

CALIFORNIA STATE COLLEGE

Graduate Bulletin

1971-1973



THE GRADUATE DEGREE PROGRAMS



1971-1973

MASTER OF EDUCATION PROGRAMS

Biology
Chemistry
Elementary Education
Elementary Guidance
English
Geography
Industrial Arts Education
Mathematics
Mentally Retarded
Reading Specialist
Social Studies
Socially and Emotionally Maladjusted
Speech and Hearing

MASTER OF ARTS PROGRAMS

English
History
Political Science

MASTER OF SCIENCE PROGRAMS

Biology
School Psychology

CALIFORNIA STATE COLLEGE
California, Pennsylvania 15419

CONTENTS

I. THE COLLEGE	5
II. GRADUATE STUDY	9
III. GENERAL INFORMATION	15
IV. THE GRADUATE PROGRAMS	27
V. COURSE DESCRIPTIONS	55
VI. DIRECTORY	93
VII. INDEX	107

THIS 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
THE NATIONAL COUNCIL
FOR THE ACCREDITATION OF TEACHER EDUCATION

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.

California State College is located on the Monongahela River in California, Pennsylvania, a community with a population of approximately 7,500. California is located 40 miles south of Pittsburgh, 25 miles east of Washington, Pennsylvania, and 25 miles northwest of Uniontown. The college can be most easily reached over U.S. Route 40 which comes within four miles of California at Malden or over Pennsylvania Route 88. From the eastern part of the state Interstate Route 70 connecting with the Pennsylvania Turnpike at New Stanton offers easy access to Route 88 at Speers (near Charleroi).

II. Graduate Study

History
Objectives
Admission
Candidacy

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 program in School Psychology was initiated. The Certification program for the School Psychologist was also inaugurated in the fall of 1970.

OBJECTIVES FOR GRADUATE STUDY

Master of Education

AREA OF GENERAL EDUCATION:

1. To present studies of cultural importance for the graduate student to explore for his own appreciation and understanding.
2. To help the student develop modes of inquiry and substantive understandings which will develop a more critical and creative attitude about humanistic principles.

AREA OF SPECIALIZATION:

1. To increase the competency of teachers.
2. To provide teachers with an incentive to continue professional growth.
3. To enable teachers to assume more responsible leadership roles in the educational program.
4. To emphasize basic research techniques and their use for improving instruction.
5. To provide a further understanding of the teaching and learning processes.

Master of Arts and Master of Science

1. To offer opportunity for graduate students to increase their competence and basic understanding of their disciplines.
2. To emphasize basic research techniques.
3. To offer opportunity for the improvement of skills in presenting the results of research as a thesis.
4. To offer opportunity for graduate students to pursue in depth, selected topics in their fields of specialization.
5. To provide graduate students with an incentive for academic growth beyond the Master's degree.

REQUIREMENTS FOR ADMISSION TO GRADUATE CLASSES

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 honor point value of his undergraduate work as determined by a grading system based on a four-point scale.
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 the applicant must have a teaching certificate with certification in the field in which he wishes to enroll for graduate study. 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 departments.

PROCEDURE FOR ADMISSION TO GRADUATE CLASSES

1. Each applicant will file with the Dean of Graduate Studies an application for admission to graduate classes as early as possible and preferable 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. When submitting his application, each applicant should request an appointment for a personal interview with the Dean of Graduate Studies.

APPLICATION FORMS AND ADDITIONAL INFORMATION

Application forms and additional information concerning the graduate program may be obtained by writing to the Dean of Graduate Studies, 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 twelve (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.
5. Admission to candidacy requires the approval of the Dean of Graduate Studies and of the Graduate Council. 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 programs and research requirements, but are not expected to relieve the students of their responsibility.

PLANNING A PROGRAM

As soon as the applicant has been admitted to the Graduate Studies Program he will be referred to the appropriate department for advisement. Each graduate student's program will be planned specifically for him in conference with his adviser. An adviser will be assigned to aid the student with his research after he has been admitted to candidacy for the Master's degree. The candidate may request an adviser in his area of study with the approval of the department head.

The student is required to consult with his adviser throughout his graduate program on a regularly scheduled program basis. His program of studies must be approved by his adviser prior to registration.

COURSE LOAD

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

During the summer sessions a graduate student may earn a maximum of twelve (12) semester hours of graduate work (maximum 6 credits per six-week session).

A full-time graduate student may carry ten (10) or twelve (12) semester hours of graduate work within a sixteen-week period.

RESIDENCE REQUIREMENT

A minimum of thirty (30) semester hours of work, 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.

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 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.

