education program is very flexible; it is important, therefore, that a student's course selection be coherent. Consequently, he should, with an adviser, draw up a proposed course of study in the beginning of his graduate work and adhere to it as closely as possible.

I. RESEARCH — (See also V):

*ENG	800	Methods of Research in English	3

II. ENGLISH — Minimum of eighteen (18) semester hours to be distributed as follows:

A. Linguistics — Minimum of six (6) semester hours to be selected from:

ENG	705	Introduction to Old English	3
ENG	706	Middle English	3
ENG	707	Linguistics	3
ENG	708	Advanced Linguistics	3
ENG	710	History of the English Language	3

B. Literature — Minimum of twelve (12) semester hours to be selected from:

ENG	715	Chaucer (may be counted as either Linguistics or Language)	3
ENG	716	English Drama Before Shakespeare	3
ENG	717	Shakespeare	3
ENG	718	Sixteenth Century Non-Dramatic Literature	3
ENG	725	Non-Dramatic English Literature 1600-1660	3
ENG	726	Jacobean and Caroline Drama	3
ENG	727	Milton	3
ENG	735	English Literature 1660–1700	3
ENG	736	English Literature 1700–1744	3
ENG	737	English Literature 1744–1798	3
ENG	738	Eighteenth Century English Novel	3
ENG	745	Romantic Poetry	3
ENG	746	Victorian Poetry	3
ENG	747	Nineteenth Century Non-Fiction Prose	3
ENG	748	Nineteenth Century English Novel	3
ENG	755	Colonial American Literature	3
ENG	756	American Renaissance	3
ENG	757	Rise of Realism	3
ENG	758	Modern American Poetry	3
ENG	760	Cultural Backgrounds of American Literature	3
ENG	765	Modern American Novel	3
ENG	766	Modern British Novel	3
ENG	760	Cultural Backgrounds of American Literature	3
ENG	765	Modern American Novel	3
ENG	766	Modern British Novel	3
ENG	767	History of Literary Criticism	3
ENG	768	Modern British Poetry	3
ENG	770	Modern Drama	3
ENG	790	Seminar in Literary Criticism	3
ENG	795	Seminar in English Literature	3
ENG	796	Seminar in American Literature	3
ENG	797	Seminar in Communication	3
ENG	799	Independent Study	1-4

III. PROFESSIONAL EDUCATION — Minimum of six (6) semester hours: Select at least one (1) of the following:

EDP	600	Statistical Methods	2
EDP	607	Advanced Educational Psychology	2
EDP	616	Guidance and Counseling	2
EDP	617	Psychology of Growth and Development	2
EDP	618	Social Psychology	2

Select at least one (1) of the following:

EDP 605	Philosophy of Education	2
EDP 606	General History of Education	2
EDP 608	Comparative Education	2
EDP 610	Educational Sociology	2

IV. COGNATES — Minimum of six (6) semester hours in cognate fields (such as history, sociology, psychology); some or all of these may be chosen from II or III above.

V. RESEARCH (see also I):

*ENG 802	Research Practicum/Research Project (To be scheduled within the last nine hours)	3

*Required

ENGLISH

MASTER OF ARTS

The applicant should show proof of an acceptable background in the English language and literature or a foreign language and literature.

Upon satisfactory completion of six (6) hours of graduate work in the English Department, the student may apply for Admission to Candidacy.

Candidates may choose their course of study from two options:

1. Master's Thesis Option — a minimum of thirty (30) semester hours of credit, including twenty-seven (27) in approved English courses and three (3) in the thesis.
2. Non-thesis Option — a minimum of thirty-four (34) semester hours of credit, including thirty-three (33) in approved English courses, with one credit given for a research paper of from 30-50 pages developed either from a graduate course or independently.

All candidates should elect ENG 800, Methods of Research, in the earliest possible term of residence.

Information on the Comprehensive Examination is available from all graduate English advisers.

I. LINGUISTICS

ENG 705	Introduction to Old English	3
ENG 706	Middle English	3
ENG 707	Linguistics	3
ENG 708	Advanced Linguistics	3
ENG 710	History of the English Language	3

II. LITERATURE — Minimum of eighteen (18) semester hours to be selected from:

ENG 715	Chaucer	3
ENG 716	English Drama Before Shakespeare	3

ENG	717	Shakespeare	3
ENG	718	Sixteenth Century Non-Dramatic Literature	3
ENG	725	Non-Dramatic English Literature 1600-1660	3
ENG	726	Jacobean and Caroline Drama	3
ENG	727	Milton	3
ENG	735	English Literature 1660—1700	3
ENG	736	English Literature 1700—1744	3
ENG	737	English Literature 1744—1798	3
ENG	738	Eighteenth Century English Novel	3
ENG	745	Romantic Poetry	3
ENG	746	Victorian Poetry	3
ENG	747	Nineteenth Century Non-Fiction Prose	3
ENG	748	Nineteenth Century English Novel	3
ENG	755	Colonial American Literature	3
ENG	756	American Renaissance	3
ENG	757	Rise of Realism	3
ENG	758	Modern American Poetry	3
ENG	760	Cultural Backgrounds of American Literature	3
ENG	765	Modern American Novel	3
ENG	766	Modern British Novel	3
ENG	767	History of Literary Criticism	3
ENG	768	Modern British Poetry	3
ENG	770	Modern Drama	3
ENG	790	Seminar in Literary Criticism	3
ENG	795	Seminar in English Literature	3
ENG	796	Seminar in American Literature	3
ENG	797	Seminar in Communication	3
ENG	799	Independent Study	1-4

III. RESEARCH — From three to six (3-6) semester hours:

*ENG	800	Methods of Research in English	3
ENG	819	Research Paper	1
ENG	849	Thesis	3

*Required

GEOGRAPHY

MASTER OF ARTS

The Master of Arts Degree in Geography is flexible and allows for diversity in goal development. It enables a graduate with this degree to pursue a professional career in geography as well as to branch into cognate areas such as government and industry. The program accepts students with varied backgrounds. It does not require applicants to have an undergraduate major in geography.

The degree offers two options, Option A in which a Thesis or Project is required and Option B in which neither a Thesis or Project is required.

Option A requires a minimum of thirty (30) semester hours for graduation and Option B requires a minimum of thirty-six (36) semester hours for graduation.

OPTION A — Option A requires a minimum of thirty (30) semester hours for graduation. This includes six (6) semester hours of required research courses and a minimum of fourteen to sixteen (14-16) semester hours in geography of which two to four (2-4) are in research. The research offers a choice of a Master's Thesis or a Research Project.

OPTION B — Option B requires a minimum of thirty-six (36) semester hours for graduation. This includes six (6) semester hours of required research courses and a minimum of eighteen (18) semester hours in geography. No Thesis or Project is required.

I. RESEARCH COURSES (Options A and B) — Six (6) semester hours to be selected from the following:

GEO 798	Seminar	3
GEO 800	Methods of Geographic Research	3

II. GEOGRAPHY — FIELD OF SPECIALIZATION (Options A and B) A minimum of twelve (12) semester hours to be selected from the following:

GEO 700	Philosophy of Geography	3
GEO 711	Demographic Analysis	3
GEO 712	Geography and Urban Politics	3
GEO 713	Urban Geography	3
GEO 731	Geography of Resources	3
GEO 732	Industrial Geography	3
GEO 733	Land Use Analysis	3
GEO 734	Site Selection	3
GEO 735	Marketing Geography	3
GEO 736	Spatial Analysis	3
GEO 740	Regional Science	3
GEO 741	Europe	3
GEO 742	Soviet Union	3
GEO 743	East Central Europe	3
GEO 744	Asia	3
GEO 745	China	3
GEO 746	Africa	3
GEO 747	Latin America	3
GEO 749	Anglo America	3
GEO 751	Geomorphology	3
GEO 752	Climatology	3
GEO 753	Physiography of the U.S.	3
GEO 765	Field Methods	3
GEO 766	Field Problems	3
GEO 767	Advanced Cartography	3
GEO 768	Map and Aerial Photo	3
GEO 785	Readings in Geography	3
GEO 786	Research in Geography	3
GEO 790	Seminar in Contemporary Problems	3

III. RESEARCH REQUIRED (Option A) (Option B neither required)

EITHER REQUIRED

RES	829	Research Project	2
RES	849	Master's Thesis	4

IV. COGNATE COURSES (Options A and B) Courses may be selected in cognate fields from the Graduate Catalog with the advice and consent of the adviser.

V. COMPREHENSIVE EXAMINATION (Options A and B) The student is required to pass a comprehensive examination.

GEOGRAPHY

MASTER OF EDUCATION

The Master of Education in Geography is intended for those who plan to make a career of teaching at the Elementary and Secondary levels of education.

OPTION A — Option A requires a minimum of thirty (30) semester hours for graduation. This includes nine to ten (9-10) semester hours of Professional Education and seventeen to nineteen (17-19) semester hours in Geography of which eight to ten (8-10) are in Research. The Reseach offers a choice of a Master's Thesis or a Research Project.

OPTION B — Option B requires a minimum of thirty-six (36) semester hours for graduation. This includes nine to ten (9-10) semester hours of Professional education and eighteen (18) semester hours in Geography of which at least six are in Research. No Thesis or Project is required.

I. PROFESSIONAL EDUCATION (OPTIONS A AND B) — Nine to Ten (9-10) Semester Hours are required from the following:

The following is required

EDP	655	The Curriculum and Teaching of Geography	3

Select one from the following

EDP	605	Philosophy of Education	2
EDP	606	General History of Education	2

Select one from the following

EDP	610	Educational Psychology	2
EDP	636	Advanced Psychology of Learning	2

One additional Professional Education course with advice and consent of the adviser.

II. GEOGRAPHY — FIELD OF SPECIALIZATION

Option A — A minimum of nine (9) semester hours to be selected from the same listing as for the Master of Arts degree.

Option B — A minimum of fifteen (15) semester hours to be selected from the same listing as for the Master of Arts degree.

III. RESEARCH REQUIRED (Option A) A minimum of eight to ten (8–10) semester hours to be selected from the following.

REQUIRED

GEO 798	Seminar	3
GEO 800	Methods of Geographic Research	3

EITHER REQUIRED

RES 829	Research Project	2
RES 849	Master's Thesis	4

IV. RESEARCH REQUIRED (Option B) Six (6) semester hours required.

REQUIRED

GEO 798	Seminar	3
GEO 800	Methods of Geographic Research	3

V. COGNATE COURSES (OPTIONS A AND B) — Courses may be selected in cognate fields from the graduate catalog with the advice and consent of the adviser.

VI. COMPREHENSIVE EXAMINATION (Options A and B) — The student is required to pass a comprehensive examination.

HISTORY

MASTER OF ARTS

In addition to the general requirements for admission to graduate studies, applicants who wish to be approved for admission to the History program must also meet the following requirements: (1) a major or evidence of adequate undergraduate preparation in the field in which the applicant expects to pursue graduate work is required. The adequacy of preparation will be determined by the Graduate History faculty; (2) the applicant must have earned at least a "B" average in the appropriate undergraduate area of specialization. If the applicant is unable to meet this requirement, he or she must take the Miller Analogies Test.

There are two (2) plans for the Master of Arts in History. In Plan I (the 30-hour option), the student must successfully complete a thesis or a research project (2 hours) and Independent Studies (1 hour) in addition to nine (9) approved courses (three (3) each from the chronological and topical areas and one (1) from the non-United States area). Methods of Research and Historiography are required of **all** students. Plan II (the 36-hour option) consists of twelve (12) courses which include the course requirements in Plan I, except that four (4) courses are required in the two (2) major areas, and Quantitative Methods is a requirement.

Thirty (30) and Thirty-six (36) Credit Options

Three (3) options are available under the Master of Arts Program in History.

Option A Thirty (30) credits, with a thesis
Option B Thirty (30) credits, with a research project
Option C Thirty-six (36) credits, with emphasis on Research Methodology

I. REQUIRED COURSES — Nine (9) credits are required for Options A, B, and C from the following:

*HIS	800	Methods of Research	3
*HIS	801	Quantitative Methods	3
*HIS	805	American Historiography	3
**HIS	829	Research Project	2
**HIS	849	Master's Thesis	4

*Required Courses (Option C)
**Either Required (Options A and B)

II. UNITED STATES HISTORY CHRONOLOGICAL AREAS

Option A and B Nine (9) credits minimum
Option C Twelve (12) credits minimum

HIS	700	The Colonial Era	3
HIS	705	The Revolution and Early National Period	3
HIS	706	The Middle Period in U.S. History, 1820—60	3
HIS	715	The Civil War and Reconstruction	3
HIS	716	The Era of Reform, 1873 until World War I	3
HIS	717	The 1930's in the United States	3
HIS	718	The United States Since World War II	3

III. UNITED STATES HISTORY, TOPICAL AREAS

Options A and B Nine (9) credits minimum
Option C Twelve (12) credits minimum

HIS	720	Studies in American Constitutional History	3
HIS	725	Studies of the Afro-American in American History	3
HIS	726	Studies in American Economic History	3
HIS	727	Studies in the Social and Intellectual History of the United States	3
HIS	728	Studies in American Labor History	3
HIS	735	Studies in American Diplomatic History	3
HIS	736	Studies in American Urban History	3
HIS	737	Studies in Pennsylvania History	3

IV. NON-UNITED STATES — Three (3) credits required for Options A, B, and C from the following:

HIS	755	Studies in the History of England	3
HIS	760	Studies in the History of Contemporary Europe	3
HIS	778	History of Russia — Road to Revolution	3

V. INDEPENDENT STUDY

HIS	779	Independent Studies in History	1-3

INDUSTRIAL ARTS

MASTER OF EDUCATION

The applicant must meet all the general requirements for admission to the graduate school. The applicant should hold an Instructional I teaching certificate or its equivalent. The program provides opportunity for those with the qualifications to prepare for the industrial arts supervisory program, the master of education degree as a terminal degree, or as a program for those pursuing advanced degrees.

Students have the option of selecting one (1) or two (2) program plans leading to a Master of Education Degree in Industrial Arts Education. Plan (A) requires thirty (30) semester hours including a thesis or project and Plan (B) requires thirty-six (36) semester hours without a thesis or project.

Successful completion of all programs and course work requirements plus a satisfactory score on a comprehensive examination are required for graduation.

Two options are available —

PLAN A: Requires 30 semester hours and a thesis or project.

PLAN B: Requires 36 semester hours without a thesis or project.

I. GENERAL EDUCATION

PLAN A: Two to six (2-6) semester hours in the following courses.

PLAN B: Four to six (4-6) semester hours in the following courses.

GEE	508	Science and Technology	2 cr.
GEE	510	History of Mathematics	2 cr.
GEE	515	Science Biographies	2 cr.
GEE	516	World Resources & Population Problems	2 cr.
GEE	517	American Civilization	2 cr.
GEE	518	Comparative Institutions	2 cr.
GEE	525	Community Problems of Health & Safety	2 cr.
GEE	526	Mass Communications	2 cr.
GEE	527	Community Resource Problems	2 cr.
GEE	537	Computer Science	2 cr.
GEE	588	Seminar on Creativity	2 cr.

Other courses by approval of Department Chairman and Dean.

II. PROFESSIONAL EDUCATION

PLAN A: Four to six (4-6) semester hours in the following courses.

PLAN B: Four to six (4-6) semester hours in the following courses.

** *Choose one of the following three courses:*

EDP	607	Advanced Educational Psychology	2 cr.
EDP	617	Psychology of Growth and Development	2 cr.
EDP	636	Advanced Psychology of Learning	2 cr.

***Choose one of the following six courses:*

EDP	605	Philosophy of Education	2 cr.
EDP	606	General History of Education	2 cr.
EDP	608	Comparative Education	2 cr.
EDP	610	Educational Sociology	2 cr.
EDP	616	Guidance and Counseling	2 cr.
EDP	618	Social Psychology	2 cr.
EDP	625	Advanced Mental Hygiene	2 cr.
EDP	628	Psychology of the Disadvantaged Child	2 cr.
EDP	638	Selection & Use of Instructional Materials in the Classroom	2 cr.
EDP	685	Seminar in Audio-Visual Techniques	2 cr.

**Required of all Industrial Arts graduate students in Both Plan A & B who enter the program beginning Fall, 1979 and all other students who have not graduated by the end of Summer, 1983.

III. INDUSTRIAL ARTS — FIELD OF SPECIALIZATION

PLAN A: Sixteen to twenty-two (16-22) semester hours to be selected from the following areas.

PLAN B: Eighteen to twenty-two (18-22) semester hours to be selected from the following areas.

PROFESSIONAL AREA — INDUSTRIAL ARTS

PLAN A: Six to eight (6-8) semester hours in the following courses.

PLAN B: Eight to ten (8-10) semester hours in the following courses.

*IAR	700	Organization & Administration of I.A.	2
*IAR	706	Curriculum Development in Industrial Art	2
**IAR	707	History & Philosophy of I.A. Education	2
IAR	708	Planning the Industrial Arts Laboratory	2
IAR	715	Supervision of Industrial Arts Education	2

*Required of all students in both Plan A & B.

**Required of all Industrial Arts graduate students in both Plan A & B who enter the program beginning Fall, 1979 and all other students who have not graduated by the end of Summer, 1983.

LABORATORY AREAS — INDUSTRIAL ARTS

PLAN A: Seven to eleven (7-11) semester hours in the following courses.

PLAN B: Nine to sixteen (9-16) semester hours in the following courses.

INDUSTRIAL MATERIALS

IAR	730	Research in the Problems of Woodworking	3
IAR	735	Studies in Industrial Patternmaking Techniques	3

IAR	740	Studies in Metal Technology	3
IAR	745	Research in Problems of Metal Machining	3
IAR	770	Industrial Plastics and Their Application to Industrial Arts	3
IAR	784	Industrial Materials Workshop	1-3

POWER

IAR	758	Advanced Studies in Digital Electronics	3
IAR	759	Advanced Studies in Linear Electronics	3
IAR	795	Fluid Power Workshop	3
IAR	797	Advanced Studies in Power Technology	3

VISUAL COMMUNICATIONS

IAR	705	History & Philosophy of Contemporary Industrial Design	2
IAR	710	Research in Technical Drawing Problems	3
IAR	711	Representational Drawing I	2
IAR	712	Representational Drawing II	2
IAR	716	Problems in Architectual Design	3
IAR	760	Research in and Development of Graphic Arts Techniques	3
IAR	762	Research and Development in Screen Printing Techniques	3
IAR	766	Research in Photographic Techniques	3
IAR	767	Visual Communication Techniques	3
IAR	768	Photofabication Techniques	3

SPECIAL PROBLEMS AND WORKSHOP — One to six (1-6) semester hours may be selected from the following, and count in the Industrial Arts Field of Specialization within the semester hours required.

IAR	709	Special Problem in Industrial Arts	1-2
IAR	719	Special Problem in Industrial Arts	1-2
IAR	786	Industrial Arts & Industrial Practices Workshop	2

IV. RESEARCH

PLAN A: Six to eight (6-8) semester hours to be selected from the following courses: EDP 600; RES 800; and either RES 829 or RES 849.

PLAN B: Six (6) semester hours to include the following courses: EDP 600 RES 800; and IAR 787.

+EDP	600	Statistical Methods	2
+RES	800	Methods of Research	2
IAR	787	Research Seminar in Industrial Arts Ed. (Required for Plan B)	2
++RES	829	Research Project	2
++RES	849	Master's Thesis	4

+Required for Both Plans A & B

++Either required for Plan A.

COURSES BEYOND THE MASTER'S DEGREE
INDUSTRIAL ARTS SUPERVISOR'S CERTIFICATE

IAS	780	Developing Teaching Techniques and Curriculum Materials	2
IAS	785	Seminar in Industrial Arts Supervision	2
IAS	791	Practicum I — Industrial Arts Supervision	2
IAS	792	Practicum II — Industrial Arts Supervision	2

SUPERVISORY CERTIFICATE IN INDUSTRIAL ARTS

The industrial arts supervisory certificate program extends beyond the Master of Education's degree. Applicants to the program need to hold an Instructional II certificate in industrial arts or its equivalent, and a Master of Education's degree from an accredited college or university. The student is required to apply for admission to the program by writing to the Dean of the Graduate School. The courses for the program are divided into two divisions.

Division One:

All students in the program will need the background provided by the following five courses. The courses may be taken in the Master of Education's degree program, or the student may present evidence of competence related to the course. If neither situation occurs, the student is required to take the course as part of his supervisory program.

IAR	700	Organization and Administration of Industrial Arts	2
IAR	706	Curriculum Development in Industrial Arts Education	2
IAR	707	History and Philosophy of Industrial Arts Education	2
IAR	708	Planning the Industrial Arts Laboratory	2
IAR	715	Supervision of Industrial Arts Education	2

Division Two:

The following courses (12 credits) are especially designed with the purpose of increasing the competencies of the prospective supervisor and are required by all who desire the Industrial Arts Supervisory Certificate.

EDP	680	Improvement of Instruction through Supervision	2
EDP	685	Group Dynamics	2
IAS	780	Developing Teaching Techniques and Curriculum Materials	2
IAS	785	Seminar in Industrial Arts Supervision	2
IAS	791	Practicum I — Industrial Arts Supervision	2
IAS	792	Practicum II — Industrial Arts Supervision	2

Formal acceptance for the Supervisory Program is made after the student has completed four credit hours of supervisory courses and made application for acceptance. After completion of the courses the student will meet with a Certification Jury who will make final recommendations to the Dean of the Graduate School for the Supervision Certificate.

MATHEMATICS

MASTER OF ARTS

The applicant must meet all the requirements of the graduate school for admission. The applicant must present a record in mathematics showing evidence of good to superior work on the undergraduate level. There is no language requirement to be admitted to the program.

The Master of Arts Degree in Mathematics has two (2) options:

OPTION 1 — Has a minimum of 36 semester hours required with a minimum of six semester hours taken in each of the following 4 areas: Analysis, Algebra, Geometry and Applied. There is no thesis required for this option.

Upon satisfactory completion of nine (9) hours of graduate work in the Mathematics Department, the student will apply for candidacy for the Master of Arts degree in Mathematics. If the student is admitted to candidacy he will then be assigned an adviser, who will be responsible for directing the student in his program and if he elects Option II, the adviser will direct his thesis in the field of Mathematics.

OPTION II — Has a minimum of 30 semester hours required with a minimum of six semester hours taken in each of the following 4 areas: Analysis, Algebra, Geometry and Applied. A thesis will be required in this option.

Mathematics courses may be taken in the Master of Arts program and counted toward the requirements in the Master of Education program.

A student that is approved for candidacy will be assigned an adviser who will direct his program. If the student elects Option II and does a thesis, this adviser will direct the student in this endeavor.

OPTION I

Minimum of thirty-six (36) semester hours. A minimum of six (6) semester hours from each of the following four (4) areas:

I. AREA OF ANALYSIS — Minimum of six (6) semester hours

GMA 701	Real Variable Analysis I	3
GMA 702	Real Variable Analysis II	3
GMA 703	Differential Equations	3

	GMA 706	Topology	3
	GMA 713	Complex Variable Analysis	3

II. AREA OF ALGEBRA — Minimum of six (6) semester hours

GMA 721	Abstract Algebra	3
GMA 723	Linear Algebra	3
GMA 725	Theory of Numbers	3
GMA 728	Group Theory	3

III. AREA OF GEOMETRY — Minimum of six (6) semester hours

GMA 743	Projective Geometry I	3
GMA 744	Projective Geometry II	3

IV. AREA OF APPLIED MATHEMATICS & RESEARCH — Minimum of six (6) semester hours

GMA 761	Mathematical Statistics I	3
GMA 762	Mathematical Statistics II	3
CSC 771	Computer & Information Science I	3
CSC 772	Computer & Information Science II	3

OPTION II

Minimum of thirty (30) semester hours.

I. AREAS OF ANALYSIS — Minimum of six (6) semester hours

GMA 701	Real Variable Analysis I	3
GMA 702	Real Variable Analysis II	3
GMA 703	Differential Equations	3
GMA 706	Topology	3
GMA 713	Complex Variable Analysis	3

II. AREA OF ALGEBRA — Minimum of six (6) semester hours

GMA 721	Abstract Algebra	3
GMA 723	Linear Algebra	3
GMA 725	Theory of Numbers	3
GMA 728	Group Theory	3

III. AREA OF GEOMETRY — Minimum of six (6) semester hours

GMA 743	Projective Geometry I	3
GMA 744	Projective Geometry II	3

IV. AREA OF APPLIED MATHEMATICS & RESEARCH — Minimum of six (6) semester hours

GMA 761	Mathematical Statistics I	3
GMA 762	Mathematical Statistics II	3
CSC 771	Computer & Information Science I	3
CSC 772	Computer & Information Science II	3

V. RESEARCH — Three (3) semester hours

*Research	849	Master's Thesis	3

*Required

MATHEMATICS

MASTER OF EDUCATION

The applicant must meet all the requirements of the graduate school for admission. The applicant must present a record in mathematics showing evidence of good to superior work on the undergraduate level. There are no language requirements to be admitted to the program.

The Master of Education Degree in Mathematics has two (2) options:

OPTION I — Has a requirement of 36 semester hours as follows : 8 semester hours in Professional Education. A minimum of 22 semester hours in Mathematics with at least 4 semester hours taken in each of the following 4 areas: Analysis, Algebra, Geometry and Miscellaneous. Also a minimum of six semester hours in Research are required.

OPTION II — Has a requirement of 30 semester hours as follows: A requirement of 10 semester hours in Professional Education. A requirement of 16 semester hours in Mathematics with a minimum of four semester hours from each of the four areas of mathematics: Analysis, Algebra, Geometry and Miscellaneous. Also a requirement of 4 semester hours in the Area of Research.

Option I

Minimum of thirty-six (36) semester hours.

I. PROFESSIONAL EDUCATION — minimum of eight (8) semester hours

*EDP	626	Current Methods & Philosophy in Mathematics Education	2
*EDP	680	Seminar in Mathematics Education	2
		(Select one from the following)	
EDP	607	Advanced Educational Psychology	2
EDP	636	Advanced Psychology of Learning	2
		(Select one from the following)	
EDP	605	Philosophy of Education	2
EDP	610	Educational Sociology	2
EDP	637	Development & Organization of the Curriculum for the Secondary School	2

II. TEACHING OF MATHEMATICS — minimum of ten (10) semester hours from the following six (6) courses.

GMA	781	Topics, Activities and Programs for General Mathematics	2
GMA	782	Teaching of Algebra	2
GMA	783	Teaching of Geometry	2
GMA	784	Teaching of Analysis	2
GMA	785	History of Mathematics	2
CSC	786	Computer Science for Teachers	2

III. MATHEMATICS — minimum of twelve (12) semester hours from the following:

GMA 701	Real Variable Analysis I	3
GMA 702	Real Variable Analysis II	3
GMA 703	Differential Equations I	3
GMA 706	Topology	3
GMA 713	Complex Variable Analysis	3
GMA 721	Abstract Algebra	3
GMA 723	Linear Algebra	3
GMA 725	Theory of Numbers	3
GMA 728	Group Theory	3
GMA 743	Projective Geometry I	3
GMA 744	Projective Geometry II	3
GMA 761	Mathematical Statistics I	3
GMA 762	Mathematical Statistics II	3
CSC 771	Computer & Information Science I	3
CSC 772	Computer & Information Science II	3

IV. RESEARCH — minimum of six (6) semester hours

*RES 800	Methods of Mathematics Research	2
*EDP 600	Statistical Methods	2
*EDP 656	Computer Oriented Research	2

*Required

Option II

Minimum of thirty (30) semester hours.

I. PROFESSIONAL EDUCATION — minimum of eight (8) semester hours

*EDP 626	Current Methods & Philosophy in Mathematics Education	2
*EDP 630	Seminar in Mathematics Education	2
	(Select one from the following)	
EDP 607	Advanced Educational Psychology	2
EDP 636	Advanced Psychology of Learning	2
	(Select one from the following)	
EDP 605	Philosophy of Education	2
EDP 610	Educational Sociology	2
EDP 637	Development & Organization of the Curriculum for the Secondary School	2

II. TEACHING OF MATHEMATICS — minimum of ten (10) semester hours from the following six (6) courses.

GMA 781	Topics, Activities and Programs for General Mathematics	2
GMA 782	Teaching of Algebra	2
GMA 783	Teaching of Geometry	2
GMA 784	Teaching of Analysis	2
GMA 785	History of Mathematics	2
GMA 786	Computer Science for Teachers	2

III. MATHEMATICS — minimum of six (6) semester hours from the following:

GMA 701	Real Variable Analysis I	3
GMA 702	Real Variable Analysis II	3
GMA 703	Differential Equations I	3
GMA 706	Topology	3
GMA 713	Complex Variable Analysis	3
GMA 723	Linear Algebra	3
GMA 725	Theory of Numbers	3
GMA 728	Group Theory	3
GMA 743	Projective Geometry I	3
GMA 744	Projective Geometry II	3
GMA 761	Mathematical Statistics I	3
GMA 762	Mathematical Statistics II	3
CSC 771	Computer & Information Science I	3
CSC 772	Computer & Information Science II	3

IV. RESEARCH — minimum of four (4) semester hours

**RES 800	Methods of Mathematics	2
**RES 829	Research Project	2
**RES 849	Master's Thesis	4

*Required
**Either Required

MENTALLY AND/OR PHYSICALLY HANDICAPPED

MASTER OF EDUCATION

Track A

MAJOR AREA (30 credits)

*ESP 700	Introduction to Exceptionality	3
*ESP 701	Introduction to Behavior Analysis	3
*ESP 702	Behavior Management & Techniques	3
*ESP 703	Education of Severely/Profoundly Handicapped	3
*ESP 704	Diagnostic Testing & Prescriptive Teaching	3
*ESP 708	Methods and Curriculum I — For Those With Learning Problems	3
*ESP 709	Methods and Curriculum II — For Those With Learning Problems	3
*ESP 707	Habilitation Training	3
*ESP 720	Internship (May be two 3-credit sessions)	6

RESEARCH (4-7 credits)

*ESP 800	Seminar in Advanced Behavior Analysis & Design OR 736-Seminar in Research Design & Statistics	3

**RES	819	Research Paper	1
**RES	829	Research Project	2
**RES	849	Master's Thesis	4

*Required
**One Required

Students in both Track A and Track B may choose an extended research credit option in lieu of a written master's requirement. Students would pursue 6 hours from the following research block:

RES	800	Methods of Research	2
EDP	600	Statistical Methods	2
GEE	537	Computer Science	2
EDP	656	Computer Oriented Research	2
SOS	808	Social Science Research Techniques	3

Track B

MAJOR AREA (21 credits)
Required by all unless competency can be displayed.

*ESP	703	Education of Severely/Profoundly Handicapped	3
*ESP	704	Diagnostic Testing & Prescriptive Teaching	3
*ESP	708	Methods and Curriculum I — For Those With Learning Problems	3
*ESP	709	Methods and Curriculum II — For Those With Learning Problems	3
*ESP	707	Habilitation Training	3
*ESP	720	Internship (May be two 3-credit sessions)	6

9 credits to be selected from following list of seminars

ESP	731	Seminar in Assessment & Prescription	3
ESP	732	Seminar in Special Education Administration and Supervision	3
ESP	712	Seminar on Contemporary Trends & Issues in the Education of Exceptional Populations	3
ESP	734	Seminar in Counseling Parents of Exceptional Children	3
ESP	735	Seminar in Education of the Gifted	3
ESP	736	Seminar in Research Design & Statistics	3
ESP	737	Seminar in Legislation and Litigation Affecting Exceptional Children	3
ESP	738	Seminar on Teacher Behavior & Group Dynamics	3
ESP	739	Field Experience Seminar in Special Education	1-3

RESEARCH (4-7 credits)

*ESP	800	Seminar in Advanced Behavior Analysis & Design OR 736-Seminar in Research Design & Statistics	3
**RES	819	Research Paper	1

**RES	829	Research Project	2
**RES	849	Master's Thesis	4

*Required
**One Required

Students in both Track A and Track B may choose an extended research credit option in lieu of a written master's requirement. Students would pursue six (6) hours from the following research block:

RES	800	Methods of Research	2
EDP	600	Statistical Methods	2
GEE	537	Computer Science	2
EDP	656	Computer Oriented Research	2
SOS	808	Social Science Research Techniques	3

POLITICAL SCIENCE

MASTER OF ARTS

Option I — 30 Hour Option

I. REQUIRED COURSES — Five (5) or nine (9) semester hours

POS	800	Methods of Political Science	3
*RES	829	Research Project	2
*POS	869	Master's Thesis	6

*Either required

II. Twenty-one (21) or twenty-five (25) semester hours depending upon whether the student does a Master's Thesis or a Research Project. The student shall take one course at least in four of five areas A, B, C, D, E.

A. AREA STUDIES

POS	708	Politics of African Nationalism	3
POS	710	Comparative Communist Systems in Eastern Europe	3
POS	716	Problems of the Soviet Political System	3
POS	728	Politics of Underdeveloped Nations	3

B. DOMESTIC POLITICAL INSTITUTIONS

POS	745	The Legislative Process	3
POS	746	American Chief Executives	3
POS	747	Civil Liberties and Judicial Process	3
POS	748	Problems in Public Administration	3
POS	755	Urban Studies	3

C. INTERNATIONAL AFFAIRS

POS	717	Nationality Problems in the Soviet Union and Eastern Europe	3
POS	718	Problems in International Organization	3
POS	740	American Defense Policy	3

D. POLITICAL PARTIES AND INTEREST GROUPS

POS	756	Modern Political Parties	3
POS	757	The Political Process	3

E. THEORY

POS	705	History of Political Theory	3
POS	730	Comparative Government	3

F. INDEPENDENT STUDY

POS	779	Independent Studies in Political Science	1-3

Option II — 36 Hour Option

I. REQUIRED COURSE — Three (3) semester hours

POS	800	Methods of Political Science	3

II. Minimim of thirty-three (33) semester hours. The student shall take one course at least in four of five areas A, B, C, D, E.

A. AREA STUDIES

POS	708	Politics of African Nationalism	3
POS	710	Comparative Communist Systems in Eastern Europe	3
POS	716	Problems of the Soviet Political System	3
POS	728	Politics of Underdeveloped Nations	3

B. DOMESTIC POLITICAL INSTITUTIONS

POS	745	The Legislative Process	3
POS	746	American Chief Executives	3
POS	747	Civil Liberties and Judicial Process	3
POS	748	Problems in Public Administration	3
POS	755	Urban Studies	3

C. INTERNATIONAL AFFAIRS

POS	717	Nationality Problems in the Soviet Union and Eastern Europe	3
POS	718	Problems in International Organization	3
POS	740	American Defense Policy	3

D. POLITICAL PARTIES AND INTEREST GROUPS

POS	756	Modern Political Parties	3
POS	757	The Political Process	3

E. THEORY

POS	705	History of Political Theory	3
POS	730	Comparative Government	3

F. INDEPENDENT STUDY

POS	779	Independent Studies in Political Science	1-3

READING SPECIALIST

MASTER OF EDUCATION

Qualified teacher from all academic disciplines, as well as elementary teachers, may apply for admission to the program. The only certification

requirement is that the applicant holds at least the college provisional or Instructional Level I Certificate.

A minimum of thirty (30) or thirty-six (36) graduate credits is required for the Master of Education degree as a reading specialist.

REQUIREMENTS FOR THE READING SPECIALIST — 30 HOURS

I. READING AND LANGUAGE ARTS — HOURS REQUIRED — 15 or 16

REQUIREMENTS: (Content)

*RES	701	Fundamentals of Reading Instruction (K-12)	2
*RSP	702	Diagnosis and Treatment of Reading Problems	3
*RSP	703	Practicum — Diagnostic Case Studies	3
*RSP	704	Practicum — Remedial Case Studies	3
RSP	730	Problems in Secondary Reading	2

ELECTIVES:

EDE	715	Recent Trends in Language Arts	3
EDE	738	Children's Literature and Reading	2
EDE	780	Seminar in Reading and Language Arts	2
GEE	520	Language in Society	2
GEE	526	Mass Communications	2
RSP	739	Independent Study	1-3

II. PSYCHOLOGY HOURS REQUIRED — 4

REQUIREMENTS: (Behavioral)

EDP	636	Advanced Psychology of Learning	2

ELECTIVES:

EDP	607	Advanced Educational Psychology	2
EDP	617	Psychology of Growth and Development	2
EDP	628	Psychology of the Disavantaged Child	2
EDE	735	Psychology of the Exceptional Child	2
PSY	746	Psychology of Learning Disabilities and Prescriptive Techniques	2

III. EDUCATIONAL RESEARCH HOURS REQUIRED — 6

REQUIREMENTS : (Research)

RES	800	Methods of Research	2
**RES	829	Research Project	2
**RES	849	Master's Thesis	4

ELECTIVES:

**EDP	600	Statistical Methods	2
**EDE	706	Evaluation and Measurements	2

IV. RELATED COURSES HOURS REQUIRED — 4 or 5

REQUIREMENTS: (Humanistic)

**EDP	637	Development and Organization of the Curriculum for the Secondary School	2
**EDE	705	Development and Organization of the Curriculum for the Elementary School	3

ELECTIVES:

GEE	506	Philosophy and Philosophers	2
EDP	605	Philosophy of Education	2
EDP	606	General History of Education	2
EDP	650	Perception and Motor Development in Education of Children	2
EDE	700	Historical Background of Elementary School	2

*Required to be taken in sequence
**Either Required (with Thesis 8 hours required in Research)

NOTE: Research Project or Thesis will be done in Reading or in some other phase of Language Arts.

REQUIREMENTS FOR THE READING SPECIALIST — 36 HOURS

I. READING AND LANGUAGE ARTS HOURS REQUIRED — 21 or 22

REQUIREMENTS: (Content)

*RSP	701	Fundamentals of Reading Instructions (K-12)	2
*RSP	702	Diagnosis and Treatment of Reading Problems	3
*RSP	703	Practicum — Diagnostic Case Studies	3
*RSP	704	Practicum — Remedial Case Studies	3
RSP	730	Problems in Secondary Reading	2

ELECTIVES:

EDE	715	Recent Trends in Language Arts	3
EDE	738	Children's Literature and Reading	2
EDP	650	Perception and Motor Development in Education of Children	2
EDE	750	Classroom Diagnostic Procedures for Reading	3
GEE	520	Language in Society	2
GEE	526	Mass Communications	2
RSP	739	Independent Study	1-3

II. PSYCHOLOGY HOURS REQUIRED — 4

REQUIREMENTS: (Behavioral)

EDP	636	Advanced Psychology of Learning	2

ELECTIVES:

EDP	607	Advanced Educational Psychology	2
EDP	617	Psychology of Growth and Development	2
EDP	628	Psychology of the Disadvantaged Child	2
EDE	735	Psychology of the Exceptional Child	2
PSY	746	Psychology of Learning Disabilities and Prescriptive Techniques	2

III. EDUCATIONAL RESEARCH HOURS REQUIRED — 6

REQUIREMENTS: (Research)

RES	800	Methods of Research	2

ELECTIVES:

**EDP	600	Statistical Methods	2
**EDE	706	Evaluation and Measurements	2
EDE	780	Seminar in Reading and Language Arts	2
GEE	537	Computer Science	2

IV. RELATED COURSES HOURS REQUIRED — 4 or 5

REQUIREMENTS: (Humanistic)

**EDP	637	Development and Organization of the Curriculum for the Secondary School	2
**EDE	705	Development and Organization of the Curriculum for the Elementary School	3

ELECTIVES:

GEE	506	Philosophy and Philosophers	2
EDP	605	Philosophy of Education	2
EDP	606	General History of Education	2
EDE	700	Historical Background of Elementary School	2

*Required to be taken in sequence

**Either required

CURRICULUM REQUIREMENTS FOR READING SUPERVISORS PROGRAM

RSU	680	Improvement of Instruction through Supervision	2
RSU	685	Group Dynamics	2
RSP	731	Supervision and Administration of a Reading Program	2
RSP	732	Reading Curriculum and Instructional Materials	2
RSP	733	Reading Internship	4

SCHOOL PSYCHOLOGY

MASTER OF SCIENCE

ADMISSIONS

In addition to the regular requirements for admission to graduate study, applicants for the School Psychology Program must meet the following requirements: (1) Applicants must have a Bachelor's Degree; (2) Applicants must have an adequate background in psychology, such as courses in General Psychology, Psychology of Learning, Child Psychology, and others; (3) Adequacy of course background will be determined by the Admissions Committee of the School Psychology Program. The applicant must have at least a 2.75 grade average in his undergraduate work and at least a "B" average in his psychology courses to be considered for admission to the graduate School Psychology

Program; (4) Applicants who fail to satisfy the above-mentioned grade requirements may be required to take the Miller Analogies Test. Other applicants with less than a "B" grade average in their psychology courses may, at the discretion of the Psychology Department, be required to take the Miller Analogies Test; (5) Applicants for admission to graduate study are to be interviewed by members of the Admission Committee; (6) Student must file an information sheet to accompany the application.

CANDIDACY

Candidacy: (in addition to graduate school candidacy requirements): (1) Applicants will be required to submit two letters of recommendation; (2) Applicants will be required to write an autobiography; (3) Oral interview by a committee will be required.

A minimum of thirty (30) graduate credits will be required for the Master of Science Degree. A minimum of sixty (60) graduate credits will be required for certification as a School Psychologist.

I. AREA I — PSYCHOLOGY AND EDUCATIONAL FOUNDATIONS
Minimum Credits — M.S. (8). Minimum Credits — Certification (10)

A. CORE COURSES (Field of Specialization):

**PSY	702	Psychopathology of Childhood	2
*PSY	727	Advanced Child Psychology	2
*EDP	636	Advanced Psychology of Learning	2
*PSY	741	Theories of Counseling and Psychotherapy	2

B. ELECTIVES:

PSY	700	Advanced Adolescent Psychology	2
PSY	701	Personality Theory	2
PSY	705	Seminar in Advanced General Psychology	2
PSY	707	Congitive Development of Childhood and Adolesence	3
PSY	747	Application of Psychological Principles in Schools	2
PSY	769	Independent Study	2–4
EDP	605	Philosophy of Education	2
EDP	606	General History of Education	2

*Required for Master's Degree
**Required for Certification

II. AREA II — PSYCHOLOGICAL METHODS AND TECHNIQUES — Minimum Credits — M.S. (8). Minimum Credits - Certification (16)

A. CORE COURSES (Field of Specialization):

*PSY	721	Advanced Tests and Measurements	2
*PSY	725	Group Testing with Practicum	2
*PSY	722	Individual Psychological Evaluation I (Binet and Infant Scales)	2
*PSY	723	Individual Psychological Evaluation II (Wechsler Scales)	2

**PSY	724	Individual Psychological Evaluation III (Assessment of Sensory, Motor, Perceptual and Language Impairments in Children)	2
**PSY	742	Techniques of Counseling and Psychotheraphy with Practicum	2
**PSY	755	Group Counseling Techniques and Counsultation with Practicum	2
**PSY	731	Projective Techniques I	2

B. ELECTIVES:

PSY	732	Projective Techniques II	2
PSY	769	Independent Study	2-4

*Required for Master's Degree
**Required for Certification

III. AREA III — SCHOOL PROGRAMS AND ORGANIZATION

Minimum Credit — M.S. (2). Minimum Credit — Certification (6)

A. CORE COURSES (Field of Specialization):

**PSY	746	Psychology of Learning Disabilities	2
*PSY	750	Administration of Pupil Personnel Services	2
EDE	705	Development and Organization of the Curriculum for Elementary Schools	2
ESP	732	Seminar in Special Education Administration and Supervision.	3

B. ELECTIVES:

EDE	637	Development and Organization of the Curriculum for Secondary Schools	3
ESP	708	Methods and Curriculum I for those with Learning Problems	3
PSY	795	Seminar in Behavior Modification with Practicum	2
PSY	745	Psychology of the Gifted Child	2
PSY	769	Independent Study	2-4
RSP	702	Diagnosis and Treatment of Reading Problems	3
ESP	700	Introduction to Exceptionality	3

*Required for Master's Degree
**Required for Certification

IV. AREA IV — RESEARCH

(A) **Thesis Option** — (30 credit M.S. Degree) Minimum Credits — M.S. (8). Minimum Credits — Certification (8)

A. CORE COURSES:

*PSY	760	Experimental Methods in Psychology	2
*PSY	765	Psychological Statistics	2
*PSY	849	Master's Thesis	4

B. ELECTIVES:

PSY	796	Seminar in Analysis of Research in School Psychology	2

GEE	537	Computer Science	2
PSY	769	Independent Study	2

(B) **Alternate Option)** (36 credit M.S. Degree) Minimum Credits - M.S. (6). Minimum Credits — Certification (6)

A. CORE COURSES:

*PSY	760	Experimental Methods in Psychology	2
*PSY	765	Psychological Statistics	2
*PSY	796	Seminar in Analysis of Research in School Psychology	2

B. ELECTIVES:

GEE	537	Computer Science	2
PSY	769	Independent Study	2

*Required for Master's Degree
**Required for Certification

V. AREA V — CLINICAL PRACTICUM — INTERNSHIP — Minimum Credits — Certification (14)

A. CORE COURSES (Field of Specialization):

**PSY	772	Internship in School Psychology (minimum of 540 clock hours in supervised experience)	12-18
**PSY	797	Seminar in Problems in School Psychology	2

B. ELECTIVES:

PSY	771	Clinical Practicum	3-6

**Required for Certification

SOCIAL SCIENCE

MASTER OF EDUCATION

Option I — 30 Hour Option

I. SOCIAL SCIENCE — 14 credits minimum

*SOS	800	Social Science Research Techniques	3
SOS	716	Economic, Social, and Political Order	3
SOS	717	Analysis of Power Structure	3
SOS	785	Seminar in World Culture	3
ANT	705	Cultural Institutions	3
**RES	829	Research Project	2
		OR	
**RES	849	Master's Thesis	4

*Prerequisite in all other courses in the program
**Either Required

II. PROFESSIONAL EDUCATION — 6 credits

*EDP	637	Development and Organization of Curriculum for the Secondary Schools	2

Humanistics — 2 credits

EDP	605	Philosophy of Education	2
EDP	606	General History of Education	2

Behavioral — 2 credits

EDP	607	Advanced Educational Psychology	2
EDP	617	Psychology of Growth and Development	2
EDP	618	Social Psychology	2
EDP	636	Advanced Psychology of Learning	2

*Required course

III. ELECTIVES — 9 credits minimum

GENERAL EDUCATION

GEE	537	Computer Science	2
EDP	600	Statistical Methods	2

GENERAL FIELD OF SOCIAL SCIENCE — Only six (6) of the hours may be taken in the same discipline and at least three hours must be non-western world in orientation.

ANTHROPOLOGY

ANT	705	Cultural Anthropology	2
GEE	536	Archaeology Field School	2-4
ANT	701	Archaeology Field School	3-6

ECONOMICS

ECO	715	Economics for the Teacher	3

GEOGRAPHY

GEO	700	Philosophy of Geography	3
GEO	711	Population Analysis	3
GEO	712	Geography and Urban Politics	3
GEO	713	Urban Geography	3
GEO	731	Geography of Resources	3
GEO	732	Industrial Geography	3
GEO	733	Land Use Analysis	3
GEO	734	Site Selection	3
GEO	735	Marketing Geography	3
GEO	736	Geographic Aspects of Planning	3
GEO	760	Regional Geography	3
GEO	775	Reading in Geography	3
GEO	778	Map and Aerial Photo Interpretation	3

HISTORY

HIS	700	Colonial American to 1763	3
HIS	705	The American Revolution and the Federal Period	3
HIS	706	The Middle Period in U.S. History 1820-1860	3
HIS	715	The Civil War and Reconstruction	3
HIS	716	The Era of Reform, 1873 to WWI	3
HIS	717	The 1930's in America	3
HIS	718	The United States since WW II	3
HIS	720	Studies in American Constitutional History	3
HIS	725	Studies of the Afro-American in American History	3
HIS	726	Studies in American Economic History	3

HIS	727	Studies in Social and Intellectual History of the United States	3
HIS	728	Studies in American Labor History	3
HIS	729	Studies in Pennsylvania History	3
HIS	735	Studies in American Diplomatic History	3
HIS	736	Studies in American Urban History	3
HIS	755	Studies in the History of England	3
HIS	760	Studies in the History of Contempory Europe	3
HIS	770	Studies in the History of Eastern Asia	3
HIS	775	Studies in the History of the Middle East	3

POLITICAL SCIENCE

POS	705	History of Political Theory	3
POS	706	Government and Politics in Western Europe	3
POS	708	Politics of African Nationalism	3
POS	710	Comparative Communist Systems in Eastern Europe	3
POS	715	Politics of the German Speaking Peoples	3
POS	716	Problems of the Soviet Political System	3
POS	717	Nationality Problems in the Soviet Union and Eastern Europe	3
POS	718	Problems in International Organization	3
POS	728	Politics of Undeveloped Nations	3
POS	730	Comparative Government	3
POS	740	American Defense Policy	3
POS	745	The Legislative Process	3
POS	746	American Chief Executives	3
POS	747	Civil Liberties and Judicial Process	3
POS	748	Problems in Public Administration	3
POS	755	Urban Studies	3
POS	756	Modern Political Parties	3
POS	757	The Political Process	3
POS	779	Independent Studies in Political Science	3

Option II — 36 Hour Option

I. SOCIAL SCIENCE — 12 credits

*SOS	800	Social Science Research Techniques	3
SOS	716	Economic, Social, and Political Order	3
SOS	717	Analysis of Power Structure	3
SOS	785	Seminar in World Culture	3
ANT	706	Cultural Institutions	3

*Prerequisite in all other courses in the program

II. PROFESSIONAL EDUCATION — 6 credits

*EDP	637	Development and Organization of Curriculum for the Secondary School	2

Humanistics — 2 credits

EDP	605	Philosophy of Education	2
EDP	606	General History of Education	2

Behavioral — 2 credits

EDP	607	Advanced Educational Psychology	2
EDP	617	Psychology of Growth and Development	2
EDP	618	Social Psychology	2
EDP	636	Advanced Psychology of Learning	2

*Required course

III. RESEARCH — 6 credits

Credits to be selected from following courses:

*SOS	800	Social Science Research Techniques	3
GEE	537	Computer Science	2
EDP	600	Statistical Methods	2
HIS	801	Quantitative Methods of History	3
EDP	656	Computer Oriented Research	2

*Required course

IV. ELECTIVES — 12 credits

GENERAL FIELD OF SOCIAL SCIENCE — Only six (6) of the hours may be taken in the same discipline and at least three hours must be non-western world in orientation.

ANTHROPOLOGY

ANT	705	Cultural Anthropology	2
GEE	536	Archaelogy Field School	2-4
ANT	701	Archaeology Field School	3-6

ECONOMICS

ECO	715	Economics for the Teacher	3

GEOGRAPHY

GEO	700	Philosophy of Geography	3
GEO	711	Population Analysis	3
GEO	712	Geography and Urban Politics	3
GEO	713	Urban Geography	3
GEO	731	Geography of Resources	3
GEO	732	Industrial Geography	3
GEO	733	Land Use Analysis	3
GEO	734	Site Selection	3
GEO	735	Marketing Geography	3
GEO	736	Geography Aspects of Planning	3
GEO	760	Regional Geography	3
GEO	775	Readings in Geography	3
GEO	778	Map and Aerial Photo Interpretation	3

HISTORY

HIS	700	Colonial American to 1763	3
HIS	705	The American Revolution and the Federal Period	3
HIS	706	The Middle Period in U.S. History 1820-1860	3
HIS	716	The Era of Reform, 1873 to WWI	3
HIS	717	The 1930's in America	3
HIS	718	The United States since World War II	3

HIS	720	Studies in American Constitutional History	3
HIS	725	Studies of the Afro-American in American History	3
HIS	726	Studies in American Economic History	3
HIS	727	Studies in Social and Intellectual History of the United States	3
HIS	728	Studies in American Labor History	3
HIS	729	Studies in Pennsylvania History	3
HIS	735	Studies in American Diplomatic History	3
HIS	736	Studies in American Urban History	3
HIS	755	Studies in the History of England	3
HIS	760	Studies in the History of Contemporary Europe	3
HIS	770	Studies in the History of Eastern Asia	3
HIS	775	Studies in the History of the Middle East	3

POLITICAL SCIENCE

POS	705	History of Political Theory	3
POS	706	Government and Politics in Western Europe	3
POS	708	Politics of African Nationalism	3
POS	710	Comparative Communist Systems in Eastern Europe	3
POS	715	Politics of the German Speaking Peoples	3
POS	716	Problems of the Soviet Political System	3
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POS	746	American Chief Executives	3
POS	747	Civil Liberties and Judicial Process	3
POS	748	Problems in Public Administration	3
POS	755	Urban Studies	3
POS	756	Modern Political Parties	3
POS	757	The Political Process	3
POS	779	Independent Studies in Political Science	3

SPEECH PATHOLOGY AND AUDIOLOGY

Option I — 30 Credit Option
Research Option

I. PROFESSIONAL EDUCATION — Four (4) semester hours. Select one (1) from the following:

EDP	605	Philosophy of Education	2
EDP	606	Gen. History of Education	2

Select one (1) from the following:

EDP	617	Psychology of Growth and Development	2
EDP	625	Advanced Mental Hygiene	2
EDP	628	Psychology of the Disadvantaged	2
EDP	636	Psychology of Learning	2

II. FIELD OF SPECIALIZATION AND COGNATE AREAS — 18-20 semester hours: Note: A **minimum** of 15 hours **must** be selected from those courses designated as "SPA." The remaining 3-5 hours **may** or **may not** be "SPA" courses.

SPA	700	Aphasia and Cerebral Palsy	3
SPA	705	Voice Disorders	3
SPA	706	Profound Language Disorders	3
SPA	707	Stuttering	3
SPA	708	Neurology of Speech and Language	3
SPA	710	Advanced Clinical Methods	1-3
SPA	715	Experimental Phonetics	3
SPA	716	Administration of Clinical Procedures	3
SPA	720	Diagnostic Audiometrics	3
SPA	725	Aural Rehabilitation	3
SPA	749	Independent Study and Research	2
SPA	759	Special Problems in Speech Pathology and Audiology	2
SPA	785	Seminar in Speech Pathology	2
ESP	700	Introduction to Exceptionality	3
ESP	701	Introduction to Behavior Analysis	3
ESP	702	Behavior Management and Techniques	3
ESP	703	Ed. of Sev./Profound Handicapped	3
ESP	738	Sem. Tch. Behavior. Group Dynamics	3
ESP	739	Field Exp. Sem. in Special Ed.	3
ELG	701	Org. and Admin. of Guidance El. School	2
ELG	702	Counseling Theory	2
ELG	703	Consulting Theory	2
GEO	520	Language in Society	2
EDP	616	Guidance and Counseling	2

III. RESEARCH — Six to eight (6-8) semester hours selected from the following:

*EDP	600	Statistical Methods	2
**SPA	800	Research Methodology	2
**RES	800	Methods of Research	2
***RES	829	Research Project	2
***RES	849	Master's Thesis	4

*Required
**Either Required
***Either Required

Option II — 36 Credit Option

I. PROFESSIONAL EDUCATION — Six (6) semester hours. Select one (1) or two (2) from the following:

EDP	605	Philosophy of Education	2

EDP	606	General History of Education	2

Select one (1) or two (2) from the following:

EDP	617	Psychology of Growth and Development	2
EDP	625	Advanced Mental Hygiene	2
EDP	628	Psychology of the Disadvantaged Child	2
EDP	636	Psychology of Learning	2

II. FIELD OF SPECIALIZATION AND COGNATE AREAS — 24 semester hours: NOTE: A **minimum** of 18-20 hours **must** be selected from those courses designated as "SPA". The remaining 4-6 hours **may** or **may not** by "SPA" courses.

SPA	700	Aphasia and Cerebral Palsy	3
SPA	705	Voice Disorders	3
SPA	706	Profound Language Disorders	3
SPA	707	Stuttering	3
SPA	708	Neurology of Speech and Language	3
SPA	710	Advanced Clinical Methods	1-3
SPA	716	Administration of Clinical Procedures	3
SPA	720	Diagnostic Audiometrics	3
SPA	725	Aural Rehabilitation	3
SPA	785	Seminar in Speech Pathology	2
ESP	700	Introduction to Exceptionality	3
ESP	701	Introduction to Behavior Analysis	3
ESP	702	Behavior Management and Techniques	3
ESP	703	Ed. of Sev./Profound Handicapped	3
ESP	738	Sem. Tchr. Behav. Group Dynamics	3
ESP	739	Field Exp. Sem. in Spec. Ed.	3
ELG	701	Org. and Admin. of Guidance El. School	2
ELG	702	Counseling Theory	2
ELG	703	Consulting Theory	2
EDP	616	Guidance and Counseling	2
GEE	520	Language in Society	2

III. RESEARCH — Six (6) semester hours selected from the following:

*EDP	600	Statistical Methods	2
SPA	715	Experimental Phonetics	3
SPA	749	Independent Study and Research	2
SPA	759	Spec. Probs. in Sp. Pathology or Audiology	2
**SPA	800	Research Methodology	2
**RES	800	Methods of Research	2

*Required
**Either Required

V Course Description

General Education
Professional Education
Research
Administration
Biology
Chemistry
Communication
Counselor Education
Early Childhood Education
Earth Science
Elementary Education
English
Geography
History
Industrial Arts
Industrial Arts Supervision
Mathematics
Mentally and/or Physically Handicapped
Political Science
Reading Specialist
Reading Supervisor
School Psychology
Social Science
Speech Pathology and Audiology

Course Description

GENERAL EDUCATION

GEE 500 COMPARATIVE STUDIES IN LITERATURE 2 cr.
From non-dramatic literay classic such as *The Divine Comedy, Don Quixote, Paradise Lost, The Brothers Karamazov, The Mahabarata, The Iliad, Les Miserables,* a number will be chosen and studied in some detail both for the enduring values they offer in themselves and for the conclusions that may be drawn from them regarding their cultures, aesthetics, and philosophies.

GEE 505 GREAT WORKS IN DRAMA 2 cr.
Study and comparison of a number of plays by authors of various nationalities (for instance Aeschylus, Plautus, Calderon, Racine, Goethe, Ibsen, Chekhov, Shakespeare, Shaw, O'Neill) for the values they represent in themselves and also as a basis for comparisons in aesthetics, philosophy and culture.

GEE 506 PHILOSOPHY AND PHILOSOPHERS 2 cr.
This course proposes to consider the basic problems of philosophy through the writings of Plato, Aristotle, Kant, Schopenhauer, Bergson, James, Dewey and other thinkers. The guiding aim will be to present diverse views from primary sources. Lecture and discussion will be used. The techniques of the "Great Books" seminars will be used in discussion.

GEE 507 COMPARATIVE MUSIC 2 cr.
This course is designed to analyze music and its effect on our lives. Discussions will be devoted to such areas as Art and Life, why we like music, and how we like music, music as an art, music as a humanity and the spiritual factor in music. Some technicalities will be entered into such as the composer's materials, instruments: the means for making music. Many listening experiences will be derived from records. Modern trends in music and our attitude toward "this modern stuff" will be discussed.

GEE 508 SCIENCE AND TECHNOLOGY 2 cr.
In a consideration of the interaction of technology with both the individual and the social institution, current socio-technological problems are used to introduce the major concepts of technology. The concepts include modeling, decision-making, feedback, stability and dynamics. Particular areas include energy, noise and health delivery with emphasis on the man-technology interaction. The major objective is to improve the technological literacy of the student — to give a broad understanding of modern technology (its capabilities, characteristics, and limitations) which is so important as we perform and cope with the problems of the interaction of technology and society.

GEE 510 HISTORY OF MATHEMATICS 2 cr.
A study of the origin and the development of our number system. The development of the fundamental operations of mathematics is stressed. The importance of mathematics to the various stages of civilization is emphasized.

GEE 515 SCIENCE BIOGRAPHIES 2 cr.
A selected series of projects involving the lives of the men of science and the nature of their contributions to science. Emphasis is placed upon the discoveries rather than the lives. Experiments duplicating the pioneer work are utilized wherever possible.

GEE 516 WORLD RESOURCES AND POPULATION PROBLEMS 2 cr.
A resume of the world's resources with emphasis upon soils, vegetation (particularly forests), waters, minerals, and human resources. The availability and possible development of these resources in relationship to the world's under-populated and over-populated areas. The availablity of a reasonable standard of living in various regions as determined by potential resource development.

GEE 517 AMERICAN CIVILIZATION 2 cr.
A treatment of those elements in American life which have given direction to the unique development of the United States.

GEE 518 COMPARATIVE INSTITUTIONS 2 cr.
In this course some of the major institutions of a number of modern societies are compared in terms of philosophic defenses, organization, function, alleged outcomes, real outcomes, human costs, etc. Among the institutions examined are: family organization, economic systems, and governmental systems.

GEE 520 LANGUAGE IN SOCIETY 2 cr.
This course will view languages as inventions or creations of men. It is based on the premise that speakers of different languages view their words differently, and therefore, evaluate them differently. It assumes that thinking is relative to the languages learned. It emphasizes the point of view that development in many of the modern sciences has been accelerated by the creation of new systems of representations (languages). It considers also recent evidence that man's creative potential may be seriously impaired by the imposition of prejudices, rigidities and certainties that are passed along through the languages of all cultures.

GEE 525 COMMUNITY PROBLEMS OF HEALTH AND SAFETY 2 cr.
An analysis of the program and problems of the community in health and safety. Dealing with the basic facts and principles of public or community health and safety at the local, state and national levels, including the relationships between public health departments, voluntary health agencies and the school's health and safety program.

GEE 526 MASS COMMUNICATIONS 2 cr.
The history, development, function and problems of mass media in America. The various theories of mass communication based on the organization of different societies: authoritarian, libertarian and communist. The social responsibility theory of each and the impact of each on their respective societies.

GEE 527 COMMUNITY RESOURCES PROBLEMS 4 cr.
To help elementary, junior, and senior high school teachers improve classroom instruction through the identification and proper utilization of community resources. Emphasis is upon the study of systematic ways for making new knowledge available through utilzation of community resources in a form that can be readily integrated into the curriculum. To help the teachers gain better understanding of the economics, cultural, and governmental life of their community. To help develop a functional relationship between education and other segments of community life. To produce teaching materials for use in the schools of the area.

GEE 535 SOCIOLOGY OF THE FAMILY 2 cr.
An analysis of marriage, the family, and kinship systems with the primary focus on the American culture. Cross-cultural patterns from a historical perspective will also be reviewed. Special attention will be paid to marital interaction and family disorganization.

GEE 536 ARCHAEOLOGY FIELD SCHOOL 2-4 cr.
To instruct students in scientific archaeological field and laboratory techniques. The basic orientation will be that of research.

GEE 537 COMPUTER SCIENCE 2 cr.
In general, this beginning course will attempt to outline the role of the Computer in Education. Emphasis will be placed upon what computers can do and how they perform basic tasks. No prior knowledge of the field will be reguired.
Basic elementary information which is common to nearly all data processing and information handling systems will be covered. Topics also discussed will be elementary concepts of number systems, computer components and their functions, stored program concepts, problems flow charting, programming techniques and the history of calculating machinery and computers.

GEE 547 MORAL PROBLEMS OF SCIENTIFIC RESEARCH AND BEHAVIOR CHANGE 2 cr.
This course will examine some of the important moral and legal problems that arise in the pursuit and application of scientific knowledge. Although the issues can be raised broadly, attention will focus on the problems connected with human and animal subjects. Current legal requirements and moral controversies in the students' fields of study will be an important part of the course. There will be continuing consultation with interested departments about recent developments and new problems.

GEE 565 SURVEY OF THE HUMANITIES AND RELATED ARTS 2 cr.
This course is intended to relate some aspects of the humanities; namely, music, art, and literature through the perceiving of experiences presented in auditory, visual and verbal forms. Through these art forms, a search is made to better understand man's wonderings, problems, experiences with beauty and a myriad other life's experiences. A review of representative art works are used to evoke experiences and to understand them in a humanistic light.

GEE 588 SEMINAR ON CREATIVITY 2 cr.
Individual research into the psychological, sociological, and educational aspects of creativity is carried on under the guidance and supervision of the instructor. Each student prepares a research paper on some phase of creativity and presents his findings to the seminar group for critical examination and discussion. For education majors, emphasis is placed upon discovering educational ways and means for developing the creative capacities of the child through the teaching of one's subject matter field. Appropriate periodic lectures, class discussions, and individual conferences are conducted to guide the student during the course of his research.

GEE 585 EARTH SCIENCE WORKSHOP 2 cr.
Earth Science Workshop is a field and laboratory oriented course. The major objective is to give the in-service teacher a broad overview of the several disciplines comprising the field of earth science. This is achieved primarily by acquainting him with the many local points of interest to both the earth science teacher and student, and by his working with the tools and materials of the earth scientist.

PROFESSIONAL EDUCATION

EDP 600 STATISTICAL METHODS 2 cr.
Includes the understanding and application of frequency distribution, series analysis, correlation, normal curve, sampling, collection of data, statistical tables and graphic presentations.

EDP 605 PHILOSOPHY OF EDUCATION 2 cr.
An introduction to the discipline of philosophy, and the significant contributions that this discipline makes to education. Major schools of traditional and

contemporary philosophy are examined with particular emphasis upon studying the influence these philosophies have had upon educational theory and practice over the years.

EDP 606 GENERAL HISTORY OF EDUCATION 2 cr.
Examines the concepts of modern education as they are found in the historical development of the school.

EDP 607 ADVANCED EDUCATIONAL PSYCHOLOGY 2 cr.
Current issues and recent evidence in the areas of educational psychology including growth, personality, heredity and environment, intelligence, learning, transfer of learning, emotion, motivation, and teaching methods.

EDP 608 COMPARATIVE EDUCATION 2 cr.
Historical foundations, rise and development of national educational systems of Western Europe and nations of the Western hemisphere. Postwar development and extension of educational opportunities in England, Norway, Sweden, Denmark, Holland, Germany, France, Russia, Mexico, and the Republics of Central and South America.

EDP 610 EDUCATIONAL SOCIOLOGY 2 cr.
Deals with the role of the school in child socialization, inter-group education, the intergration of school and community, group processes and the teacher, teacher problems in human relations, and educating for leadership.

EDP 615 TEACHER AWARENESS 3 cr.
This course deals with a practical approach to the solution of daily problems arising from action and interaction with students, other faculty members, administrators, school board members, parents, and the community.
The course will be experience oriented with an in-depth perception of the significant responsibilities and functions the teacher performs with emphasis on student rights, duties, responsibilities and legal rights of teachers, evaluations, classroom procedures and lesson planning.

EDP 616 GUIDANCE AND COUNSELING 2 cr.
For teachers, teacher-counselors, administrators, and other non-specialists in guidance to further the guidance work for which they are responsible. Consideration to guidance programs, the interview, interpretation of test data, observations, case study, and other counseling techniques; to guidance in the classroom and club; to group discussion and committee work; to counseling with pupils and parents regarding study, discipline, health, social, emotional, educational, and vocational problems.

EDP 617 PSYCHOLOGY OF GROWTH AND DEVELOPMENT 2 cr.
This course is designed to provide insight into how people grow and develop from infancy to old age. Maturation, learning, and their interrelationships are studied. Physical growth patterns are noted along with emotional, intellectual, and social development with implications for the school, community, and home.

EDP 618 SOCIAL PSYCHOLOGY 2 cr.
A study of the effects of group membership upon individual behavior with particular emphasis on social attitudes, collective behavior, and social problems.

EDP 619 STUDENT TEACHING SUPERVISION 3 cr.
The course is intended for teachers presently acting as cooperating teachers and for those interested in serving in this capacity in the future. A prerequisite for admission to the workshop is three years of teaching experience. This course will provide the opportunity to strengthen, clarify, re-think, and revitalize the approach to student teaching supervision.

EDP 620 CURR. & METH. OF TEACHING BIOL. IN H. S. 2 cr.
The primary object of this course is to acquaint teachers-in-service with the thinking and philosophy which went into the building of the BSCS courses of study. The three versions will be studied, and an attempt to evaluate each version against the various school backgrounds will be made. Laboratory projects will be pursued which will serve as source material in the teacher's own classes. Two class hours and two lab hours per week. Prerequisite: Certification to teach biology.

EDP 625 ADVANCED MENTAL HYGIENE 2 cr.
This course is concerned with the study of disorders due to physic causes — whether the symptons are somatic, psychic, or behavioral. Preventive and psychological adjustments of children in a deprived society are analyzed in order to improve their harmonious relationships in group improvement and development.

EDP 626 CURRENT METHODS AND PHILOSOPHY IN MATHEMATICS EDUCATION 2 cr.
This course deals with the methods, materials and philosophy of two of the leading groups of modern mathematics. These two bodies have and will continue to influence textbook publications in modern mathematics in the secondary schools.

EDP 627 EARLY CHILDHOOD EDUCATION 2 cr.
This course deals with the growth and development of early childhood education. The emphasis is placed on the child's behavior and how it affects his educative process. Physical, social, emotional, mental development and earlier deficiencies will be systematically observed, tested, and interpreted.

EDP 628 PSYCHOLOGY OF THE DISADVANTAGED CHILD 2 cr.
Emphasis will be placed on insight into the psychology of disadvantaged children. Analysis of research, direct experimentation, and naturalistic observation will be utilized in this study. These tools will be used as methods for compensating earlier deficiencies in the child's environment.

EDP 630 COUNSELING PARENTS OF EXCEPTIONAL CHILDREN 2 cr.
The family as a social system; parental reactions to the child who is defective whether mentally retarded, physically handicapped, sensorily handicapped, emotionally disturbed or gifted; the helping process including principles of interviewing; the initial interview, the terminal interview and the role of the special class teacher in helping the parent to more realistic acceptance of the child's handicap.

EDP 635 CBA AND CHEMISTRY MATERIALS 2 cr.
This course will cover the methods of chemical bond approach and chemical materials approach to the teaching of high-school chemistry.

EDP 636 ADVANCED PSYCHOLOGY OF LEARNING 2 cr.
A treatment of selected, well-known learning theories. These are related to the learning process, derived from rational and empirical source, with the object of showing relationships to teaching and clarifying the developmental processes in conceptual and perceptual areas.

EDP 637 DEVELOPMENT & ORGANIZATION OF THE CURRICULUM FOR THE SECONDARY SCHOOL 2 cr.
Modern practices and procedures in curriculum development will be studied. The students will have opportunities to study objectives, methods, and materials designed to help the secondary teacher. Emphasis will be placed on practical day-to-day problems in the classroom and to long-range curriculum development.

EDP 638 SELECTION AND USE OF INSTRUCTIONAL MATERIALS IN THE CLASSROOM 2 cr.

Designed for teachers, and for instructional materials specialists. Major emphasis is on the improvement of instruction through the informed selection and effective use of instructional materials and equipment. Deals with a broad range in the evaluation of materials including motion picture films, filmstrips, slides, transparencies, flat pictures, recordings, audio tapes, feltboard materials, and study displays.

EDP 640 IMPROVEMENT OF INSTRUCTION THROUGH SUPERVISION 2 cr.

A study of the theory, research, practice and evolving concepts which have practical implications for supervision in the school environment. It views supervision as only a part of a larger entity . . . the operation of the educational system. Supervision is defined as a relationship in which supervisory personnel assist professional and para-professional employees within a specific department to develop effective practices which will improve the quality of instruction and result in individual pupil progress.

EDP 645 ISSUES AND INNOVATIONS IN SECONDARY EDUCATION 3 cr.

The course will emphasize an analytical approach to current issues and innovations in Secondary Education. The major effort will focus on whether the innovations are possible for schools located in Western Pennsylvania. Innovations such as free electives, modular scheduling, open high school, pass-fail grading and career education will be analyzed. The seminar approach will be utilized and participants will be expected to do extensive reading in the above areas.

EDP 646 CONTEMPORARY TRENDS IN SECONDARY EDUCATION 3 cr.

The purpose of the course is to survey the current curricular practices, trends and innovations in secondary education.

EDP 647 THE MIDDLE SCHOOL; ITS PHILOSOPHY AND MODES OF OPERATION 3 cr.

The course will emphasize the differences between the philosophy of the Junior High School and the Middle School. The nature of the Middle School Program, types of students, expected teacher behavior and Middle School Physical Plants will be the major topics. Field trips to new middle schools and sessions with middle school principals will be arranged.

EDP 648 LEGAL DECISIONS AFFECTING SECONDARY EDUCATION 3 cr.

The course will focus on court decisions, state and federal, which have brought about changes in the typical role of secondary school teachers. Student rights, teachers' rights, tenure problems, legality of negotiations and the related problems created by the issues will be the major topics.

EDP 650 PERCEPTION AND MOTOR DEVELOPMENT IN EDUCATION OF CHILDREN 2 cr.

The purpose of this course is to provide the teacher with fundamental knowledge, through practical program demonstrations and readings, as to the role of the motor cortex in learning.

EDP 657 PROFESSIONAL NEGOTIATIONS 3 cr.

The role of teachers, administrators and school board members in the collective negotiations process. The class will be structured upon in-class experiences involving role playing and simulation exercises designed to prepare participants

for a negotiations posture. The Public Employee Act (Act 195), the legal rights, duties, restrictions and limitations of teachers will form the basis of class work.

EDP 665 INDUSTRIAL ARTS AS A TEACHING METHOD FOR GRADES K-6 2 cr.
An introduction and/or review of: the purposes and relationships of general education and industrial arts; the learning capabilities of young and special children; and the various curriculum approaches for utilizing tools and materials to facilitate normal or remedial human development in grades K-6. Graduate students from either the elementary or special education curriculum will have the opportunity to develop basic psychomotor skills in the areas of visual communications, industrial materials and power technology that are applicable for use within the public school setting (hand-eye-co-ordination type activities). Finally, the elementary or special education major will be designing, developing, presenting and evaluating curriculum supported by industrial arts content for students in grades K-6. These curriculum and instructional patterns will occur within their own individual classrooms or a general laboratory setting as conditions dictate. Graduate students who have successfully completed the requirements for IAR 303 — Industrial Arts for Elementary and Special Education Majors — will be denied admission to this course.

EDP 685 SEMINAR IN AUDIO-VISUAL TECHNIQUES 2 cr.
This course is concerned with the more important aspects of developing and expanding audio-visual programs in the elementary and the secondary schools. Demonstrations, lectures, and group dicussions will include the utilization, preparation, and administration of audio-visual materials.

EDP 686 GROUP DYNAMICS 2 cr.
This course is designed to bring together the recent research on teacher behavior with the theories and research of social psychology and group dynamics. It aims to give the student some understanding of group processes and some personal experience helpful in developing a repertoire of ideas and behaviors that will be pertinent in supervision and in the classroom.

EDP 687 GUIDANCE AND COUNSELING SEMINAR: SECONDARY TEACHERS 3 cr.
The course is designed to permit in-service secondary personnel to become familiar with the scope of the guidance function especailly as it relates to the classroom. Through a number of varied experiences, the student will become aware of the areas on which he may use guidance techniques in his everyday teaching and/or supervisory capacity. All students will consider the information from form "core" areas; (1) Counseling (2) Individual Appraisal Techniques (3) Informational Services and the Homeroom and Guidance. In addition, each student will give individual in-depth consideration to any problem area of his choice. These independent studies will then be shared with the class. Class activity and evaluation will vary according to class and individual requirements.

RESEARCH

RES 800 METHODS OF RESEARCH 2 cr.
This course gives a general introduction into the reasons and the procedures for research in education. Types of research, selection of a research problem, the use adviser and two other professors recommended by the Dean of Graduate Studies. The student may expect special guidance in this work from his adviser and other members of the graduate committee.

ENG 800 METHODS OF RESEARCH IN ENGLISH 3 cr.
Basically, this course is an introduction to the graduate study of English and to methods of bibliographical research (in the sense of acquaintance with the basic reference sources of literary history). The aim of the course is not merely to acquaint the student with the standard reference books in the field but to give him a brief overview of some of the principal methods and preoccupations of the literary critic and scholar.

GEO 800 METHODS OF GEOGRAPHIC RESEARCH 3 cr.
Consideration of purpose, scope, and procedures of geographic research including problem sensing, data collection, and statistical analysis. Prerequisites: GEO 700; Recommended: GEO 790 and EDP 600.

HIS 800 HISTORICAL METHODOLOGY 3 cr.
Basic methods of historical research are surveyed; proper use of sources, bibliography, annotation; brief analysis of the practical and technical approach of leading historical scientists.

POS 800 METHODS OF POLITICAL SCIENCE 3 cr.
Basic methods of political science research are surveyed; proper use of sources, bibliography, annotation; brief analysis of the practical and technical approach of leading social scientists.

SOS 800 METHODS IN SOCIAL SCIENCE 3 cr.
Basic methods of social science research are surveyed; proper use of sources, bibliography, annotation; brief analysis of the practical and technical approach of leading social scientists.

RES 829 RESEARCH PROJECT 2 cr.
A written report of a scientific investigation is required. It is suggested that the report be based on an actual classroom problem. The report may cover the available literature in the field or it may be based on a classroom experiment. A knowledge of research techniques and scientific reporting is required.

RES 849 MASTER'S THESIS 4 cr. (certain areas 6 cr.)
A thesis is the written report of an exhaustive research made to derive findings and arrive at conclusions in a specific field of investigation. The thesis subject must have the prior approval of a special graduate committee composed of the faculty adviser and two other professors recommened by the Dean of Graduate Studies. The student may expect special guidance in this work from his adviser and other members of his graduate committee.

AMINISTRATION PROGRAM FOR PRINCIPALS

Since the programs for Elementary and Secondary Principals are competency-based, most of the background and experiences for the ten (10) generic competencies will be obtained through special seminars, professional laboratory experiences, independent study projects, and field learning contracts. Some of the knowledge competencies will be fulfilled by enrolling in existing graduate courses, such as psychology, history and philosophy of education, and school curriculum.

BIOLOGY

BIO 700 CELLULAR ULTRASTRUCTURE 3 cr. (lecture)
The fine structure of cellular organelles as revealed by the electron microscope is discussed in relation to organelle and cell function. Ultrafine structure of the cell

membrane, cell wall, nucleus, mitochondria, Golgi apparatus, locomotor organelles, etc., are included. This course does not include instruction in the techniques of electron microscopy.

BIO 701 A PROCESS APPROACH TO ENVIRONMENTAL EDUCATION 2 cr.
An intensive one week workshop taught only at the Ivan McKeever Environmental Center, Sandy Lake, PA. The course is taught using college personnel as well as staff members from the McKeever Center. The workshop emphasizes the development of skills and techniques for strengthening environmental programs, identifying methods of implementing new programs, field work and designing methods for involving "the public."

BIO 705 CELLULAR PHYSIOLOGY 4 cr. (3 hrs. lecture, 2 hrs. lab)
The physiology of the cell with emphasis on the relationship of cell structure and function. Includes physical and chemical aspects of cells, the relation of cells to their environment, energy conversions in cells, membrane permeability, photosynthesis, and enzyme action. Prerequisite: Organic Chemistry.

BIO 706 BACTERIOLOGY 4 cr. (3 hrs. lecture, 2 hrs. lab)
A critical analysis of the biology of the bacteria is undertaken, correlated with their role in public health, medicine, and industry where applicable. Physiological and biochemical properties of the bacteria are discussed and experimentally tested as a basis of the rationale of control. Staining techniques, isolating, culturing, counting, and identification are performed during the progression of these investigations. Prerequisite: Organic Chemistry.

BIO 707 MYCOLOGY 4 cr. (3 hrs. lecture, 2 hrs. lab)
An extensive examination of the fungi is undertaken with emphasis on the filamentous form. The cytology, physiology, and morphology of the fungi are studied to determine their place in nature. Techniques in isolating, culturing, counting, photographing, and identifying fungi will be pursued in the laboratory. Prerequisites: Botany I, Microbiology, and consent of instructor.

BIO 708 MICROBIAL ECOLOGY AND PHYSIOLOGY 4 cr. (3 hrs. lecture, 2 hrs. lab)
Detailed analyses of the anabolic and catabolic activities of bacteria, fungi, and algae are studied. The microbiological processes of nitrification, denitrification, chemosynthesis, bacterial and algal photosynthesis, fermentation, and antibiosis will be examined, with reference to ecological interactions with man and other organisms. Prerequisites: Microbiology and Organic Chemistry.

BIO 713 APPLIED AND THEORETICAL CONCEPTS IN MODERN BIOLOGY 3 cr.
A biology course for secondary school science teachers who have the responsibility for teaching life sciences or biologically-related concepts in their teaching assignments. Major pedagogical emphasis is predicated upon the subject areas of biochemistry, cell biology, genetics, microbiology, and ultrastructure. A conceptual approach will be integrated into these biological subjects so the student will become aware of the chemical and physical interrelationship which ramify through the biological sciences. Demonstrations and "hand on experiences" with all kinds of biological instrumentation will be an important component of the course. Students will be expected to develop behavioral objectives and lesson plans to show how they will utilize the information presented in their classroom situation(s).

BIO 715 TISSUE CULTURE 4 cr. (3 hrs. lecture, 2 hrs. lab)
This course deals with methodology of cell and tissue culture. Basic cell structure, behavior of cells in culture; cells and their environment; media for culturing cells are discussed. Laboratory work will also be practiced on preparation of apparatus, glassware, etc.; sterilization procedure and aseptic techniques; primary

explantation techniques; cell line establishment, trypsinization; preparation of culture media, solutions, chick plasma and embryo extracts; and chromosome preparation from tissue culture.

BIO 716 CYTOGENETICS 4 cr. (3 hrs. lecture, 2 hrs. lab)
This course aims at a comprehensive understanding of mitosis, meiosis, crossing over, chromosome morphology and karyotyping. Special emphasis also on human cytogenetics including sex determination, sex chromatin, congenital malformations associated with anomalies of autosomes and sex chromosomes, mutagenic effects of drugs, radiation, etc., and the most recent technique of chromosome banding and mapping.

BIO 717 POPULATION GENETICS 3 cr. (lecture)
This course is based upon the Hardy-Weinburg law of population genetics, the recent works of Theodosious Dobzhansky when at Columbia University and of Bruce Wallace of Cornell. The role of the Hardy-Weinburg formula in explaining trends in population and the significance of heterozygosity in the retention of unfavorable genes in the population will be emphasized. The algebra and statistics of genetics will be used to clarify evolutionary trends, including the Hardy-Weinburg equation, chi-square, probability, and analysis of variance. A class project will be run on Drosophila population studies. Prerequisite: Advanced Genetics.

BIO 718 ADVANCED PROBLEMS IN GENETICS 3 cr. (lecture)
This course is essentially molecular and microbial genetics. The topics covered will vary somewhat from year to year but will usually include protein structure, function, and structural determination, nucleic acids and protein synthesis, mutation rate and mechanisms, mechanism of recombination found in microbial transformation, transduction, and conjugation. Prerequisite: Genetics.

BIO 721 BIOCHEMISTRY I 4 cr. (3 hrs. lecture, 2 hrs. lab)
(taught in Chemistry Department)
A comprehensive survey of the properties of amino acids, elucidation of protein structure, protein biosynthesis, the Genetic Code, and carbohydrate metabolism. The laboratory will include methods of separation, such as dialysis, gel filtration, adsorption chromatography, ion-exchange chromatography, partition chromatography, thin-layer chromatography, electrophoresis, spectrophotometry, fluorimetry, and qualitative and quantitative determination of carbohydrates and proteins. Prerequisite: Organic Chemistry I and/or instructor's permission.

BIO 722 BIOCHEMISTRY II 4 cr. (3 hrs. lecture, 2 hrs. lab)
(taught in Chemistry Department)
A continuation of Biochemistry I and including fatty acid biosynthesis, fatty acid metabolism, photosynthesis, protein metabolism, vitamins, hormones and immunochemistry. The laboratory will include qualitative and quantitative determination of fats and steroids, and work with nucleic acids, enzymes, vitamins, and hormones. Prerequisite: Biochemistry I and/or instructor's permission.

BIO 725 MOLECULAR BIOLOGY 4 cr. (3 hrs. lecture, 2 hrs. lab)
This course will go beyond the content of the biochemistry courses to emphasize macromolecular biological synthesis and function, enzymology, genetic and cellular control systems such as the operon and repressors, cyclic reaction systems such as electron transport, phosophorylations, pentose shunt, tricarboxylic acid cycle; special techniques such as reaction kinetics, cell fractionation, purifications, and assays for peptides, isoenzymes, DNA, cyclic AMP, NAD, vitamins, etc.; and the biochemistry of natural products, alkaloids, terpenes, pigments, hormones, pesticides, medicinals, and other classes of compounds. Prerequisites: Biochemistry I and II or consent of instructor.

BIO 730 ANIMAL SYSTEMATICS 4 cr. (3 hrs. lecture, 2 hrs. lab)
A general survey of the animal kingdom from the taxonomic point of view, with emphasis on morphology and phylogeny as bases for classification. Also, some attention to ecological and geographical distribution of animal life. Prerequisites 15 credit hours of Biology

BIO 735 COMPARATIVE VERTEBRATE ANATOMY
4 cr. (3 hrs. lecture, 2 hrs. lab)
A comparative study of the Chordata from prochordates to mammals with emphasis on the evolution of the vertebrates, including man. Lectures and class discussions will be held in the laboratory, with selected specimens used for dissection for the purpose of making comparisons quickly and accurately. Prerequisite: Zoology II.

BIO 736 EMBRYOLOGY 3 cr. (lecture)
A study of the development of the vertebrate embryo, emphasizing the frog, teleost, chick, and pig. Prerequisite: Zoology II.

BIO 737 ANIMAL BEHAVIOR 3 cr. (lecture)
Basic neuroanatomy, neurophysiology, and neurochemistry, plus a comparative survey of the behavior of selected animals, together with consideration of basic techniques of ethological analysis. Prerequisite: Zoology II or General Biology.

BIO 738 HERPETOLOGY 4 cr.
A study of the anatomy, physiology, ecology, and taxonomy of the major groups of amphibians and reptiles. Prerequisite: Zoology II.

BIO 740 ORNITHOLOGY 4 cr.
Study of birds; with a major emphasis field observation and identification of resident and migratory species. Numerous field trips in Western Pennsylvania areas also illustrate ecological, behavioral and habitat relations and the impact of humans on bird life. Lectures and some labs cover anatomic and physiologic adaptions of the vertebrate structure to the stringent problems of flight and climate. No prerequisites.

BIO 741 ADVANCED RESEARCH STUDIES 1-4 cr.
An original research investigation with a qualified research professor in the student's area of biological research interest.

BIO 742 SCIENTIFIC PHOTOGRAPHY 2-4 cr.
A basic course in life and environmental sciences which stresses the myriad of ways in which photography can be applied to enhance the effectiveness of teaching and research endeavors of biologists and environmentalists. Special attention is given to photomicroscopy, macrophotography, and field photography. Various other illustrative materials are also prepared utilizing selective photographic equipment and/or procedures.

BIO 745 ENTOMOLOGY 4 cr. (3 hrs. lecture, 2 hrs. lab)
Theoretical and field study of the local classes of insects and related species; taxonomy, collecting and mounting, general and specific morphology, metamorphosis and life cycles, economic importance and control measures. Prerequisite: Not open to those having Biology 362.

BIO 746 PARASITOLOGY 4 cr. (3 hrs. lecture, 2 hrs. lab)
A study of symbiotic relationships in the animal kingdom with an emphasis on invertebrate endoparasites of man, his domestic animals, and common wildlife of the area. Morphology, life cycles, host-parasite relationship, etiology, epidemiology, and treatment and diagnosis are stressed.

BIO 747 LIMNOLOGY 4 cr. (3 hrs. lecture, 2 hrs. lab)
This course consists of the analysis of the various physical, geological, chemical, and biotic characteristics of fresh water environments. The biotic assemblages of the various aquatic systems will be particularly emphasized. Field work will be conducted in various ponds, bogs, lakes, and streams in Pennsylvania. Prerequisite: one ecology course.

BIO 750 TERRESTRIAL ECOLOGY 4 cr. (3 hrs. lecture, 2 hrs. lab)
The course involves selected aspects of terrestrial systems including various qualities of community dynamics such as structure, composition, succession, phenology, and paleoecology. The biota will be intensively analyzed through the field work taken in various communities of the Northern Temperate Forest and Upland regions. Several extended field trips may be required. Prerequisite: one ecology couse.

BIO 751 PLANTS AND MAN 4 cr.
The course is formulated so that the students will become acquainted with man's relationships and economic interest in plants from the products from plant cell walls, exudates and extractions to those primarily as food.

BIO 755 FIELD BOTANY 4 cr. (3 hrs. lecture, 2 hrs. lab)
Study and collection of higher plants with emphasis on the local flora. The course should suggest to the serious student problems of a highly speculative and worthy nature and touch on other vital and related subjects such as ecology, genetics, morphology and evolution. The materials collected in the field will be further studied in the laboratory for structure and family relationships and compared with specimens in the California State College Herbarium.

BIO 756 FIELD AND LABORATORY TECHNIQUES IN BOTANY 4 cr. (3 hrs. lecture, 2 hrs. lab)
The course is designed to meet the needs of those who are working in natural history. For students and teachers who wish to collect, save, and work with specimens available to them, but lack the information for preserving them. It encompasses field study, collection, preservation, and illustration of the major divisions of plant kingdom with consideration of the major habitats, the value of field notes and the tabulation of laboratory data.

BIO 757 PLANT SYSTEMATICS 4 cr. (3 hrs. lecture, 2 hrs. lab)
A course designed to explore the history of plant classification and its culmination in present-day taxonomic practices, the evolution of the vascular plants, and a definitive study of their representative modern families. An extensive plant collection will be required of each student. Prerequisites: Botony I and II.

BIO 758 PLANT ANATOMY AND MORPHOGENESIS 4 cr. (3 hrs. lecture, 2 hrs. lab)
A study of plant growth and descriptive experimental studies on cells and meristems. How plant correlation, polarity, symmetry, differentiation, regeneration, tissue mixtures and abnormal growth are involved in the distinctive phenomena of morphogenesis. Laboratory work will consist largely of the growth of representative plants from the seeds in the laboratory. Experiments will show the effects of light, temperature, water and various other physical factors together with chemical substances such as growth substances and the various genetic factors.

BIO 760 ADVANCED PLANT PHYSIOLOGY 3 cr. (lecture)
Advanced studies of plant processes — photosynthesis, respiration, mineral metabolism, water relations, plant growth substances, and environmental plant physiology, including recent advances in the field. Prerequisites: Elementary Plant Physiology or equivalent; also courses in general physics and organic chemistry.

BIO 766 BIOMETRY 3 cr. (lecture)
A study of statistical techniques, applied to experimental design and analysis of biological problems in the field and the labortory, with emphasis on multivariant situations and on insuring validity of results. Prerequisites: College Algebra or Statistics.

BIO 767 LAB INSTRUMENTATION FOR BIOLOGY
4 cr. (3 hrs. lecture, 2 hrs. lab)
A consideration of both theoretical and practical aspects of laboratory instrumentation which apply to continuing study and research in biology. Subject areas include advanced optical microscopy such as phase, fluorescence, and photomicrography; various techniques of chromatography including gas, liquid, gel, thin layer, and paper; electrophoresis; spectrophotometry and colorimetry in the UV, visible, and IR regions; pH and buffering; cell disruption and fractionation techniques; ultracentrifugation, and special assays of interest to the student. Prerequisites: Analytical Chemistry or permission of instructor.

BIO 768 TECHNIQUES IN ELECTRON MICROSCOPY
4 cr. (3 hrs. lecture, 2 hrs. lab)
Detailed training in the operation and care of the electron microscope; techniques of specimen preparation for electron microscope visualization, including fixation, embedding, and ultrathin sectioning and special techniques such as replication and shadow casting. Prerequisites: BIO 762 and consent of instructor.

BIO 770 CONFERENCE ON ELECTRON MICROSCOPY
4 cr. (3 hrs. lecture, 2 hrs. lab)
Principles and techniques involved in electron microscopy, operation of the electron microscope and techniques of specimen preparation, including ultramicrotomy, staining, and shadow casting. This is a summer course for visiting faculty and graduate students. Prerequisites: Consent of the instructor.

BIO 775 RADIATION BIOLOGY 4 cr. (3 hrs. lecture, 2 hrs. lab)
The physics and physical chemistry of ionizing radiations and their interactions with matter; radiation measurement and dosimetry; lab manipulation and safety practices; health physics. Biological effects at the molecular, cellular, organ and organismal, and ecological levels with distinctions between low level, high level, and special condition situations, and between external radiation and internal radioisotopes. Prerequisites: Radiation Biology 430 or permission of instructor.

BIO 776 RADIOISOTOPE TECHNIQUES 4 cr. (3 hrs. lecture, 2 hrs. lab)
Practical and theoretical aspects of techniques of handling radioactive materials and conducting isotope tracer experiments; fundamentals of radioactivity; measurement units and instrumentation; radiochemistry; laboratory safety; radioisotope tracer methodology as used in biology; laboratory handling of biological materials; health physics, laboratory and administrative requirements. Prerequisites: Analytical Chemistry or permission of instructor.

BIO 778 ORGANIC EVOLUTION 3 cr. (lecture)
An intensive study of the impact of evolutionary thought upon the various disciplines of biology. Emphasis is upon evolution of life from non-life, organic evolution and the genetic basis of evolution. Also emphasis is placed upon the elemental forces of evolution, the sources of variation, the role of natural selection and genetic drift, the result of evolution through adaptation. Evolutionary divergence is studied through an understanding of races and species, isolating mechanisms, the origin of species, and evolution above the species level. Prerequisite: General Biology.

BIO 795 SEMINAR IN BIOLOGY 2 cr. (lecture)
The seminar involves library research, class discussion, and reports by the participants upon topics of special interest. Members of the biology staff are invited to lead some discussions in their major fields of interest.

MSC 700 MARINE SCIENCE CONSORTIUM
Seventeen colleges, including California, have two marine laboratories on the Atlantic Ocean near Chesapeake Bay, at Wallops Island, Virginia, and Lewes, Delaware. The Consortium offers field-oriented undergraduate and graduate courses throughout the year, using their own course numbers and titles. See the announcements in the California offices of Dr. Catalano (Biology) and Mr. Anthony (Geography) for current offerings. Biology students may take the Consortium biology graduate courses for credit at California by meeting the course prerequisites and obtaining approval of the graduate adviser and of the biology department faculty by vote. These courses are regular credit, not transfer credit; the registration must be recorded by the Graduate Office.

BIO 800 METHODS OF RESEACH IN SCIENCE 2 cr.
Consideration of the fundamental methods of research in the natural sciences; with emphasis on scientific methods, technical library use, collection and interpretation of data, and the format of scientific writing for the thesis and for publication. The Style Manual for Biological Journals will be followed.

CHEMISTRY

CHE 701 ADVANCED INORGANIC I 3 cr.
A study of the geometry of atoms and molecules as related to electronic structure and the relationship between chemical and physical properties electronic structure.

CHE 702 ADVANCED INORGANIC II 3 cr.
A study of the nature and properties of coordination compounds.

CHE 705 INORGANIC PREPARATIONS 2 cr.
Syntheses of selected inorganic compounds.

CHE 711 ADVANCED ANALYTICAL I 3 cr.
Chemical and Physical methods of separation.

CHE 712 ADVANCED ANALYTICAL II 3 cr.
Instrumental Analysis and Spectroscopy.

CHE 721 ADVANCED ORGANIC I 3 cr.
A survey of the types of chemical bonds, resonance, radicals, carbenes, confirmation analysis, aromaticity and the reactions of some of the important types of organic compounds.

CHE 722 ADVANCED ORGANIC II 3 cr.
A survey of the modern concepts of organic chemistry and their use in the interpretations of data in terms of mechanisms of organic reactions.

CHE 731 ADVANCED PHYSICAL CHEMISTRY I 3 cr.
Classical and statistical thermodynamics as applied to chemical systems.

CHE 732 ADVANCED PHYSICAL CHEMISTRY II 3 cr.
Kinetics and electrochemistry.

CHE 735 QUANTUM MECHANICS 3 cr.
An introduction to the concepts of quantum mechanics with applications to chemical systems.

CHE 736 FOUNDATIONS OF SCIENCE EDUCATION 2 cr.
An examination of the historical, philosophical, sociological, and psychological foundations of science education.

CHE 737 SCIENCE IN THE SCHOOL CURRICULUM 2 cr.
Foundations for science curriculum methods of curriculum development, current developments, planning and evaluation procedures and research.

CHE 745 MATHEMATICS FOR CHEMISTS 3 cr.
Differential equations, partial differential equations, boundry value problems, vector analysis, fourier analysis, matrix operations and complex variables with particular reference to specific chemical systems and problems in thermodynamics, statistical mechanics, kinetics and quantum mechanics.

CHE 746 SUPERVISION OF SCHOOL SCIENCE PROGRAMS 2 cr.
This course is concerned with the supervision of the total science education program in public schools with an emphasis on secondary education. Some of the major topics include: principles of supervision, objectives, curriculum development, recent trends and evaluation of teaching.

CHE 747 SUPERVISION OF SCIENCE TEACHERS 2 cr.
This course is designed to help those persons supervising the laboratory experience of student teachers and other teacher education students in science.

CHE 748 ENVIRONMENTAL CHEMISTRY FOR SCIENCE MAJORS 2 cr.
The course begins with basic chemical principles including the structure of atoms,molecules, chemical reations, stoichiometry, organic molecules and functional groups; the second half of the course deals with various aspects of air pollution, water pollution, heavy metals contamination, pesticides and air and water pollution by radioactive substances.

CHE 754 ATRONOMY FOR TEACHERS 2 cr.
This course is designed for teachers who wish to incorporate the science of astronomy and associated activities into their teaching environment. Activities within the course are highly individualized and will utilize our Celestron 10 and our 12.5 inch Criterion reflecting telescopes. Visits to nearby optical and radio observatories will be scheduled.

CHE 755 PHYSICO-CHEMICAL PRINCIPLES 2 cr.
The unprecedented importance of science requires intensive study of efficient methods for transmitting to our children the principal intellectual achievements of science, together with an understanding of how these achievements were, and are being obtained.
This course is based on the premise that the major principles of chemistry and physics can be viewed through "Big Ideas" or conceptual schemes, that will serve to summarize this vast body of knowledge. Thus the course will have a dual purpose.
1. To review major concepts in a unified manner.
2. To provide an alternative frame of reference for the science teacher in building the science curriculum.

The seven conceptual schemes as advanced by the National Science Teachers Association (NSTA), will serve as the basic framework for the course.

CHE 756 BASIC CONCEPTS OF PHYSICS 2 cr.
Basic concepts and principles of classical physics together with selected topics in contemporary physics. Designed to strengthen the physics background of science teachers.

CHE 757 HISTORY OF CHEMISTRY 2 cr.
The course begins with early man's ideas concerning the nature of things and his acquired knowledge of the properties of things through arts and crafts. The

beginning and development of chemistry are then traced from alchemy through the phlogiston theory up to organic chemistry; finally, a look at the impact of instrumentation upon chemistry, and general directions taken by chemistry in the twentieth century.

CHE 758 LITERATURE OF CHEMISTRY 2 cr.
Chemical library usage for information retrieval and introduction to modern methods of chemical information handling.

CHE 780 SEMINAR IN SCIENCE EDUCATION 2 cr.
A course dealing with the problems arising out of the practice of science education in public schools. Problems will be common to the participants. Emphasis is on developing skills and understandings leading to problem solution.

CHE 790 INDIVIDUAL STUDIES IN SCIENCE EDUCATION 1-3 cr.
Designed to enable students to pursue areas of interest in science education with the help of a graduate faculty member. May be repeated to a maximum of 3 credits.

CHE 796 INDIVIDUAL STUDIES IN PHYSICS 1-3 cr.
Designed to enable students to pursue areas of interest in physics with the help of a graduate faculty member. May be repeated to a maximum of 3 credits.

COUNSELOR EDUCATION

ELEMENTARY GUIDANCE

ELG 701 ORGANIZATION & ADMINISTRATION OF GUIDANCE IN THE ELEMENTARY SCHOOL 3 cr.
The purpose of this course is to provide the guidance counselor with an overview of the necessary competencies for organizing, administering, and evaluating elementary guidance programs. The major function of an elementary school counselor is that of building a better learning climate for all children. In order to develop a program conducive to this end, the prospective counselor must become familiar with the developmental needs of the child as well as his own needs and values. Therefore, a major focus of this course is to increase individual self awareness.

ELG 702 COUNSELING THEORY 2 cr.
This course deals with theories, objectives, principles, and practices of guidance and counseling concerning the child, the family, socioeconomic problems of the community institutions, and agencies.

ELG 703 CONSULTING THEORY 2 cr.
The purpose of this course is to develop an understanding of education as a social institution. Social institutions will be viewed as a historical product of the particular cultural milieu that they develop in. An attempt will be made to create in the student an understanding of the elements, processes and conditions in learning and socio-educational systems that are optimal for human development.

ELG 705 DEVELOPMENTAL GROUP COUNSELING 2 cr.
The meaning, functions, types, and principles of the group approach to elementary guidance and counseling; the dynamics of group interaction; the leadership of groups; role playing; personal development in groups; group guidance and counseling techniques; influence of group processes on individual development.

ELG 709 INDEPENDENT STUDY 1-2 cr.
The student will have an opportunity to do independent study or research in elementary counseling. The student will be guided by a member of the elementary counseling staff. (By permission of adviser)

ELG 711 PRACTICUM I 2 cr.
The practicum begins with a review of counseling theory and techniques, then moves to analysis of tape recordings, observations of actual counseling interviews, and counseling experiences. Practicum I should be completed within the first 12 credits of the student's program. Prerequisites: ELG 701 and ELG 702.

ELG 712 PRACTICUM II 2 cr.
This is a continuation of ELG 711 with emphasis on counseling and consulting with children, teachers, and parents in a local school district. Both individual and group counseling experiences will be developed. Prerequisite:ELG 711.

ELG 713 PRACTICUM III 2 cr.
This is a continuation of ELG 712. This course will serve as a culmination of practicum experiences. The course is flexible so it may meet individual needs of counselor trainee with varing degrees of skills while ensuring the minimum standards of competence in counseling. Prerequisites: ELG 712.

ELG 715 ADVANCED COUNSELING THEORY 2 cr.
The initial phase of the course will review the theories and the role that it plays in the counseling process. The second phase of the course deals with building around the various theoretical approaches to counseling. Counseling approaches that will be considered include: 1) rationale; 2) learning theory; 3) analytic; 4) phenonomenalogical aid; 5) existential.
The final aspect of the course involves students attempting to incorporate a counseling approach into their own personality and making an attempt to put into use this approach through role playing.

ELG 716 ADVANCED CONSULTING THEORY 2 cr.
This is a continuation of ELG 703 Consulting Theory. Therefore, a review of ELG 703 will be made. Central to the course will be looking at our educational systems in terms of policies, procedures and practices. The concepts of power and authority will be considered in terms of bringing about institutional change. The ultimate goal of this course is to have students aware of how changes are made in institutions and the roles that they can play in bringing about these changes.

ELG 785 RESEARCH SEMINAR IN COUNSELOR EDUCATION 2 cr.
This course is designed to give the student a comprehensive review of the research and current literature in counselor education. Critical study and evaluation of research findings from the literature (Personnel & Guidance Journals, Elementary School Guidance Journal, etc.) will be emphasized.

ELG 786 SEMINAR IN CAREER INFORMATION 2 cr.
This course is intended to provide counselors and other personnel workers with an introductory study of major theoretical thinking about vocational development and decision-making. It is intended to survey the world of work and the impact of its constantly changing nature on the individual. An opportunity to consider the rationale and applications of an informative service, with attention to such issues as classifications of occupations, types and sources of information and their evaluation will be provided. An examination of the counseling process with regards to vocational development and choice theory, use of information, and specific counseling goals will be made.

ELG 787 INTEGRATED SEMINAR 2 cr.
This course is designed for graduate students in elementary counseling who have completed all course requirements. The purpose of the course is to culminate the student's graduate work by synthesizing previous course work and experiences in counseling.

SECONDARY GUIDANCE

Since the Secondary Guidance Program is competency-based, it is not course oriented. Therefore, prescriptions to fulfill the five (5) generic competencies will consist of such activities as special seminars and professional laboratory experiences.

EARLY CHILDHOOD EDUCATION

This program in Early Childhood Education, being competency-based, is not course oriented. Therefore, specific course descriptions for the competencies are not available. Sub-competencies for the six generic competencies will be fulfilled by prescribed activities discussed in seminars and in field experiences. Several courses in psychology, expressive arts, and research are prescribed.

EARTH SCIENCE

EAS 710 RECENT DEVELOPMENTS IN EARTH SCIENCE 3 cr.
Recent developments in the various aspects of earth science are discussed. Guest lecturers will lead discussions in their areas of expertise. Students will conduct individual research into recent academic and popular literature. Results of this research will be submitted in the form of a paper.

EAS 711 EARTH SCIENCE WORKSHOP 3 cr.
The workshop is designed to provide students with a combination of experiences including lectures, field work, and laboratory situations. Through these experiences the student is expected to gain insights relevant to present day situations.

EAS 720 HYDROLOGY 3 cr.
Hydrology is a basic survey course in the area of fresh water and its utilization by humans. The course deals with the indentification of water resources and the geographic and geologic aspects of these resources. Much time is spent on water measurement practices of government and industry.

EAS 725 WEATHER ANALYSIS 3 cr.
This is a field oriented study designed to give students practical experience in collection of weather data and analysis of that data. It involves weather measurements, plotting, and prediction. Weather problems and library research are part of the course.

EAS 730 COAL TECHNOLOGY 3 cr.
The study of coal exploitation begins with a study of the origins and reserves of coal. The techniques of coal reserve measurement, and methods of recovery form the course emphasis.

EAS 740 SEDIMENTOLOGY 3 cr.
This course deals with the identification, description, classification, analysis, and origin of sediments and sedimentary rocks. Emphasis is on student solutions to actual problems dealing with samples and data. Independent work is emphasized.

EAS 741 STRATIGRAPHY 3 cr.
A study is made of the basic principles governing the interpretation, correlation, classification, and naming of stratified rock units. The stratigraphy of the Pennsylvanian System is emphasized. Local field trips and student problem solving are important elements of the course.

EAS 742 STRUCTURAL GEOLOGY 3 cr.
The primary and secondary structures of rock masses and their modes of formation are covered. Actual structures are examined and studied in the field. Structural problems based on geological maps and structure sections are an integral part of the course.

EAS 743 MICROPALEONTOLOGY 3 cr.
This is a lab oriented course in which the student deals intimately with sample materials containing microfossils. Problems similar to those that a micropaleontologist in industry would face are posed. Solution of the problem generally involves the separation of the fossils from the enclosing sample, the identification of the individual fossil, and a correct or at least a logical stratigraphic or paleontological interpretation based on the data.

EAS 755 GEOCHEMISTRY 3 cr.
Geochemistry involves the basic chemical principles employed in the solution of some geologic problems. Geologic dating, sedimentary geochemistry, chemical weathering, colloids, and structural aspects of clay minerals and soils are covered.

EAS 760 FIELD PROBLEMS IN EARTH SCIENCE 3 cr.
The course involves actual problems faced by workers in selected fields of earth science. Problem solving may involve field work, library research, and laboratory investigation. Areas of investigation each semester will depend upon the instructors areas of interest and expertise.

EAS 762 FIELD PROBLEMS IN HYDROLOGY 3 cr.
The problems permit the student to do practical work concerning water and water budgets. Students work with problems concerning storage of water, stream measurement, evaporation, infiltration and migration, well drilling, aquifer testing, tracer studies, mine drainage, and domestic use.

EAS 780 READINGS IN EARTH SCIENCE 3 cr.
Readings in earth science allows the student to examine documents, journals, monograms, and other literature pertaining to a specific area of interest. The student in consultation with the adviser outlines a reading program and the objectives of the program. Critique writing and oral presentation are a part of the program.

EAS 781 RESEARCH IN EARTH SCIENCE 3 cr.
The individualized research is field and/or library oriented. Howerver, upon request by the student and with the support of the faculty the course may be tutorial. Students are required to prepare written and oral presentations. Research proposals are created according to accepted procedures and projects evaluated according to customary standards.

EAS 790 SEMINAR IN ASTRONOMY 3 cr.
Seminar in astronomy is designed to reinforce undergraduate experiences in specific areas of astronomy and to discuss the implications of the recent discoveries in astronomy. The course involves lecture, reviews of selected readings, and presentation of research findings.

EAS 792 SEMINAR IN GEOLOGY 3 cr.
Seminar in Geology is designed to reinforce undergraduate experiences in specific areas of geology and to discuss the implications of the recent discoveries in geology. The course involves lecture, reviews of selected readings, and presentation of research findings.

EAS 794 SEMINAR IN METEOROLOGY 3 cr.
Seminar in meteorology is designed to reinforce undergraduate experiences in specific areas of meteorology and to discuss the implications of the recent

discoveries in meteorology. The course involves lecture, reviews of selected readings, and presentation of research findings.

EAS 796 SEMINAR IN OCEANOGRAPHY 3 cr.
Seminars in oceanography is designed to reinforce undergraduate experiences in specific areas of oceanography and to discuss the implications of the recent discoveries in oceanography. The course involves lecture, reviews of selected readings, and presentation of research findings.

EAS 800 METHODS OF RESEARCH IN EARTH SCIENCE 3 cr.
Consideration of purpose, scope, and procedures in earth science research including problem sensing, data collection, and statistical analysis.

ELEMENTARY EDUCATION

EDE 700 HISTORICAL BACKGROUND OF THE ELEMENTARY SCHOOL 2 cr.
Emphasis is given to historical and philosophical backgrounds as they have been developed in the elementary school. In this course the students will have an opportunity to interpret modern educational issues as influenced by the past.

EDE 705 DEVELOPMENT AND ORGANIZATION OF THE CURRICULUM FOR THE ELEMENTARY SCHOOL 2 cr.
The student has an opportunity to study the development of the school curriculum in relationship to the philosophy and objectives of the local school. Special emphasis is placed on recent trends in elementary curriculum development.

EDE 706 EVALUATION AND MEASUREMENTS IN THE ELEMENTARY SCHOOL 2 cr.
This course is concerned with the assumptions, implications, principles, concepts and purposes of testing in the public school. Principles of test construction, validity, reliability and other criteria of evaluating instruments are studied. Major emphasis is on achievement testing; however, consideration is also given to the nature and measurement of intelligence, aptitude testing and disseminating and reporting test information and data.

EDE 707 CREATIVE ACTIVITIES IN THE ELEMENTARY SCHOOL 2 cr.
In this course the student is acquainted with creative teaching techniques. The student is given opportunities to demonstrate his own creativity through various projects and special assignments, with emphasis on art, music, writing, and drama.

EDE 708 DEVELOPMENTAL READING IN THE ELEMENTARY SCHOOL 2 cr.
Emphasis is placed on reading trends and various procedures for teaching reading. Through research findings, current literature and discussions the students will be able to organize, administer, and evaluate a developmental reading program.

EDE 710 TEACHING READING IN CONTENT SUBJECTS 2 cr.
Developing the basic vocabularies and concepts needed in the fields of arithmetic, social studies, geography and science. Interpreting and using symbols, pictures, tables and graphic materials. Developing an awareness of and proficiency in the various reading skills needed in the selection, interpretation, organization, and presentation of data obtained through reading textbooks and resource materials in these fields.

EDE 715 RECENT TRENDS IN LANGUAGE ARTS 3 cr.
A study of recent trends and research findings for teaching language arts in the elementary school is made. The students examine, use and evaluate current textbooks and materials that are available in the Language Arts Field. Modern methods of teaching language arts is studied through laboratory techniques — observations and discussions.

EDE 716 SPECIAL PROBLEMS IN ELEMENTARY SOCIAL STUDIES 3 cr.
This course is organized around current problems of teaching social studies — planning a social studies program, methods of teaching, available materials and textbooks. Opportunities for developing units of learning and making independent studies of trends in teaching Elementary Social Studies are presented.

EDE 717 GEOGRAPHY IN THE MODERN ELEMENTARY SCHOOL 2 cr.
The course emphasizes techniques and methods for teaching geography in the elementary school. Proper use of textbooks, maps, and other tools of learning used in teaching geography as studied. The student has an opportunity to work on individual classroom problems or programs. The student becomes acquainted with the various skills that are essential to the study of geography at each grade level.

EDE 718 ARITHMETIC IN THE ELEMENTARY SCHOOL 2 cr.
Emphasis in on understanding the child's perceptions and the child's cognitive development, especially as related to mathematics. Activities appropriate to the developmental and academic levels of elementary school children will be demonstrated. (As time permits, critical analyses of commercial arithmetic materials and texts, as well as recent trends and current curricular projects in arithmetic will be undertaken.)

EDE 720 RESOURCE MATERIALS IN ELEMENTARY SCIENCE 2 cr.
This course is designed to acquaint the student with the various resources which might be utilized to advantage in an elementary science program. The resources to be investigated and studied include plant and animal resources, soil and mineral resources, human resources, and the resources of business and industry. Emphasis is placed on the application of these resources to classroom situations.

EDE 725 THE CREATIVE ELEMENTARY MUSIC PROGRAM 2 cr.
This course is designed to show the elementary teacher how to guide the musical activities of his students. Through extensive activities in simulated classroom situations, the teacher learns how to integrate, simultaneously, all aspects of music into a song so that the children may realize a complete and challenging musical experience. These areas include creativeness, rhythmic activity, listening, reading, games, dances, and playing on instruments. Students have many opportunities throughout the course to analyze worthy song material and follow through by planning and teaching to the class appropriate activites in the aforementioned areas.

EDE 726 ART EDUCATION FOR THE ELEMENTARY GRADES 2 cr.
A course to provide students who expect to teach in the elementary grades with a basis for ever increasing spiritual and intellectual horizons through the study of art and its historical and contemporary significance as an important creative force in our society. A climate for research and analysis of art forms in the arts will be established to meet the individual needs of students.

EDE 727 GUIDANCE IN THE ELEMENTARY SCHOOL 2 cr.
Evaluate instruments and procedures used by the classroom teacher; creation of conditions for mental health; relation of guidance to other phases of instruction.

Testing, case studies, and parent-teacher relations are stressed. Prerequisite: Educ. Psychology.

EDE 728 PROBLEMS IN HEALTH AND PHYSICAL EDUCATION FOR THE ELEMENTARY SCHOOL 2 cr.
A survey of the problems and research concerning teachers' responsibilities for the health and physical activities of elementary school children.

EDE 730 TEACHING IN KINDERGARTEN AND THE PRIMARY GRADES 2 cr.
Students discuss purpose, direction, curriculum development, methods materials and techniques for working with children in kindergarten and the primary grades.

EDE 735 PSYCHOLOGY OF THE EXCEPTIONAL CHILD 2 cr.
To provide an enlarged and more precise concept of the characteristics and needs of children who are in some respect exceptional. Basic principles of educational practice with systematic instruction in relation to exploratory charts, sociograms and case studies.

EDE 736 ORGANIZATION AND ADMINISTRATION OF THE ELEMENTARY SCHOOL 3 cr.
A comprehensive view of the major aspects of organization and administration of the elementary school is presented. Recent trends including the open-classroom are given special emphasis. Wherever possible theoretical bases are related to specific administrative and organization practices. Particular attention is given to the various roles of the elementary principal in the school.

EDE 738 CHILDREN'S LITERATURE AND READING 2 cr.
This course is designed as a vital entity of the total reading program in the elementary school. Permeating all instruction in the course is the philosophy that children's growth in and through reading is dependent on developing lasting interests and skills in reading; on an understanding of the world and human relationships; and on an appreciation of fine literature which must have its roots enmeshed in the elementary reading program. The emphasis on ways in which teachers can use literature in the classroom to meet children's needs and interests, to deepen their insights, and to heighten their appreciation of an extensive range of prose and poetry of literary quality will be a prime focal point.

EDE 740 RECENT TRENDS IN ELEMENTARY SCHOOL SCIENCE 2 cr.
This course is designed to acquaint elementary school teachers with representative samples of the newer elementary science curricula developed within the past ten years. Emphasis will be placed upon the inquiry approach to teaching science, which actively involves children with science materials. The philosophical foundations of such elementary science programs as the Science Curriculum Improvement Study, Science — A Process Approach, and the Elementary Science Study will be considered. The implications of the most modern psychological studies will be included in relation to the newer elementary science curricula. Teachers will engage in actual laboratory activities that exemplify these recent approaches to teaching elementary science.

EDE 745 TOPICS IN ALGEBRA FOR THE ELEMENTARY MATHEMATICS TEACHER 2 cr.
A presentation of Algebraic structures which will serve as a mathematical guide in the teaching of arithmetic.

EDE 746 TOPICS IN GEOMETRY FOR THE ELEMENTARY MATHEMATICS TEACHER 2 cr.
Geometry activities appropriate to the elementary school, such as geoboards, mirror cards, and curve stitching, are presented. Emphasis is also on an

introduction to the axiomatic methods, exemplified by finite geometries, and culminating with an historical discussion of Euclid's parallel postulate and the discovery of non-Euclidean geometries. The contributions of the Renaissance painters to the fields of projective geometry and perspective drawing will be briefly treated to motivate the notion of and the importance of the invariance of the cross-ratio. Certain intuitive notions of topology together with the child's perception of space and topology are considered.

EDE 747 TRENDS OF CURRENT RESEARCH FINDINGS IN ELEMENTARY MATHEMATICS 3 cr.
A review of recent and current elementary school mathematics programs will be presented; a good point for departure is CURRICULUM DEVELOPMENT IN ELEMENTARY MATHEMATICS, written under the egis for the Far West Laboratory of Educational Research and Development. In this course, attention will be directed toward the differences between current curricular programs (many are activity oriented and child oriented) and the so called "new math" projects of the late 1950's and the early 1060's (most of which were content oriented). For those students who wish, the opportunity is available to work on individual projects or to contribute to or continue with on going research projects.

EDE 748 MATERIALS, RECREATIONAL MATHEMATICS AND EVALUATIVE TECHNIQUES IN ELEMENTARY SCHOOL MATHEMATICS 2 cr.
To help in-service teachers: (1) become aware of implementation of, and understanding of variety and quality of mathematics materials available; (2) to understand the need for, to appreciate mathematical concepts, and to become aware of sources of recreational mathematical materials; (3) to understand role of evaluation in mathematics to understand various methods of evaluation and types of tests available, and to develop proficiency in evaluating and interpreting test results.

EDE 750 CLASSROOM DIAGNOSTIC PROCEDURES FOR READING 3 cr.
This course is designed to acquaint the regular classroom teacher with the causes of retardation in reading, to familiarize the teacher with diagnostic procedures, and to provide the teacher with the skills and techniques of remediation.

EDE 780 SEMINAR IN READING AND LANGUAGE ARTS 2 cr.
Investigation and discussion of problems related to current practices, research and trends in the reading-language arts area. Specific topics vary from semester to semester to meet student needs. Additionally, students are encouraged to pursue an individual problem in an area of special interest.

EDE 785 SEMINAR: CURRENT INSSUES AND INNOVATIONS IN ELEMENTARY EDUCATION 2 cr.
This course is concerned with the perspectives of today's dynamic society. Pertinent issues and innovations in elementary education will be discussed, investigated, and analyzed.

EDE 787 SEMINAR IN ELEMENTARY ART EDUCATION 2 cr.
A course dealing with tools, materials, techniques, and processes suitable for elementary children.

EDE 790 INDEPENDENT STUDY 1-3 cr.
This course is designed to provide the student with a multiplicity of options that lend themselves to individual investigation and/or design. The student may register for 1, 2 or 3 credits.

ENG 705 INTRODUCTION TO OLD ENGLISH 3 cr.
This course has been designed to enable the student to read the literature in Old English and to understand and learn the grammar and vocabulary of Old English to facilitate that reading. The course (1) provides an introduction to the phonology and morphology; (2) utilizes phonetics by means of related texts (e.g., Clark); (3) introduces the grammar; (4) introduces the literature in the original; and (5) provides an introduction to the bibliography of Old English language and literature.

ENG 706 MIDDLE ENGLISH 3 cr.
An introduction to a variety of Middle English literary texts and types, and to the principal Middle English dialects, from 1100 to 1500 (but exclusive of Chaucer: see ENG 715). Particular attention may be paid to particular authors (such as Sir Thomas Malory or William Langland) or genres (such as the drama, romance, or lyric), and to the literary Renaissance of the later fourteenth century. The purpose of the course is two-fold: (1) literary-historical, stressing the growth and development of English literature under native English and continental influence from the waning of the Anglo-Saxon world to the beginnings of the modern world, and (2) linguistic, stressing of the growth and development of English phonology, morphology, syntax, and dialects from the end of Old English to the beginning of Modern English.

ENG 707 LINGUISTICS 3 cr.
This course will use modern, standard, spoken, American English to illustrate and define topics in the general field of synchronic linguistics. The areas surveyed will include articulatory phonetics, phonemic analysis, patterns of intonation and stress, morphemics, inflectional categories, immediate-constituent theory, tagmemics, language typology, and linguistic universals. The topics discussed should provide a broad foundation for further study in terms of linguistic problems, terminology, proposed solutions, and useful results.

ENG 708 ADVANCED LINGUISTICS 3 cr.
This course provides a rapid overview of traditional grammatical theory from the anomaly-analogy disputes of the Hellenistic Greeks to the Latin-oriented systems of fairly recent scholars. Then it will survey the emergence and advance of American structural linguistics as represented by its acclaimed proponents: Bloomfield, Fries, Trager, Smith, Francis, Hill, and Sledd. Finally, the analytic approach of Harris and the generative proposals of Chomsky will be discussed. The major emphasis in the course will be placed on the theory and practice of generative-transformational grammar.

ENG 710 HISTORY OF THE ENGLISH LANGUAGE 3 cr.
The purpose of this course is to give the graduate student of English a basic knowledge of modern linguistic procedures, necessarily structural. These procedures once mastered, the student applies them in English 700-1100; 1100-1500; 1500 to the present. The student is thus given a view of change in sounds, forms, syntax (grammar); the structural changes from 700 A.D. to the present. He is also introduced to the change in vocabulary and its meanings. The problems of a standard dialect, then and now is introduced; this is the element of dialect geography. Finally, from the beginning of the course to the end, the details of the use of the Latin alphabet to record English (theory and nature of spelling) is emphasized so that the student can actually read the evidence from earlier periods and understand the problems of the present. He is introducted to the major political-historical events which affected the growth and structure of British and American English.

ENG 715 CHAUCER 3 cr.
A survey of the works of Chaucer through Troilus and Criseyde, with some attention to selected *Canterbury Tales* as well. The course will study Chaucer's literary artistry, his use of sources, his debt to continental authors such as Dante and Boccaccio, his cultural, religious, and political background, and (in some detail) his language.

ENG 716 ENGLISH DRAMA BEFORE SHAKESPEARE 3 cr.
An introduction to the drama of the Middle Ages and the early Renaissance in England. Particular attention is paid to the origins and development of the early drama, its religious and realistic character, the humanistic drama of the early Renaissance, and finally the emergence of professional drama in the work of Shakespeare and his older contemporaries. Methods of stage production will be treated in some detail.

ENG 717 SHAKESPEARE 3 cr.
This course will provide for the careful examination of three or four of Shakespeare's plays and will include the careful consideration of recent trends in Shakespeare criticism.

ENG 718 SIXTEENTH CENTURY NON-DRAMATIC LITERATURE 3 cr.
A study of the literary and intellectual traditions in non-dramatic English Literature from 1485-1603. Among the authors and works studied will be: Skelton, More, Ascham, Elyot, Wyatt, Surrey, Tottel's *Miscellany Mirror for Magistrates,* Foxe, Hooker, the Courtly Makers, Sidney, Gascoigne, Nashe, Lyly, Lodge, the Sonneteers, Spenser.

ENG 725 NON-DRAMATIC ENGLISH LITERATURE 1600-1660 3 cr.
The primary purpose of Seventeenth-Century English Literature is to provide the student with a representative survey of the non-dramatic literature of the century. The course is intended to provide representative works not merely of literary art, but of the full written expression of the political, religious, and scientific thought of the century. The course is also intended to provide for the student literary representations contributing to the development of the prose and poetry of the century.

ENG 726 JACOBEAN AND CAROLINE DRAMA 3 cr.
The methods and types of the drama (exclusive of Shakespeare) from 1590 to the closing of the theaters in 1642. Plays will be selected from among those by the following authors: Lyly, Jonson, Dekker, Beaumont and Fletcher, Massinger, Chapman, Webster, Middleton, Ford, Marston, Shirley, Tourneur.

ENG 727 MILTON 3 cr.
This course is designed to be a comprehensive study of John Milton's poetry and to survey the major prose works. Special emphasis will be directed to the major poems, *Paradise Lost, Paradise Regained,* and *Samson Agonistes,* and to the major criticism relevant to these works.

ENG 735 ENGLISH LITERATURE 1660-1700 3 cr.
The course will stress the cultural attitudes and developments that continue into the eighteenth century: the doctrine of correctness, stress upon manners and wit, rejection of emotion in both art and religion, and the dominance of rationalism. The works of major figures (Dryden, Milton, Bunyan, Locke, and the playwrights) as well as minor figures (Butler, Pepys, Marvell, Shadwell, and Behn) will be examined.

ENG 736 ENGLISH LITERATURE 1700-1744 3 cr.
The course will undertake to make understandable some of the appellations usually applied to the eighteenth century, such as "The Age of Reason" and "The

Century of Enlightenment." In the works of Pope, Swift, Gay, and Fielding, the student will see the triumph of reason, while Addison and Steele, Shaftesbury, and the followers of Locke reveal a trend toward greater liberality in political and religious thoughts. Finally, Defoe, Farquhar, Steele, Lillo, and Young will illustrate the new emphasis on morality and sentimentalism.

ENG 737 ENGLISH LITERATURE 1744-1798 3 cr.
The rise of the novel as an art form, the prominence of Johnson and his group, and the eventual domination of sentiment and sensibility all require attention. Some of the authors to be examined are : Thomson, Gray, Collins, Cowper, Burns, Chatterton, Smart, Crabbe, Goldsmith, Sheridan, the Wartons, Burke, Gibbon, and, of course, Boswell.

ENG 738 EIGHTEENTH CENTURY ENGLISH NOVEL 3 cr.
The evolution of the novel in eighteenth century English will be traced through the examination of representative works of Defoe, Richardson, Fielding, Sterne, Smollett, the Gothic novelists, Lewis, Austen, and others.

ENG 745 ROMANTIC POETRY 3 cr.
An intensive study of the work of the major poets of the Romantic Period — this course will attempt to acquaint the student with both the poetry itself and the critical reaction to that peotry over the last century. The discussion of each of the major poets will focus on the poetry as a representation of those characteristics which are traditionally associated with Romanticism, as well as those qualities peculiar to that specific poet under discussion.

ENG 746 VICTORIAN POETRY 3 cr.
This course will attempt an intensive study of the poetry of the Victorian period. Emphasis will be placed on such major figures as Tennyson, Browning, Arnold, Rossetti, Morris, Swinburne, Hopkins, Houseman, and Hardy. The literary contribution of each of these poets will be evaluated through selected readings and against the background of their own lives and the times in which they lived.

ENG 747 NINETEENTH CENTURY NON-FICTION PROSE 3 cr.
This course will survey the major prose writers of the nineteenth century and emphasize the intellectual and social backgrounds of their ideas as well as their rhetorical analysis of representative samples of their work. Authors to be studied will include: Macauley, Carlyle, Newman, Mill, Ruskin, Arnold, Pater, Huxley, and Butler.

ENG 748 NINETEENTH CENTURY ENGLISH NOVEL 3 cr.
The Victorian novel will be examined both in its relation to the general developments of the novel as a genre and in its viability as a vehicle for the expression of those themes and ideas significant to the nineteenth century. Novelists will include: Austen, Dickens, Thackeray, and Hardy.

ENG 755 COLONIAL AMERICAN LITERATURE 3 cr.
Colonial Literature — an intensive investigation of the developing literature of the American Colonies 1607-1789. Emphasis on the intellectual, political, religious, social and economic forces shaping that literature. Primary readings for the course include large portions of the works of the Mathers, Taylor, Edwards, Franklin, Jefferson, and the Federalists; equal emphasis is placed on works of intellectual history that deal with the period.

ENG 756 AMERICAN RENAISSANCE 3 cr.
The American Renaissance — an investigation of American Transcendentalism and the Literature related to it, with emphasis on the development of a definition of American Romanticism. Careful study of the works of Emerson, Thoreau, Hawthrone, Melville, and Whitman; Cooper and Poe at the instructor's option.

ENG 757 THE RISE OF REALISM 3 cr.
A critical analysis of literary trends in America from the time of the Civil War to the post-World War I era, with attention to a reasonable representation of the works of both major and secondary writers.

ENG 758 MODERN AMERICAN POETRY 3 cr.
A course designed to study the nature of poetry and to place within this context an examination of the trends of the twentieth century. Special emphasis put on Pound, Frost, Eliot, Stevens, Jeffers, and Cummings.

ENG 760 CULTURAL BACKGROUNDS OF AMERICAN LITERATURE 3 cr.
An examination of movements and patterns of thought in American intellectual history that have been influential on the mind and art of the American literary artist, with emphasis on developments particularly germane to the emergence of periods and styles on the American literary scene. The impact of such developments will be studied by treating representative works of literature that bear the imprint of their intellectual-social milieu. Studies treating such subjects as the influence on American Literature of Freud, the teachings of Marx and developments in science, the novel of protest, and the political novel will be examined.

ENG 765 MODERN AMERICAN NOVEL 3 cr.
The course will cover the period from the end of WWI to the present, but with emphasis on the fiction of the 20's, 30's, and 40's. Individual representative works will be selected from among such authors as: Anderson, Hemingway, Lewis, Dos Passos, Cather, Fritzgerald, Faulkner, Steinbeck, Updike, O'Connor, Styron, Malamud, and Bellow.

ENG 766 MODERN BRITISH NOVEL 3 cr.
Experiments both in style and in subject matter abound in the 20th century British novel. Although novelists expand the language beyond all prior limits as no age has done since the 16th and 17th centuries, they also explore new realms within the conscious and unconscious worlds they inhabit. The course will trace these experiments through the works of such artists as Joyce, Lawrence, Conrad, Ford, Woolf, Chesterton, Beckett, Cary, Bowen, Orwell, Greene, Durrell, Lowry, Golding, and Fowles.

ENG 767 HISTORY OF LITERARY CRITICISM 3 cr.
This course will be both historical and practical in its concerns. It will be necessary to review the large critical trends important to English and American Literature; and it will be necessary to provide students with an opportunity for exercises in practical criticism.

ENG 768 MODERN BRITISH POETRY 3 cr.
This course will consider the struggle of the British poet to hold his place in a world where "things," including his empire, "fall apart," where twice the "blood-dimmed tide is loosed," where "innocence" on both personal and national levels "is drowned." Among those poets studied will be: Yeats, Lawrence, Graves, Owen, Auden, Betjeman, Thomas, Larkin, Kinsella, Gunn, and Hughes.

ENG 770 MODERN DRAMA 3 cr.
The 20th century is an age of unprecedented innovation and technical development in the theater. It is also an age in which two basic themes, alienation of the individual and illusion vs. reality, hold the stage above all others. These innovations and themes will be found and examined in the works of such playwrights as Strindberg, Jarry, Ibsen, Maeterlinck, Gorki, Shaw, Yeats, Pirandello, Lorca, O'Neill, Brecht, Odets, Williams, Beckett, Genet, Ionesco, Pinter, Albee, Bolt, and Weiss.

ENG 790 SEMINAR IN LITERARY CRITICISM 3 cr.
The study in detail of a particular critical theory, its history and development, and of those critics who in practice best exemplify this tradition. Opportunity will be given the student to show his ability to examine literary texts in the light of his study of the theory.

ENG 795 SEMINAR IN ENGLISH LITERATURE 3 cr.
The seminar will allow the student to focus attention on a major figure, movement, genre, or problem in the study of English literature. Recent seminars have concerned Tennyson, Browning, Blake, Yeats and Joyce.

ENG 796 SEMINAR IN AMERICAN LITERATURE 3 cr.
Attention centers on the works of major American authors. In recent years the works of Hawthorne, Melville, and Twain have been carefully examined in individual seminars.

ENG 797 SEMINAR IN COMMUNICATION 3 cr.
The Seminar in Communication will deal with subject matter not normally addressed in traditional literature or linguistics courses, including such possible topics as: Literature into Film, The Teaching of Writing, and The Oral Tradition in American Literature. The course will be offered on an irregular basis, and seminar topics will be published in advance.

ENG 799 INDEPENDENT STUDIES IN ENGLISH 1-4 cr.
The course presents an opportunity for the student to do independent reading or research in English. The student will be advised by a member of the English Department faculty. The nature and scope of the study and the assigned credit hours will be determined on an individual basis, after consultation with the English Department Graduate Committee.

ENG 800 METHODS OF RESEARCH IN ENGLISH 3 cr.
An introduction to the graduate study of English and English education and to methods of bibliographical research in these fields. The course not only acquaints the student with standard reference works but provides an overview of some of the principal methods and preoccupations of the literary critic and the teacher of English.

ENG 802 RESEARCH PRACTICUM/RESEARCH PROJECT 3 cr.
The purpose of the course is to help the student relate the ideas and content of the over-all M.Ed. program to his role as a teacher and to offer guidance in completing a project relevant to the student's specific pedagogical interests. The course will be conducted in the fashion of a semiar.

GEOGRAPHY

GEO 700 PHILOSOPHY OF GEOGRAPHY 3 cr.
Classical and contemporary development of the principal concepts which define geography as an academic discipline.

GEO 711 DEMOGRAPHIC ANALYSIS 3 cr.
An analysis of demographic processes, current situations, and consequences of population trends as they relate to urban and rural distributions.

GEO 712 GEOGRAPHY AND URBAN POLITICS 3 cr.
This course emphasizes the role of the political process in the development of the American urban environment. Stressing, locational influence and political

behavior as it relates to housing, neighborhoods, transportation, poverty, voting, and the law.

GEO 713 URBAN GEOGRAPHY 3 cr.
An investigation and analysis of cities in selected regions as the their location, distribution, classification, function, growth, types and patterns of land use. Geography in urban planning is also included.

GEO 731 GEOGRAPHY OF RESOURCES 3 cr.
A geographic analysis of the factors involved in the production, distribution, and consumption of resources. Local and world patterns of mineral fuels, metals, chemicals and construction materials are emphasized.

GEO 732 INDUSTRIAL GEOGRAPHY 3 cr.
A geographic analysis of the factors involved in the production and distribution of economic goods. Local and world patterns of industry and their spatial integration are emphasized.

GEO 733 LAND USE ANALYSIS 3 cr.
An analysis of the structure of urban and rural areas with particular emphasis on the description, patterns and trends in land use. Methods for defining, representing and evaluating land use are developed. Explanations of land use patterns through models are incorporated.

GEO 734 SITE SELECTION 3 cr.
The effects of physical features and spatial economic organization upon the selection of locations for industrial and commercial activities. Attention is given both to regional position and to local site.

GEO 735 MARKETING GEOGRAPHY 3 cr.
Spatial patterns and spatial interaction involved in marketing. Attention is given to factors of location for specific business operations and definition of service areas for specific goods and services.

GEO 736 SPATIAL ANALYSIS 3 cr.
This course emphasizes the role location and spatial variations play in the planning process, particularly as it relates to population, employment, land use, housing, transportation, resources and the environment.

GEO 740 REGIONAL SCIENCE 3 cr.
The nature of a region is investigated as to definition and delineation. The function of the region concept as well as regional development is emphasized.

GEO 741 EUROPE 3 cr.
This course emphasizes the distribution of physical, human and cultural phenomena and their influences upon European environment. Library research and oral presentation are an integral part of the course.

GEO 742 SOVIET UNION 3 cr.
A regional and topical study of the physical and cultural features. The emphasis is on those factors responsible for the current position of the Soviet Union as a major power and for potential future development. Library research and oral presentation are an integral part of the course.

GEO 743 EAST CENTRAL EUROPE 3 cr.
This is a systematic and regional geography of the communist states of East Central Europe including Poland, Czechoslovakia, Hungary, Rumania, Albania, Yugoslavia and Bulgaria. An analysis of the geographic trends and problems in these countries in the post-war period is made. Library research and oral presentation are an integral part of the course.

GEO 745 CHINA 3 cr
A geographic study of the historical, cultural, political, and economic factors as they combined to make 20th century China an important factor in world affairs. Library research and oral presentation are an integral part of the course.

GEO 746 AFRICA 3 cr.
A regional study of Africa emphasizing the social and economic development in relation to the physical environment. Library research and oral presentation are an integral part of the course.

GEO 747 LATIN AMERICA 3 cr.
The physical environment and the human activities is emphasized. Library research and oral presentation are an integral part of the course.

GEO 749 ANGLO-AMERICA 3 cr.
An analysis of spatial variation within the American environment and its relationship to the distribution of economic, social and political problems. Library reseach and oral presentation are an integral part of the course.

GEO 751 GEOMORPHOLOGY 3 cr.
Experiences in geomorphology involve the study of the origin and characteristics of landforms and the processes which produced them. Field work is a part of the study.

GEO 752 CLIMATOLOGY 3 cr.
A study of the world climatic patterns with in depth investigations of microclimatic regions.

GEO 753 PHYSIOGRAPHY OF THE UNITED STATES 3 cr.
Landforms and their origins are analyzed. The country is divided into physiographic provinces and the elements of each province are identified.

GEO 765 FIELD METHODS 3 cr.
Study of techinques used in making geographic observations in the field. Emphasis on study of natural and cultural landscape features at selected localities.

GEO 766 FIELD PROBLEMS 3 cr.
Application of field methods to the landscape. Micro studies are conducted.

GEO 767 ADVANCED CARTOGRAPHY 3 cr.
Advanced techniques of graphic presentation. Accent on methods of cartostatistical methods of map analysis. Familiarization with modern cartographic techniques.

GEO 768 MAP AND AERIAL PHOTO INTERPRETATION 3 cr.
The use of aerial photographs as sources of qualitative and quantitative information. The principles of image identification, simple photogrammetric measurements, mapping from aerial photographs and interpretation of the natural and cultural landscape.

GEO 769 STATISTICAL CARTOGRAPHY 3cr.
This course deals with the statistical approach to cartographic representation. Methods of data manipulation, problems of symbolization and techniques of presentation are emphasized.

GEO 785 READINGS IN GEOGRAPHY 3 cr.
Directed readings in topics selected within the student's interests in geography. Designed to exemplify sense of geographic problem and to develop abilities of

critical appraisal. Oral reports and writing of critiques are essential media of expression in this course.

GEO 786 RESEARCH IN GEOGRAPHY 3 cr.
Organization of a research project in the student's area of interest requiring significant effort in one or more of the techniques generally useful to geographers.

GEO 790 SEMINAR IN CONTEMPORARY PROBLEMS 3 cr.
Indepth analysis of topics of current interest. Primarily a research and oral presentation of selected topics.

GEO 798 SEMINAR IN GEOGRAPHY 3 cr.
Culmination of the student's course work. Review of the literature applicable to the student's particular field of interest in geography. Presentation of student research conducted within his area of interest.

GEO 800 METHODS OF GEOGRAPHIC RESEARCH 3 cr.
Consideration of purpose, scope, and procedures of geographic research including problem sensing, data collection, and statistical analysis. Development of a research problem and written and oral presentation of the results is the culmination of the course.

HISTORY

HIS 700 THE COLONIAL ERA 3 cr.
Topics concerning the exploration and settlement of America, and the social, political, economic and intellectual life of the American colonies before the Revolution.

HIS 705 THE REVOLUTION AND EARLY NATIONAL PERIOD 3 cr.
Topics in the social, political, economic and intellectual life of the American people to 1820.

HIS 706 THE MIDDLE PERIOD IN U.S. HISTORY, 1820-60 3 cr.
The year of Jacksonian nationalism and two-party politics; internal economic developments, territorial expansion and the rise of sectionalism, slavery and the emergence of the Republican party; the sectional controversies of the 1850's and the coming of the Civil War.

HIS 715 THE CIVIL WAR AND RECONSTRUCTION 3 cr.
Causes of the Civil war; the political crisis of 1860-1861; military, political, economic and diplomatic analysis of the war; presidential and congressional reconstruction; social, political and economic developments; the erosion of reconstruction and the Compromise of 1877; long-range results of the Civil War and Reconstruction era.

HIS 716 THE ERA OF REFORM, 1873 UNTIL WORLD WAR I 3 cr.
A detailed examination of certain key groups and events which influence America's response to a rapidly industrializing and urbanizing society. The particular focus will be upon the ideology and activities of such groups as the populist, mugwumps, utopian reformers, the new clergy and the progressives.

HIS 717 THE 1930's IN THE UNITED STATES 3 cr.
A comprehensive examination of the cultural, constitutional, political, diplomatic, literary and economic developments of the 1930's which have made that decade a

watershed in American history. Special attention will focus on the New Deal, the political leadership of Franklin D. Roosevelt, the role of the United States Supreme Court, social and cultural aspects of the times, such as music and the "radical" literature of the period, the end of isolation, the coming of World War II, and the varied interpretations that historians have drawn from the thirties in America.

HIS 718 THE UNITED STATES SINCE WORLD WAR II 3 cr.
A consideration of the major events, problems and trends in the American experience since the Second World War; domestic and foreign problems will be given equal treatment. Heavy emphasis may be placed on the revolutions in civil rights, space and learning, while special attention might focus on the importance of the United States as a major world power.

HIS 720 STUDIES IN AMERICAN CONSTITUTIONAL HISTORY 3 cr.
Topics in the formation of the Constitution and its development through amendment, interpretation and practice.

HIS 725 STUDIES OF THE AFRO-AMERICAN IN AMERICAN HISTORY 3 cr.
Selected topics concerning the Afro-American from the origins of the slave trade through emancipation, "Jim-Crowism," the urban experience, to the Black Revolution of the 1960's. Special emphasis might be given to economic, social or cultural aspects of the black experience in any chronological era.

HIS 726 STUDIES IN AMERICAN ECONOMIC HISTORY 3 cr.
Selected topics concerned with the evolution of American economic institutions. Emphasis will be given to major sources of economic history and specialized research techniques required in this field.

HIS 727 STUDIES IN THE SOCIAL AND INTELLECTUAL HISTORY OF THE UNITED STATES 3 cr.
Selected aspects of the social and intellectual thought and their contributions to American civilization will be investigated. Emphasis will be placed on the early evolution of American institutions and on the recent impact of the city on American social and intellectual thought and institutions.

HIS 728 STUDIES IN AMERICAN LABOR HISTORY 3 cr.
A detailed examination of particular issues in the history of the American labor movement. Special emphasis will be placed on the emergence of industrial unionism and its relation to American politics.

HIS 735 STUDIES IN AMERICAN DIPLOMATIC HISTORY 3 cr.
A program of major themes in the history of Americn foreign relations, a single topic to be selected for class investigation at the beginning of the semester. Primary and secondary sources bearing on the chosen subject and of general prominence in the diplomatic field are studied by the class under the guidance of th instructor.

HIS 736 STUDIES IN AMERICAN URBAN HISTORY 3 cr.
Selected topics on the historical development of urbanism in American life, such as urban demography, ethnic group acculturation, urban politics, the impact of industrialization on urban development and the effect of the city on American thought and social development in a particular period of the nation's history.

HIS 737 STUDIES IN PENNSYLVANIA HISTORY 3 cr.
Selected topics in the transition from the "Holy Experiment" to the Keystone State. Emphasis may be placed on the frontier role of Western Pennsylvania, the racial origins, compositions and movements of the population, or the unique economic, political and social development of Western Pennslyvania.

HIS 755 STUDIES IN THE HISTORY OF ENGLAND 3 cr.
Selected topics concerned with the types of, and changes in English social, legal and governmental institutions in relation to political and economic development from the Norman conquest to the present era.

HIS 760 STUDIES IN THE HISTORY OF CONTEMPORARY EUROPE 3 cr.
Major themes concerned with the evolution of Twentieth Century Europe; problems of stability and change within the European state system, Europe as part of the global system of nation-states; the growth of economic and political community and the countermovements of revitalized Gaullist and Soviet Bloc nationalism.

HIS 778 RUSSIA THE ROAD TO REVOLUTION 3 cr.
Ninetheenth century Russia — a prelude to revolution. A study of the historical, political, economic and social trends and forces which contributed to the outbreak of the Russian Revolution of 1917.

HIS 779 INDEPENDENT STUDIES IN HISTORY 1-3 cr.
An opportunity for the student to do independent reading or research in history; the student will be advised by a member of the history department; the nature and scope of the study and the assigned credit hours will be decided on an individual basis.

HIS 800 METHODS OF RESEARCH 3 cr.
This course will encompass major aspects of the historical process as a literary and scientific endeavor including techniques for gathering, collating and evaluating historical evidence; the importance of creative historical thinking and effective expository writing.

HIS 801 QUANTITATIVE METHODS 3 cr.
Social science methodologies which apply to historical investigation are emphasized. These include elementary computer programming, levels of measurement, applicable programs and theory.

HIS 829 RESEARCH PROJECT 2 cr.
The investigation of an assigned historical problem in which recognized research techniques and original sources are utilized. The format is similar to the thesis.

INDUSTRIAL ARTS

IAR 700 ORGANIZATION AND ADMINISTRATION OF INDUSTRIAL ARTS 2 cr.
A critical analysis of the administrative and organizational problems related to the various types of industrial arts programs. The role of the administrator and teacher in developing, organizing and evaluating the industrial arts program as an integral part of the total school program is stressed. Emphasis is placed on teaching methodologies, activities used in the industrial arts laboratory. Organization of facilities, resources for instructor, and the measures of teacher effectiveness and student growth as related to industrial arts.

IAR 705 HISTORY AND PHILOSOPHY OF CONTEMPORARY INDUSTRIAL DESIGN 2 cr.
This course traces the history and philosophy of designing for industry from the beginning of the industrial revolution to the present. This is done by examining the appearance of things produced by the industries of the past and present, and also

by focusing on the important designers and architects of the last two hundred years. The course examines the recent emergence of industrial design as a profession and attempts to evaluate its importance to today's industry. Some emphasis is given to a general understanding of the design process so that the student will have insight into the complexity of the tasks performed by the industrial designer.

IAR 706 CURRICULUM DEVELOPMENT IN INDUSTRIAL ARTS 2 cr.
An investigation is made into the significant aspects of our culture which affects the curriculum. Key concepts in curriculum study are related to practice in establishing a curriculum consistent with accepted educational objectives and philosophies. The study of the variety of industrial arts programs in the nation, as well as, the state plan and the development of behavioral objectives for a program constitute a major part of the course.

IAR 707 HISTORY AND PHILOSOPHY OF INDUSTRIAL ARTS EDUCATION 2 cr.
A study of the evolution and development of industrial education from primitive times to the present is pursued. The establishment of the early European systems of the Renaissance in the development of sloyd, manual training, and eventually industrial arts in this country, represent the major divisions of the course. The educational philosophies and methods of such leaders as Comenius, Locke, Rousseau, Pestalozzi, Frobel, Dewey, Bonser, Woodward and Warner are contrasted to current approaches. The multicultural aspects of industrial education are also identified and discussed by the graduate student.

IAR 708 PLANNING THE INDUSTRIAL ARTS LABORATORY 2 cr.
Design experience is provided in laboratory planning in which the most recent developments in building materials and fixtures are used. Principles of school plant design are utilized to establish a relationship between the industrial arts laboratory and the total school plant. Consideration is given to the problems of statutory demands and limitations, architectual techniques, acoustics, machine utilization, planning area, storage and planning methods.

IAR 709 SPECIAL PROBLEMS IN INDUSTRIAL ARTS 1-2 cr.
The purpose of this course is to provide the opportunity for the student to investigate a problem related to industrial arts and to report his findings for a solution. This course can be used to fill out a student's semester schedule and/or be used to provide opportunity to gain credits for the completion of the degree.

IAR 710 RESEARCH IN TECHNICAL DRAWING PROBLEMS 3 cr.
The Research in Technical Drawing Problems course is organized to provide opportunities through which the student may become more competent in the principles, standards and conventions of technical sketching and technical mechanical drawing. Also, an opportunity to be made aware of the needs of the public schools with emphasis on organization and implementation of drawing programs.

IAR 711 REPRESENTATION DRAWING I 2 cr.
Experiences in advanced graphic media in technical illustration including the following: pencil, opaque watercolor, transparent watercolor and wash, pen and ink, scratchboard, shaded line media, airbrush and photo retouching. Various pictorial drawings will be explored as background material.

IAR 712 REPRESENTATIONAL DRAWING II 2 cr.
Emphasis is placed on experiencing more advanced graphic media in technical illustration. Extensive experience is provided in airbrush rendering techniques. Experimentation is the use of other graphic media is encouraged as well as more advanced techniques such as photo retouching.

IAR 715 SUPERVISION OF INDUSTRIAL ARTS EDUCATION 2 cr.
Emphasis is placed on making the master teacher aware of the duties, techniques and methods of supervision. The role of the supervisor and teacher in the improvement of industrial arts instruction is stressed. Consideration is given to the principles of supervision, staff improvements, school-community relations, improving instruction and the role of the new supervisor.

IAR 716 PROBLEMS IN ARCHITECTURAL DESIGN 3 cr.
A problem solving course in which the graduate industrial arts student will learn to apply his knowledge of architecture to the secondary school classroom. The student will prepare a complete course of study including a sample set of residential plans and a course syllabus for teaching architectual drafting at the secondary level. This course will require the student to research material for the completion of required work.

IAR 719 SPECIAL PROBLEMS IN INDUSTRIAL ARTS 1-2 cr.
Original investigations in the field of industrial arts. The nature of the problem will determine the class and laboratory hours. The course is expected to provide evidence of the ability of the student to make independent studies into the materials, methods, and principles of industrial arts as well as the ability of the student to report his findings effectively.

IAR 730 RESEARCH PROBLEMS IN WOODWORKING 3 cr.
A study of wood as a raw material, this class sketches its advantages and disadvantages. New applications fro wood are stressed. Work practical for industrial arts woodworking will be covered.

IAR 735 STUDIES IN INDUSTRIAL PATTERNMAKING TECHNIQUES 3 cr.
Modern industrial patternmaking practices are explored. Practice is provided in the application of various materials such as wood, wax, ceramics, and metals to pattern fabrication. Patterns applicable to secondary school industrial arts programs are designed and constructed.

IAR 740 STUDIES IN METAL TECHNOLOGY 3 cr.
A basic study into physical metal testing and metallurgy designed for teacher enrichment and introduction into public school programs.

IAR 745 RESEARCH IN PROBLEMS OF METAL MACHINING 3 cr.
The Research in Problems of Metal Machining course is organized to provide opportunities through which the student may become more competent and more knowledgeable in the machining of some of the common metals. Each student is required to research a special problem and present a solution to selected problem. Prerequisite: IAR 225 Fundamentals of Machine

IAR 758 ADVANCED STUDIES IN DIGITAL ELECTRONICS 3 cr.
An advanced course in digital electronics. Investigations will be made into modern design techniques for digital circuitry. Emphasis will be placed on the selection and application of digital integrated circuits including microprocessors.

IAR 759 ADVANCED STUDIES IN LINEAR ELECTRONICS 3 cr.
An advanced course in linear electronic. Investigations will be made into modern design techniques for analog circuitry. Emphasis will be placed on the selection and application of linear integrated circuitry.

IAR 760 RESEARCH IN AND DEVELOPMENT OF GRAPHIC ARTS TECHNIQUES 3 cr.
Individualized research is selected and conducted by the student dealing with some phase of graphic arts. Emphasis is placed on experimenting with advanced

operational techniques that will lead to in-depth skill development. The study may include any printing processes, such as, composition, dark room techniques, pre-press or presswork, ink and paper tests, plotting and constructing characteristic curves, special effects experiments, etc.

IAR 762 RESEARCH AND DEVELOPMENT IN SCREEN PRINTING TECHNIQUES 3 cr.
A graduate course encompassing the techniques of screen printing, to include in-depth coverage of the elements utilized in screen printing. The student will research the practical application of screen printing within his/her laboratory area (Industrial Materials, Power or Visual Communications) and develop a unit utilizing the techniques of screen printing.

IAR 766 RESEARCH IN PHOTOGRAPHIC TECHNIQUES 3 cr.
A course designed to give the graduate student an opportunity to gain information and skills related to the photographic reproductive processes. Emphasis will be placed on composition, film processing both black and white and color, enlarging techniques black and white and color. Students are required to purchase their own camera, film and paper and conduct a research experiment.

IAR 767 VISUAL COMMUNICATIONS TECHNIQUES 3 cr.
Visual Communications Techniques involves exploring and developing ways of expressing ideas, presenting information and making instruction more challenging and meaningful through the production and reproduction of visual communication materials. Emphasis is placed on instruction in the various methods used in producing visuals, such as: transparencies, exhibits, slides, posters, duplicating techniques and photographic visuals employing the latest products of industry.

IAR 768 PHOTOFABRICATION TECHNIQUES 3 cr.
Photofabrication is a relatively new process which is used in shaping, forming and decorating metals and other materials. It utilizes the tools of photography and photosensitive resists. This technique is also known as chemical milling, chemical machining, photoetching and photomilling. The student will learn how to prepare camera ready copy, process line and halftone photography, film developing, and special darkroom techniques, photoresist applications, exposure and development techniques, etching, decorating and mounting procedures. Approximately five projects will be required, such as: name plate, plaque, etch-through, printing circuit board, decorative three dimensional object, etc. The student will be required to: purchase the Kodak Literature Packet on Photofabrication and various data booklets, acquire metal, such as: copper, brass or stainless steel for his or her project and write a technical research report.

IAR 770 INDUSTRIAL PLASTICS AND THEIR APPLICATION TO INDUSTRIAL ARTS 3 cr.
A study of the changing field of plastics technology and its immediate application to industrial arts teaching at all levels of education. Emphasis is placed upon the physical development of instructional units and curriculum revisions for immediate adoption by the inservice teacher in the field.

IAR 784 INDUSTRIAL MATERIALS WORKSHOP 1-2-3 cr.
This course is primarily based upon a workshop setting while utilizing instruction and student participation. The specifics as to methods and content will be chosen during the planning phase. This effort can be used for introducing new industrial materials, processes, products and related problems to the graduate student.

IAR 786 INDUSTRIAL ARTS AND INDUSTRIAL PRACTICES WORKSHOP 2 cr.
This workshop is designed to acquaint the student with industrial plants in the tri-state area. The student will be taken on conducted tours through a variety of

industries, such as steel industries, glass factories, ceramics plants and a variety of research and developmental laboratories. The chief purpose is to afford the student an opportunity to understand the operation of a variety of industries and their implications for industrial arts.

IAR 787 RESEARCH SEMINAR IN INDUSTRIAL ARTS EDUCATION 2 cr.
A course in action-type research that utilizes much of the graduate student's background in industrial arts content, educational research, statistics, teaching methods and learning theory. While a formalized research report must be developed during an academic semester, this experience should be completed near the end of the graduate program. Topics for this course are identified on a co-operative basis between the student and the college instructor.

IAR 795 FLUID POWER WORKSHOP 3 cr.
This course is a study and analysis of fundamental, sequence, rapid traverse and feed, accumulator, and regenerative fluid power circuits. Also, the students are required to extrapolate technical information from fluid power circuits and apply this knowledge to an actual teaching-learning situation.

IAR 797 ADVANCED STUDIES IN POWER TECHNOLOGY 3 cr.
The course is designed to provide for various learning activities that include: developing a taxonomy in origins of energy sources, energy convertors, and power transmission; technical laboratory analysis of internal combustion engine, air fuel mixtures, horsepower and torque curves, heat transfer per lb. of fuel; group project in a selected area of technology; lineage study of the development of technology; and the impack of technology on sociey and ecology. Activities relate to teaching-learning activities as they would apply to the school curriculum.

INDUSTRIAL ARTS SUPERVISION

IAS 780 DEVELOPING TEACHING TECHNIQUES AND CURRICULUM MATERIALS 2 cr.
The writing and development of new materials to be utilized in the improvement of Industrial Arts programs. The structuring and demonstration of modern teaching techniques for industrial arts. The potential supervisor will need to take into consideration the many new teaching methods and techniques. Experiences will be provided so that these materials can be utilized in actual instructional situations. (Pre-requisite: IAR 706 — Curriculum Development in Industrial Arts)

IAS 785 SEMINAR IN INDUSTRIAL ARTS SUPERVISION 2 cr.
Directed intensive study, investigation, or research in selected problems and new techniques related to supervision of industrial arts. Reports and other presentations by members will be subject to constructive criticism by the seminar group. (Pre-requisite: 6 credits in Supervision Courses and 8 credits in industrial arts professional courses.)

IAS 791 PRACTICUM I — INDUSTRIAL ARTS SUPERVISION 2 cr.
Supervised school experiences that will provide the prospective supervisor with the opportunity to observe such duties, learn about school organization and procedures essential for successful supervision. The prospective supervisor will perform functions in association with teacher interviewing, budget planning, teacher and student scheduling, evaluation of industrial arts facilities and programs. (Practicum I may be scheduled when initial enrollment is made in the supervisory program.)

IAS 792 PRACTICUM II — INDUSTRIAL ARTS SUPERVISION 2 cr.
A continuation of supervisory experiences from Practicum I with more emphasis placed on the supervisory candidate playing the role of an industrial arts supervisor. The candidate will need to demonstrate supervisory competencies through the development, planning, and conducting of an in-service program for industrial arts teachers; public relation activities in terms of news releases and industrial relations; and to participate in inner-city or rural school experiences. (Pre-requisite: Admission to Candidacy for the Supervisory Certificate and IAS 791.)

MATHEMATICS

GMA 701 REAL VARIABLE ANALYSIS I 3 cr.
This first course in Mathematical Analysis is intended for beginning graduate students of mathematics. As far as prerequisites are concerned, essentially the needed mathematical background is a degree of maturity such as might be required in a course in advanced calculus and/or differential equations. Course begins with a rigorous development of the real numbers, measurement, mapping, functions, limits and leads into differentiation and integration. Ultimate goal is to study properites of real variables that are essential tools of mathematical analysis. The study of these elements continues in GMA 702, Real Variable Analysis II.

GMA 702 REAL VARIABLE ANALYSIS II 3 cr.
This second course in Mathematical Analysis is intended for a serious student of Mathematical Analysis. As far as prerequisites are concerned, essentially the needed mathematical background is a degree of maturity such as required in GMA 701, in addition to an above average performance in GMA 701. This course assumes all the mathematical theory developed in GMA 701 and proceeds with the ultimate goal of studying properties of real variables that are essential tools of mathematical analysis.

GMA 703 DIFFERENTIAL EQUATIONS 3 cr.
An introduction to the study of Differential Equations beginning with first order of ordinary differential equations and progressing to higher order equations and perhaps some partial differential equations. Applications will be included.

GMA 706 TOPOLOGY 3 cr.
An introduction to the study of point-set topology beginning with various topologies on the set of real numbers and ending with a view of algebraic techniques applied to topological spaces.

GMA 713 COMPLEX VARIABLE ANALYSIS 3 cr.
This first graduate course in the Theory of Functions of Complex Variables is intended for those students who have completed two semesters of undergraduate advanced calculus. Topics to be covered may include — differential and integral calculus of analytic functions, residues, conformal transformations, harmonic functions and may extend beyond a bare introduction to the subject; it will serve as a substantial background for more advanced theory and for more useful and unusual applications. An attempt will be made to show some important application to problems in engineering and physics.

GMA 721 ABSTRACT ALGEBRA 3 cr.
This course is designed for the beginning graduate student. Algebraic systems investigated usually include groups, rings, integral domains and fields.

GMA 723 LINEAR ALGEBRA 3 cr.
Topics will be chosen from among (but not limited to) the following: eigenvalues and eigenvectors, diagonalization, Shur's theorem, the Cayley-Hamilton theorem, Jordan canonical form, quadratic forms, linear programming, graph theory, game theory.

GMA 725 THEORY OF NUMBERS 3 cr.
A treatment of those classical results most related to the teaching of mathematics: integers, unique factorization, Diophantine equations, congruences, Fermat's and Wilson's theorems, divisibility, perfect numbers, Euler's theorem and function, decimals, Pythagorean triangles, infinite descent and Fermat's confecture, magic squares, calendar problems.

GMA 728 GROUP THEORY 3 cr.
This course is designed for the beginning graduate student. Group structure is investigated beginning with elementary properties of groups

GMA 743 PROJECTIVE GEOMETRY I 3 cr.
This course will provide to the graduate student a "modern" introduction to projective n-spaces. It will emphasize the interrelationships between projective geometry, finite-dimensional linear algebra and algebraic structures.

GMA 744 PROJECTIVE GEOMETRY II 3 cr.
This course is a continuation of GMA 743 developing the objectives listed above.

GMA 761 MATHEMATICAL STATISTICS I 3 cr.
This is an elective course for students in the Master of Education and Master of Arts programs in mathematics. The course will cover the basic concepts of both discrete and continuous probability theory. A number of important random variables such as the Poisson, Normal, binomial and gamma will be studied in depth and sampling distribution results will be emphasized. Upon completion the student will be prepared to take the mathematical statistical inference course, GMA 762.

GMA 762 MATHEMATICAL STATISTICS II 3 cr.
This course is an elective course for students in the Master of Education and Master of Arts programs in mathematics. An undergraduate major in mathematics is a prerequisite. The course will develop the fundamental concepts and most important methods of statistical inference and their mathematical statistical basis. Topics such as maximum likelihood methods, Nexman-Pearson Lemma, likelihood ratio test and unbiased minimum variance estimators will be covered.

CSC 771 COMPUTER AND INFORMATION SCIENCE I 3 cr.
The course is taught on a lecture and laboratory basis. In the laboratory students will be given instructions in the use of the keypunch and computer terminals. Computer programs will be assigned for execution on the computer.

CSC 772 COMPUTER AND INFORMATION SCIENCE II 3 cr.
This course will include extended FORTRAN, error generation, accumulation, curve-fitting, linear programming and simulations.

GMA 781 TOPICS, ACTIVITIES AND PROGRAMS FOR GENERAL MATHEMATICS 2 cr.
This course is intended to broaden the students view of General Mathematics courses in the middle school and high school mathematics curriculum from several vantage points, such as; analysis of textbooks being used with recommendations by National Council of Teachers of Mathematics, activities and games which can be used with various topics, use of models and materials to enhance and reinforce instructional methods, and explore some programs which

can be utilized in the curriculum, as well as the inclusion of historical references in mathematics education.

GMA 782 TEACHING OF ALGEBRA 2 cr.
This course intercedes to acquaint the secondary school mathematics teacher with the teaching of algebra: (1) by comparing the content and objectives of innovative curriculum projects with the content and objectives of present commerical texts; (2) by investigating the instructional value inherent in a multitude of physical models and materials; (3) by considering the impact of certain research findings on the algebra curriculum; (4) by studying the various approaches and different methods of presenting the various topics of algebra.

GMA 783 TEACHING OF GEOMETRY 2 cr.
This course is an elective course in the Master of Education program intended for secondary mathematics teachers who want to improve their understanding of the basic elements of high school geometry, develop a greater depth of geometry, and learn different approaches to the teaching of high school geometry. The postulational structure and foundations of Euclidean geometry will be studied and compared with non-Euclidean geometries. Euclidean geometry presented through the use of transformation will be studied. Intuitive and coordinate geometry will also be considered. Emphasis will be placed on the successful integration of geometry in the secondary high school curriculum and improving the teaching of high school geometry.

GMA 784 TEACHING OF ANALYSIS 2 cr.
This course is intended to acquaint the secondary school mathematics teacher with student centered approaches in developing the ideas of analysis: (1) some concepts can be presented and developed by experimentation, (2) some concepts can be presented and developed from concrete beginnings or experiences of the student, (3) some concepts can be presented and developed by using physical or numerical settings from which generalizations and abstractions can emerge.

GMA 785 HISTORY OF MATHEMATICS 2 cr.
This course is a historical summary of the development of mathematics. Emphasis is on relating the development of mathematics to the development of Western Culture. The lives and discoveries of many mathematicians are discussed. Methods of incorporating the history of mathematics into our school mathematics courses are considered.

CSC 786 COMPUTER SCIENCE FOR TEACHERS 2 cr.
This course is designed for the secondary school mathematics teacher who is interested in an introduction to computers — their operation and use. Topics to be discussed include: the early history and development of computers, elementary concepts of computer programming in languages such as FORTRAN and BASIC with emphasis on programming in the BASIC language, flowcharting, running programs in both batch and interactive modes, etc. Emphasis will be placed on writing computer programs related to course work in high school mathematics.

MENTALLY AND/OR PHYSICALLY HANDICAPPED

ESP 700 INTRODUCTION TO EXCEPTIONALITY 3 cr.
Introduction to Exceptionality constitutes an intoductory sequence to handicapped children and to field of special education. This course examines the broad range of handicaps in children and their sociological, educational and vocational implications. Specifically, the course develops competencies in such areas as the historical development of services for handicapped children,

definitions and classification of children's handicaps, the impact of labelling children and mainstream programs, pre-school and post-school programs for the handicapped, family services, prosthetic devices and program modifications for the physically handicapped and a behavioral analysis of normal child development. This course will stress observation of the various target groups of handicapped children.

ESP 701 INTRODUCTION TO BEHAVIOR ANALYSIS 3 cr.
This course covers the basic learning principles of operant and classical conditioning. The application of these learning principles in applied settings is included.

ESP 702 BEHAVIOR MANAGEMENT AND TECHNIQUES 3 cr.
This course examines the use of behavioral principles in applied settings. The use of behavior management principles in facilitating the acquisition of academic and social skills in instructional and classroom settings is emphasized. The defining and measuring of behavior provides the initial component in this course.

ESP 703 EDUCATION OF SEVERELY/PROFOUNDLY HANDICAPPED 3 cr.
This course has been designed to prepare teachers for classrooms with severe and/or profound learning and/or behavior problems. The course emphasizes the value of a behavioral approach with such children. Class participants are presented with curriculum materials as well as specific instructional techniques/methodologies which have proven effective with such a population. Class participants spend time in classrooms which contain children with severe and/or profound handicapping conditions. They are responsible for teaching select self-help and academic skills as well as the encouraging or discouraging of selected student behaviors.

ESP 704 DIAGNOSTIC TESTING AND PRESCRIPTIVE TEACHING 3 cr.
This course is divided into two major segments. The first segment deals with the essentials of psychological testing and covers topics such as: the vocabulary/terminology of psychological testing, uses and misuses of test information, teacher-made tests, and the issue of norm-referenced tests and testing. The second segment of the course deals mainly with the rationale of criterion-referenced tests and testing. During this part of the course students are taught to prepare, administer, and interpret criterion-referenced tests. Those who are taking the course must administer both norm-referenced and criterion-referenced tests to school-age children and, using the results which are obtained, prepare a prescribed program of remediations or instruction characterized by (1) suggested teaching techniques/activities and (2) suggested commercial as well as teacher-made materials. In addition to competencies developed in these two major segments, special competencies are developed in the area of testing multiple handicapped children and adults.

ESP 708 & 709 METHODS OF CURRICULUM I AND II 3 cr.
The major purpose of Methods and Curriculum I and II is the instruction of communication and arithmetic skills to all age groups of exceptional children. Specifically, Methods and Curriculum I is concerned with communication skills (reading-silent & oral, vocabulary development, and comprehension). Methods and Curriculum II emphasizes arithmetic skills.

Both courses stress: (1) a behavioral diagnosis of communication and arithmetic strengths and weaknesses; (2) the development and implementation of intervention strategies for various populations of exceptional children; (3) the selection and/or development of appropriate materials for instruction; (4) the

procedures and techniques for continuous evaluation of the instructional process in order to determine effectiveness.

ESP 707 HABILITATION TRAINING 3 cr.
Habilitation Training is a course designed for special education majors to be taken during the semester prior to student teaching. The course content is specifically related to special education programs for senior high school students as well as those community services designed to serve post-school handicapped persons. In particular, emphasis is placed upon vocational preparation and training.

Since the vocational needs of handicapped youth are extremely diverse (based upon degree of severity), the course provides for the familiarization of the student with: (1) all governmental and private services available to serve the needs of handicapped youth; (2) program elements that function to meet those needs; (3) public school functions and programs as they pertain to vocational training; (4) standards and regulations as they relate to vocational programming; and, (5) the means by which a professional in the field may best utilize the programs and resources to improve the employability of the handicapped youth.

ESP 720 INTERNSHIP AND SEMINAR (REQUIRED BY EVERYONE) 6 cr.
The Internship experience for the graduate student is designed with emphasis on educational work with handicapped children in a variety of settings including special public school classes, classes in residential treatment centers, special schools and hospitals. Opportunities for case conference, learning seminars and teaching critiques will be provided, as well as numerous field experiences to observe qualified programs in operation.

ESP 731 SEMINAR IN ASSESSMENT AND PRESCRIPTION 3 cr.
Educational assessment techniques and the synthesization of test and observational data are investigated as they relate to the preparation of specific remediation strategies in prescriptive or directive teaching. Specific topics vary from semester to meet student needs, as students are encouraged to pursue an individual interest in an area of remediation.

ESP 732 SEMINAR IN SPECIAL EDUCATION ADMINISTRATION & SUPERVISION 3 cr.
The purpose of the seminar is to provide those individuals who have expressed interest in functioning as a supervisor or administrator, those who are seeking alternatives to teaching in education, and those teachers who seek to broaden the basis for communication with supervisory and administrative personnel the information and skills necessary to make intelligent decisions. The goals will be accomplished by considering a broad range of topics in part to be determined by the enrolees. The topics could include but not be limited to the role and function of supervisors and administrators, budgeting and financial issues, measures of teacher effectiveness, accountability, legal standards and other timely issues.

ESP 712 SEMINAR IN TRENDS AND ISSUES IN SPECIAL EDUCATION 3 cr.
This seminar will deal with recent issues concerning exceptional populations. Each student must prepare a paper on a specific issue and then make a presentation to the group. Most recent research must characterize this presentation. Sample issues include: normalization, nature/nurture, educational alternatives, etc.

ESP 734 SEMINAR IN COUNSELING PARENTS OF EXCEPTIONAL CHILDREN 3 cr.
This seminar is designed to improve the skills of professionals, in the field of special education, related to their interaction with parents of exceptional children. It provides for the opportunity to become acquainted with the special needs of

those parents, techniques of communication, processes by which change can be implemented, legal rights and implications and resources. Participants in this course are encouraged to assume the role of a parental consultant.

ESP 735 SEMINAR IN EDUCATING THE GIFTED 3 cr.
This seminar is designed to assist those who are teaching the gifted and those who are about to establish classes for this exceptional population. The seminar will deal with numerous topics which must be investigated by the students and presented. Teaching materials will be presented which have use in classes for the gifted. State STANDARDS and guidelines for programs are also presented and discussed. Students must spend time in classes for the gifted and talented which operate in the area.

ESP 736 SEMINAR ON RESEARCH DESIGN AND STATISTICS 3 cr.
This seminar will stress the development of competencies in both designing group research studies and in evaluating the results of formal published research. Special education teachers who consistently attempt to stay abreast of current trends in their professional area are consistently confronted with a myriad of research studies examining various aspects of exceptional conditions in children. The teacher requires the skills to effectively evaluate experimental research in order to become an intelligence comsumer and also to translate useful results into classroom behavior. Basic statistical analysis techniques which will enable the teacher to undertake classroom research will also be emphasized in this seminar.

ESP 737 SEMINAR ON LEGISLATION AND LITIGATION 3 cr.
The history of special education has been dotted by court cases which have changed or forced changes upon the educational structure of our society.

More recent years have seen a much more rapid change in the structure of special education. This change has been reflected in the types of programs, number of programs, services and delivery of services to exceptional children. This change has also been reflected in an increased interest in the exceptional child's human as well as civil rights.

The areas of legislation and litigation have over the years, played an overwhelming part in the initiation and subsequent growth and development of education for the exceptional child. Cases such as "Brown vs. Board of Education in Topeka, Kansas," "Mills vs. District of Columbia Board of Education," and "PARC vs. Pennsylvania Board of Education," have all helped to perpetuate special education, and insure for the education of exceptional children.

This course will deal primarily with a large number of pieces of legislation, both at the federal and state level and also with a number of pieces of litigation which have precipitated the initiation of programs for the exceptional child. The course will also deal with legislation and litigation which is now pending, and may at some future time affect the education of children.

The course will also deal with parents efforts to get laws and court decisions passed which will afford their children an opportunity to receive an education which fits their needs and abilities.

ESP 738 SEMINAR ON TEACHER BEHAVIOR AND GROUP DYNAMICS 3 cr.
The seminar on teacher behavior is designed to be an advanced methodology and application course for special education majors. The student will be given the opportunity to refine many of the skills and behaviors he may have been exposed to in other courses in his special education training. In this seminar, areas of critical importance have been identified for a more intensive review and application of the skills and methods which contribute to effective classroom instruction and management.

This seminar would be beneficial to the student who is interested in serving as a cooperating teacher in one or more of the practicums the undergraduate special education majors experience. By using the skills and principles presented in the seminar, the student will serve as a more effective supervisor of pre-service teachers.

ESP 739 FIELD EXPERIENCE SEMINAR IN SPECIAL EDUCATION 1-3 cr.

The field experience course provides a way for graduate students to obtain needed experiences with various groups of handicapped children. This course does not meet regularly but is instead characterized by the student and instructor arranging an experience which will allow the student to do something unique with an exceptional population. Students might spend time: working in an institution, working in a sheltered workshop, designing curriculum materials which are unique, working in an activity center, working in a summer camp experience, community MH/MR facility, etc. Also, students might sign up for the course in order to do some specific piece of research with a particular population of students.

The course is offered every semester and specific requirements will be worked out with individual students by the instructor.

ESP 800 SEMINAR ON ADVANCED BEHAVIOR ANALYSIS AND DESIGN 3 cr.

This course is intended for the student who has an extensive background in behavioral principles and in the field of applied behavior analysis. The course covers the field of research design and methodology in intrasubject experimentation. Also, some of the more novel uses of applied behavior analysis are introduced.

All students in special education must take this course or ESP 736 as both represent the research courses in the department.

RES 819 RESEARCH, PAPER 1 cr.

Students may elect to do a (1) credit research paper on some issue in special education. The research paper needs only the approval of the adviser and will be descriptive in nature. Students are to use the APA Publication Manual (2nd edition) for preparing their paper.

RES 829 RESEARCH PROJECT 2 cr.

Students who decide to do a research project will come up with some piece of work or material which does not qualify as a paper or as a thesis. For example, a student might prepare a slide-tape presentation on some topic or might become involved in preparing video-cassette training films on some dimension of instruction. The project is for 2 credits and only requires the approval of the adviser.

RES 849 MASTER THESIS 4 cr.

The thesis differs from the paper in several ways. First of all, the thesis is for more credits (4) and requires a committee of 3 graduate faculty members — the candidates adviser, a second faculty member from the department and a member from another department. The thesis must be inferential in nature and involve some intervention and the manipulation of some independent variable(s). The thesis would employ a statistical analysis or experimental technique which would not be found in the research paper. The APA form must be used for preparing the thesis.

POLITICAL SCIENCE

POS 705 HISTORY OF POLITICAL THEORY 3 cr.

A study of early and modern political theories; their development and application as controlling factors in the growth of western civilization and American democracy.

POS 708 POLITICS OF AFRICAN NATIONALISM 3 cr.
A comparative analysis of the government and politics of the independent nations of Africa; their international relations and foreign policies, traditional and contemporary forms of political behavior, and the impact of foreign ideologies.

POS 710 COMPARATIVE COMMUNIST SYSTEMS IN EASTERN EUROPE 3 cr.
A comparative study of Eastern European states under communist party domination; internal politics; intra-bloc relations; integrative and disintegrative tendencies.

POS 716 PROBLEMS OF THE SOVIET POLITICAL SYSTEM 3 cr.
The development of the Communist Party and the Soviet regime are thoroughly examined with emphasis on the functions, social composition and internal relations of the Party as well as the relations between the Party and other Soviet power structures.

POS 717 NATIONALITY PROBLEMS IN THE SOVIET UNION AND EASTERN EUROPE 3 cr.
An analysis of political and cultural problems of differnt nationalities in Eastern Europe and the Soviet Union.

POS 718 PROBLEMS IN INTERNATIONAL ORGANIZATION 3 cr.
Methods and materials of research in international organizations; special topics such as disarmament, security, procedural problems in the United Nations, economic and social problems, amendment and revision of the Charter.

POS 728 POLITICS OF UNDERDEVELOPED NATIONS 3 cr.
A comparative study of emerging political systems of their attempts to achieve modernity.

POS 730 COMPARATIVE GOVERNMENT 3 cr.
A comparative analysis of political systems their institutional structures.

POS 740 AMERICAN DEFENSE POLICY 3 cr.
An analysis of the forces influencing decision making in the quest for American security.

POS 745 THE LEGISLATIVE PROCESS 3 cr.
An analysis of policy determination in the American legislative system.

POS 746 AMERICAN CHIEF EXECUTIVES 3 cr.
The role of the Presidency in policy determination in both domestic and foreign affairs.

POS 747 CIVIL LIBERTIES AND JUDICIAL PROCESS 3 cr.
The study of the Supreme Court as the principal guardian of libertarian principles.

POS 748 PROBLEMS IN PUBLIC ADMINISTRATION 3 cr.
Selected studies in bureaucratic organization in both federal and state governments.

POS 755 URBAN STUDIES 3 cr.
This course will focus on the formulation of policy in urban government as well as on administrative operations.

POS 756 MODERN POLITICAL PARTIES 3 cr.
A comparative study of the aggregative function of political parties.

POS 757 THE POLITICAL PROCESS 3 cr.
The study of interest articulation in the political system.

POS 779 INDEPENDENT STUDIES IN POLITICAL SCIENCE 1-3 cr.
The student will have an opportunity to do independent study or research in political science. The student will be guided and advised by a member of the political science department. The nature of the research study and the assigned credit hours will be decided on an individual basis.

READING SPECIALIST

RSP 701 FUNDAMENTALS OF READING INSTRUCTION 2 cr.
This course is designed to provide the students with various instructional strategies that will enable them to make functional use of the basic reading skills.

RSP 702 DIAGNOSIS AND TREATMENT OF READING PROBLEMS 3 cr.
This course will introduce the student to the causes of retardation in reading. It will explore the gap between the reading expectancy level and the actual reading level. Theories of causes of retardation will be offered, introduction to the sophisticated diagnostic techniques will be presented and techniques for prevention of further remedial cases will be given. (Pre: RSP 701)

RSP 703 PRACTICUM — DIAGNOSTIC CASE STUDIES 3 cr.
Major emphasis is placed on presenting and discussing the techniques for determining reading difficulties of elementary and secondary school children. Practical use of testing devices and their application to individual diagnosis of reading difficulties are emphasized. The case study techniques is utilized. (Pre: RSP 702)

RSP 704 PRACTICUM— REMEDIAL CASE STUDIES 3 cr.
The student becomes familiar with the many materials and varied methods to be employed in the correction of reading problems through their applications with a retarded reader in a clinical situation. (Pre: RSP 703)

RSP 730 PROBLEMS IN SECONDARY READING 2 cr.
This course is designed to investigate the aspects of reading that influence learning at the Secondary level. The sequential development of reading, reading programs, materials, reading disorders as well as other problems related to reading in the content fields are studied. Discussions of problems concerning the bright and gifted, the disadvantaged, the slow learner, and adolescent interests clarify the nature and scope of the reading process.

RSP 739 INDEPENDENT STUDY 2 cr.
The student will have an opportunity to do independent study or research in Reading. The student will be guided by a member of the Reading staff.

READING SUPERVISOR

RSU 680 IMPROVEMENT OF INSTRUCTION THROUGH SUPERVISION 2 cr.
The purpose of this course is to prepare the holder of a permanent or a Level II

Instructional Certificate for a supervisory capacity in specialized areas of the curriculum. It is a requirement for all working toward a supervisory certificate. It deals with theory, research, practice and evolving concepts which have practical implications for supervision in the school environment. It views supervision as only a part of a larger entity . . . the operation of the educational system. Supervision is defined in relationship as to how supervisory personnel assist professional and para-professional employees within a specific department to develop effective practices which will improve the quality of instruction and result in individual pupil progress . . . The course content will cover basic competencies in the areas of: Authority of the supervisor (development of duties and areas of responsibilities); Relationships with other supervisors; Specific techniques for cooperating with teachers; Developing sound research practices which yield valid data; Direct supervision of actual procedures, i.e., classroom visitations, observations and evaluations; Instruments of evaluation; Evaluation of new materials and programs; In-service programs; Conference techniques; Departmental relationships, i.e., meetings, selecting department heads, selection and assignment of personnel, developing goals and interpreting needs to achieve goals, recognizing inter-departmental conflicts; Role playing and simulation; contacts with other facets of the school and community and establishing learning outcomes.

RSU 685 GROUP DYNAMICS 2 cr.
The course is designed to bring together the recent research on teacher behavior with the theories and research of social psychology and group dynamics. It aims to give the student some understanding of group processes and some personal experience helpful in developing a repertoire of ideas and behaviors that will be pertinent in supervision and in the classroom.

RSP 731 SUPERVISION AND ADMINISTRATION OF A READING PROGRAM 2 cr.
Common problems in the administration and supervision of reading programs are developed and analyzed. These problems tend to include (1) problems of method and materials, (2) problems of administrative grouping, (3) problems of evaluation, and (4) problems of personnel. Emphasis is also placed on the recruitment of qualified teachers; promotion policies; teaching schedules; administering tests and evaluating the results; safeguarding the pupil during the reading program; and reporting student progress.

RSP 732 READING CURRICULUM AND INSTRUCTIONAL MATERIALS 2 cr.
This course includes the introduction, selection and evaluation of Reading Curriculum and Instructional Materials K through 12. The developmental sequence of materials throughout the curriculum will be explored. The implementation of those materials will be discussed for strength, weaknesses, and limitations.

RSP 733 READING INTERNSHIP 4 cr.
The student is provided with an opportunity for supervised clinical and school experiences in a reading program. The student is provided with actual supervision experiences.

SCHOOL PSYCHOLOGY

PSY 701 PERSONALITY THEORY 2 cr.
A course designed to provide the student with an understanding of the development of personality from various theoretical points of view. (The course will draw comparisons between various theories. It will contrast the dynamic

approach to personality with the static approaches). The role of personality, as it affects behavior of children, adolescents, and adults will be explored. This course is seen as a fundamental course in Psychology which may become the basis for further development of the student in applied courses and to assist the student perform his function as a consultant.

PSY 702 PSYCHOPATHOLOGY OF CHILDHOOD 2 cr.
A comprehensive study of behavior disorders of children and their clinical manifestations. Various concepts of "normality" and "abnormality" will be used to demonstrate to the student the approaches available for determining behavioral disorders. Attention will be given to understanding and identifying a variety of emotional and social disturbances in children. The student will become acquainted with the implications of such disorders for the school and for methods of reeducation and treatment.

This course is designed to assist the student in identifying problems of children and preparing them for making decisions about the proper methods of handling such problems in the school or by referral outside the schools.

PSY 705 SEMINAR IN ADVANCED GENERAL PSYCHOLOGY 2 cr.
This course is designed to provide a general background in the Psychology of perception, motivation, sensation, physiological psychology, theories of numbers and measurements and an overall view of psychological concepts and theories at an advanced level. It will assist in the development of the knowledge and understanding of the field of Psychology to prepare the student to perform as a consultant to school officials, teachers, and others on the varied aspects of Psychology.

PSY 721 ADVANCED TESTS AND MEASUREMENTS 2 cr.
This course is designed to provide the student with an understanding of the use of tests for diagnostic studies of children and adolescents. It will explore the way in which tests are constructed, the questions of validity, reliability, objectivity, standardized conditions, test administration requirements, normative data, limitations of tests, and the uses to which testing may ethically be put. The course will provide a survey of some representative tests of achievement, aptitude, intelligence and interests. In this survey, the student will be assisted in learning to evaluate the various tests in terms of their usefulness in typical testing situations.

PSY 722 INDIVIDUAL PSYCHOLOGICAL EVALUATION I
(BINET AND INFANT SCALES) 2 cr.
Emphasizes theory and competence in the administration, scoring, and interpretation of the Revised Stanford-Binet Scales. Practical experiences in the administration and clinical interpretation of the tests with school age children will be provided. Some familiarity with other infant and child measures of intelligence such as the Cattell and McCarty Scales are included. Psychological Report Writing is stressed.

PSY 723 INDIVIDUAL PSYCHOLOGICAL EVALUATION II
(WECHSLER SCALES) 2 cr.
Emphasizes theory and competence in the administration, scoring, and interpertation of the Wechsler Scales: WPSSI, WISC, and WAIS. Attention is directed to the use of the Wechsler Scales both in evaluating intelligence and in clinical personality appraisal. Psychological Report Writing is stressed.

PSY 724 INDIVIDUAL PSYCHOLOGICAL EVALUATION III 2 cr.
Stresses the development of clinical skills in the assessment of sensory, motor, perceptual, and language impairment in children. Tests such as the Pender-Gestalt, Human Figure Drawings, ITPA, and other special clinical tests will be covered. Psychological Report Writing is stressed.

PSY 725 GROUP TESTS AND PRACTICUM 2 cr.
A study of commonly used group tests in the school setting is reviewed and evaluated. The student is given an opportunity to administer, score and interpret many of these group tests under supervision. Reports of results of the test will be written and reviewed by the professor. Student reports will aid the student to develop skills in writing reports of diagnostic studies.

PSY 727 ADVANCED CHILD PSYCHOLOGY 2 cr.
This course is designed to assist the student to understand at a more advanced level the development of children in areas of cognitive development, personality development, social development and the dynamics of behavior. The student should be able to appreciate what is considered to be normal development and to utilize norms at a measurement of each child's development in the various phases of growing and developing. In addition, the student will learn to appreciate the range of normal development and to evaluate deviations from the norms in terms of "normal deviation" versus abnormalities of development. Integrated into the course will be information drawn from Anthropology, Sociology, and Physiology.

PSY 731 PROJECTIVE TECHNIQUES I 2 cr.
An introduction to the theory of projective techniques methods of the study of personality, motivation, "abnormality", and dynamics of behavior. Experience is given to the student in the administration, scoring, and interpretation of some of the more widely used projective tests such as the Sentence Completion, TAT, CAT, and other picture story tests. Particular attention is given to the use of such tests in understanding personality disorders.

PSY 732 PROJECTIVE TECHNIQUES II 2 cr.
A course on the theoretical rationale, administration, scoring, and interpretation of the Rorschach test as a method of personality assessment. Supervised experience is provided in its use.

PSY 741 THEORIES OF COUNSELING AND PSYCHOTHERAPY 2 cr.
A study of some major theoretical positions on the conduct of counseling and psychotherapy. The course will examine the psychological basis for each of the theories studied as well as the implications for each approach to treatment of behavior disorders.

This course is designed to prepare the student to take more advanced work in counseling and therapeutic techniques. In addition, it is intended to give the student the broad view of how individual cases might require different approaches to the remediation of adjustment problems and suggest possible modifications of the environment which might aid in the prevention of possible adjustment problems in children

PSY 742 TECHNIQUES OF COUNSELING AND PSYCHOTHERAPY WITH PRACTICUM 2 cr.
This course is intended to assist the student to recognize the need on the part of the student for psychological counseling services and to provide a basic skill in engaging in short-term counseling with students who require such services. It seeks to help the student understand the relationship between theory and actual practice in the counseling situation. The course will explore the initial phase of counseling, an understanding of the limitations of the ability of the School Psychologist to conduct long-term, indepth counseling, and the need for referral to outside sources. Goals of the counseling situation in the school environment are explored and the ethical problems of counseling are examined. Additionally, the student will be expected to write and to orally present appropriate information about the case. The practicum includes supervised counseling experience.

PSY 745 PSYCHOLOGY OF THE GIFTED CHILD 2 cr.
This course is designed as a study of the intellectual, social, and emotional development and learning of the gifted child and his adjustment to school and life. Principles of development and learning of the gited child and their implications for educational programming and curriculum development are explored. The student will be expected to determine state requirements for placement of children, identify the gifted child and formulate in-service programs for school personnel in such areas as mental health concepts and theories and practices of child development.

PSY 746 PSYCHOLOGY OF LEARNING DISABILITIES AND PRESCRIPTIVE TECHNIQUES 2 cr.
This course is designed to acquaint the student in School Psychology with an understanding of the common types of learning disabilities. Included are considerations of cases of brain damage, dyslexia, the perceptually handicapped and perceptual motor factors in learning disabilities. The course explores potential causes and the results in terms of behavioral manifestations of such learning disabilities. In addition, the course introduces the student to methods of dealing with children with learning disabilities and the development of prescriptions for remedial treatment.

PSY 747 APPLICATION OF PSYCHOLOGICAL PRINCIPLES IN SCHOOLS 2 cr.
This course is designed to assist the student in understanding how concepts, knowledge, theories, skills, and professional techniques in the discipline of Psychology may be used in the school environment. The course will seek to assist the student or transfer his previous Psychological background into useful and meaningful approaches to consultation, remediation, program planning, and in assisting individual students to adjust more effectively to the school situation.

PSY 750 ADMINISTRATION OF PUPIL PERSONNEL SERVICES 2 cr.
This course is designed to acquaint the student with the role of the personnel involved in the Pupil Personnel Services. It explores the administrative structure of typical Departments of Pupil Personnel Services and explores the role of the School Psychologist as a member of a team providing services to children in the school. In addition, the course considers the possible development of the School Psychologist as an administrative leader in the Pupil Personnel Services.

Attention is given to the role of the School Psychologist in the school with particular attention to legal, ethical and professional standards of the School Psychologist. Students in this course participate in research on the ways School Psychologists function in various school systems and in various states.

PSY 755 GROUP COUNSELING TECHNIQUES AND CONSULTATION WITH PRACTICUM 2 cr.
The course is intended to acquaint the student with common methods of group processes used in counseling and in improvement of adjustment. Included will be consideration of the T group, encounter methods, group therapy, group dynamics, and problem solving groups. This course is intended to broaden the scope of the School Psychologist in dealing with types of problems in the schools which do not require traditional counseling or psychotherapeutic procedures. Students will receive an opportunity to engage in all types of counseling and group processes under the supervision or the professor.

The course will also explore the relationship between counseling techniques and group processes with the role of the consultant to parent, teachers, administrators, other specialists and members of the community at large. The student will be given an opportunity to explore the meaning and effect of their role on others and how to handle situations in which they are giving information and advice.

PSY 760 EXPERIMENTAL METHODS OF PSYCHOLOGY 2 cr.
This course is intended to assist the student to understand how to design, implement and analyze the results of research. Considerations will be given to the use of published literature as a source of ideas about research problems and the student will be assisted in the development of such problems into an appropriate proposal for research study. This course will assist the student in conducting research, consulting with others about research problems, and provide a resource for the interpretation of existing research in the literature.

PSY 765 PSYCHOLOGICAL STATISTICS 2 cr.
This course will teach the student the fundamentals of statistical design of experiments, statistical analysis of results of experiments and the use of statistics as a model in understanding the types of inference to be drawn from published literature. The power and the limitations of various statistical methods will be explored.

PSY 769 INDEPENDENT STUDY 2-4 cr.
This provides the student an opportunity to receive credit for existing competencies and to demonstrate those competencies through appropriate evaluational procedures. In addition, students may be permitted to explore additional work in School Psychology not provided by the courses and experiences designed in the program. This course provides a flexibility to the program in meeting the individual needs of students.

PSY 771 CLINICAL PRACTICUM 3-6 cr.
This practicum provides an opportunity for the student to develop and/or demonstrate competencies in the clinical environment.

PSY 772 INTERNSHIP IN SCHOOL PSYCHOLOGY 12-18 cr.
This is a practicum experience consisting of no less than 540 clock hours of practicum work in a school environment under close supervision. The student is expected to demonstrate all of the competencies of the practicing School Psychologist in this setting.

PSY 795 SEMINAR IN BEHAVIOR MODIFICATION AND PRACTICUM 2 cr.
This course seeks to establish an initial repertoire of skills which are required for the successful conceptualization, design, implementation and evaluation of behavioral change programs or procedures used in public school contexts. Students will be expected to design and implement a program of behavioral change through a practicum experience.

PSY 796 SEMINAR IN THE ANALYSIS OF RESEARCH IN SCHOOL PSYCHOLOGY 2 cr.
This course will consist of a review of available literature and of current research in School Psychology. Critical study and evaluation of research findings applicable to the school age child and classroom learning situations will be undertaken. The student will develop skills in finding pertinent research, critically analyzing the research, and be able to present in a clear and detailed manner the data from existing research.

PSY 797 SEMINAR IN PROBLEMS IN SCHOOL PSYCHOLOGY 2 cr.
This course in conjunction with the internship is intended to assist the student better understand the role of the School Psychologist and to deal with the problems which arise during the internship experience. In addition, the student will receive a review of such topics as the history and trends in the growth of School Psychology, the preparation and training of the School Psychologist, the right to education and due process law of 1972, the evaluation of children, psychological and educational assessment, the professional responsibilities,

ethics and professional affiliations, community responsibilities, agencies, program and services and the consultant concept of the School Psychologist.

PSY 849 THESIS 4 cr.
The student will demonstrate his ability to conduct an independent, scientific research study and to write it up in appropriate professional style.

SOCIAL SCIENCE

SOS 716 ECONOMIC, SOCIAL, AND POLITICAL ORDER 3 cr.
Analysis of the enormous diversity of the actual social institutions which guide and shape the economic process. Special emphasis will be given to the major types of systems which enable mankind to solve its economic challenge. Several of the more recent rapid growth economics are used as models.

SOS 717 ANALYSIS OF POWER STRUCTURE 3 cr.
An appraisal of the nature, composition, structure, and function of groups will be undertaken as well as Sociological theory concerning group functioning. Particular emphasis will be placed on decision-making in various levels of government, labor, military, and business.

SOS 785 SEMINAR IN WORLD CULTURE 3 cr.
This course will stress the integration of social sciences. Students will examine selected cultures of the world from social, economic, political, historical, and geographic perspectives and within the frame of reference of that culture.

SOS 800 SEMINAR IN SOCIAL SCIENCE RESEARCH TECHNIQUES 3 cr.
Emphasis will be placed on the techniques involved in both research and writing on the social sciences. This is to include the selection of a topic, acquaintance with research tools (note taking and bibliography preparation), organization of materials, and monograph writing. An overview of contemporary social science thought will also be undertaken.

ANT 701 ARCHAEOLOGY FIELD SCHOOL 3-6 cr.
The field school is designed to acquaint students with basic prehistoric and historical archaeological field and laboratory techniques. Included are instruction in basic field surveying and site layout, methods of excavation and field recording, material culture identification, field photography of artifacts and features, sampling of ecological and geological data, care, restoration, and preservation of archaeological materials, artifact classification, close-up photography and line drawings, ceramic analysis, and museum display.

ANT 703 LIVING HISTORY: STUDY AND REPLICATION OF MATERIAL FOLK CULTURE 3 cr.
The intent of the course is to bring the material folk culture of the 18th, 19th, and early 20th centuries "back to life." Students will seek examples of southwestern Pennsylvania crafts that are now extinct. They will interview persons knowledgeable of the crafts, study how they were performed, and then replicate (duplicate) the craft objects being studied. Only one to several crafts will be studied, depending on the class size. Possible crafts for study are weaving, hog butchering, bread baking, and chair making. The object of the course is to follow the material folk culture item under study from orally collecting information about the item, studying the techniques of reproducing the item, actual replications of the object, and using the reproduced item as it was used in the 18th or 19th century. For example, if weaving were the project under study, the course would include washing and carding the raw wool on cards that students would make,

dyeing it with natural dyes, spinning the wool into yarn, and weaving fabrics on a loom the students will make. Bread baking would include milling of the grain and baking of bread, using local recipes, in an outdoor baking oven that the class would build. Chair making would include cutting of the wood, turning legs on a student-made lathe, working the wood on a carpenter's shaving horse, and splitting oak to make a split oak seat.

ANT 705 CULTURAL ANTHROPOLOGY 2 cr.
Primitive educational and enculturation systems are compared cross-culturally with our own American system. The relationships between culture, personality, and education are defined and evaluated. The reaction of North American ethnic groups to Western technology and ideas is used as a basis for the understanding of different value systems.

ANT 706 CULTURAL INSTITUTIONS 3 cr.
The purpose of this course is to understand the concept of culture, to identify and understand cultural institutions, and to place them in an integrated human social context. Each student presents a written and oral report on a specific field-problem of their own choice. Assigned readings of non-western cultures are compared with American institutions.

ANT 755 EIGHTEENTH AND NINETEENTH CENTURY FOLK CRAFTS AND TRADITIONS 3 cr.
A course which is aimed at placing early American (1600's-1800's) folk crafts and traditions in cultural perspective by: (1) identifying the crafts and traditions, (2) showing the significance of the crafts and traditions to American culture, (3) relating how the crafts and traditions evolved, and (4) identifying the role of such crafts and traditions in the American family. Some of the crafts and traditions to be studied are cornhusk broom and doll making, log hewing, shingle splitting, candle dipping, spinning, natural dyeing, wooden toy making, sauerkraut making, and cider making.

ECO 715 ECONOMICS FOR THE TEACHER 3 cr.
The course is based on the premise that secondary school teachers should be able to effectively teach courses in economics which emphasize concepts, principles, and methods. Therefore this course is built on the following units: Introduction to Economics, Basic Price Theory, The Monetary System, National Income Accounting, and Theory of Income and Employment.

History Courses — See History section for course descriptions.

SPEECH PATHOLOGY AND AUDIOLOGY

SPA 700 APHASIA AND CEREBRAL PALSY 3 cr.
Theories of causation and therapies for Aphasia and Cerebral Palsy.

SPA 705 VOICE DISORDERS 3 cr.
Theories of causation and therapies for Organic Voice Disorders and Cleft Palate.

SPA 706 PROFOUND LANGUAGE DISORDERS 3 cr.
The role of the speech pathologist in team approach in Delayed Speech Development, Developmental Aphasia, Mental Retardation, and brain damaged children.

SPA 707 STUTTERING 3 cr.
This course is designed to deal with the prevalent theories and therapies of stuttering. A student learns therapeutic techniques for both children and adults.

SPA 708 NEUROLOGY OF SPEECH AND LANGUAGE 3 cr.
Neuropathological and psychological considerations involved in the acquisition and loss of speech and language.

SPA 710 ADVANCED CLINICAL METHODS 1-3 cr.
Clinical practicum concerning various types of profound speech and/or auditory disorders.

SPA 715 EXPERIMENTAL PHONETICS 3 cr.
Investigation of problems of speech and language as they relate to the experimental process. Instrumentation, research designs, areas of research and significant findings in selected contemporary studies will be examined.

SPA 716 ADMINISTRATION OF CLINICAL PROCEDURES 3 cr.
A seminar involving related disciplines and allied professions.

SPA 720 DIAGNOSTIC AUDIOMETRICS 3 cr.
A study of various audiometric and speech reception tests outlining the dimensions of hearing; experience in test administration and interpretation of tests.

SPA 725 AURAL REHABILITATION 3 cr.
Study of perceptive and behavioral problems of the aurally handicapped in society and methods of alleviation and compensation for hearing losses.

SPA 749 INDEPENDENT STUDY AND RESEARCH 2 cr.
Open to graduate students in either speech or hearing for pursuing independent interest areas and/or research.

SPA 759 SPECIAL PROBLEMS IN SPEECH PATHOLOGY OR AUDIOLOGY 2 cr.
Closely directed study of special problems in Speech Pathology or Audiology.

SPA 785 SEMINAR IN SPEECH PATHOLOGY 2 cr.
The role of the Speech Pathologist as a diagnostician and therapist in interdisciplinary investigations including counseling procedures and organization of programs for various pathologies of speech.

SPA 786 SEMINAR IN AUDIOLOGY 2 cr.
Emphasis of advanced concepts in audiological diagnosis, aural rehabilitation, and other audiological implications.

SPA 800 RESEARCH METHODOLOGY 2 cr.
Consideration, in detail, of the research methodology employed in intrasubject experimentation. Topics include reliability, validity, experimental control, and evaluation of effects and research design.

VI Directory

Directory

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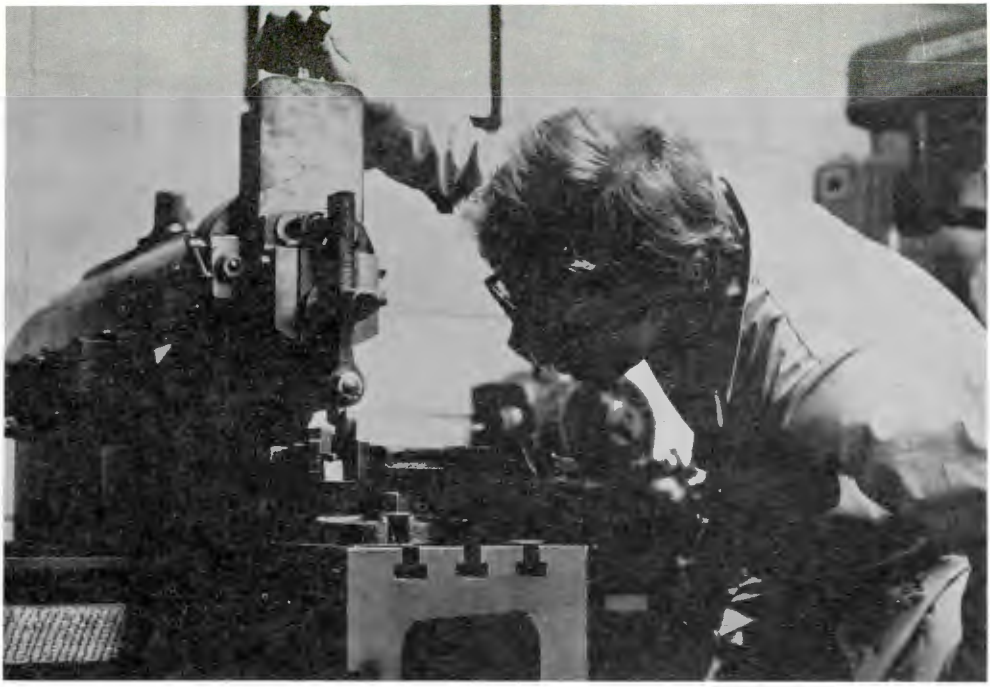

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