FEEES

Application Fee	\$10.00
Enrollment Fee (Pa. residents)	\$36.00
	(per graduate credit)
(Out-of-state)	\$43.00
	(per graduate credit)
Activity Fee (Summer Sessions only)	\$ 5.00
Graduate Degree Fee	\$ 5.00
Change of Class Fee	\$ 5.00
Late Registration Fee	\$ 1.00 (per day)
	\$ 5.00 (limit)

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 as follows:

Application Fee	}	Commonwealth of Pennsylvania
Enrollment Fee		
Graduate Degree Fee		

Activity Fee	}	Student Activities Fund
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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. The fee for these items is nominal.

Three bound copies of the Master's thesis or the research project 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 of one's graduate work may be obtained by contacting the Graduate Office. The fee for this service is \$1.00 per transcript.

REFUNDS

If a student withdraws from the college, the following schedule of refunds and credit have been established:

Sixteen Week Course

Withdrawal 1st and 2nd week	80% Refund
Withdrawal 3rd and 4th week	60% Refund
Withdrawal 5th and 6th week	40% Refund
Withdrawal after 6th week	0% Refund

Twelve Week Course

Withdrawal 1st week	80% Refund
Withdrawal 2nd and 3rd week	60% Refund
Withdrawal 4th week	40% Refund
Withdrawal after 4th week	0% Refund

Six Week Course

Withdrawal 1st week	80% Refund
Withdrawal 2nd week	60% Refund
Withdrawal after 2nd week	0% Refund

Three Week Course

Withdrawal 1st week	80% Refund
After 1st week	0% Refund

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 trimester, the letter to the President is not necessary.

WITHDRAWALS

Withdrawal from Individual Courses:

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

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

After the first six 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 Studies or the Associate Dean of Graduate Studies. "WP" or "WF" grades are assigned for all courses.

All withdrawals are subject to the policy established for credit and refunds. Refer to that section of the bulletin entitled "Refunds" immediately above.

Withdrawal forms must be properly filled in 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.

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

TIME LIMIT

All requirements for the Master's degree must be completed within five 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" grade average in all work after receiving the bachelor's degree.

Only grades of "A," "B," or "C" are acceptable toward a Master's degree. Marking system: Grade 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 semester immediately following the semester when the grade was issued. After the lapse of one trimester, if the work is not satisfactorily completed, the incomplete grade automatically becomes an "F" grade, and it cannot be removed without repeating the course.

COMPREHENSIVE EXAMINATION

Each student who is a candidate for the Master's degree will be required to pass a comprehensive examination in his area or field of specialization. The type of examination may vary in different departments. The purpose of the examination is to evaluate the student's ability to organize his thoughts, to express himself adequately, and to demonstrate a knowledge of his field.

RESEARCH REQUIREMENT

One of the requisites for fulfilling the requirements for a Master's degree at California State College is the preparation of a research project or thesis. The research project and the thesis may be distinguished 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 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.

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

The Graduate Division of the College has a cooperative arrangement with University Microfilms for the publication of theses abstracts and for microfilming of theses. The cost for this service to the graduate student is a fee of \$15 which is payable to University Microfilms, Inc. University Microfilms will make a permanent microfilm copy of the thesis and send one copy of the microfilm to the Library of Congress in Washington, D. C. University Microfilms, Inc. will also publish the abstract in their abstract journal of Master's theses. Copies of the thesis in microfilm or Xerography are available at a nominal cost on a per page basis. Abstracts of theses are limited to 150 words or less. Details and instructions concerning the microfilming of theses and abstracts are available in the Graduate Office or in the Office of the Director of Research.

STEPS IN SATISFYING THE RESEARCH REQUIREMENT

1. Completion of the course, "Methods of Research."
2. Admission to Candidacy for the Master's degree.
3. Selection of an adviser.
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 above 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 necessary 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.

HOUSING FACILITIES

Housing in the College dormitories for the summer sessions is available to graduate students. Students desiring housing facilities are requested to write to the Dean of Student Affairs and Services.

The housing fee which includes room and board, is \$19.00 per week, Meals—\$9.00, Room—\$10.00 (Fees are subject to change).

The availability of living accommodations in the college dormitories depends upon the enrollment and demand for housing. Interested students are urged to make the necessary arrangements as early as possible.

PERMANENT CERTIFICATION

The provisional college certificates issued after October 1, 1959, shall require for validation for the permanent form of the certificate, the completion of twelve (12) semester hours of post-baccalaureate work and at least three full years of successful teaching experience. Provisional College Certificates issued after October 1, 1963, shall require for validation for the permanent form of the certificate the completion of 24 semester hours of approved post-baccalaureate or graduate work at a regionally accredited institution.

By enrolling in the graduate program teachers may com-

plete their twelve (12) or twenty-four (24) credit hours of post-baccalaureate work which are required for permanent certification and at the same time begin work on the Master's degree.

Effective July 1, 1969, the Instructional III Certificate shall be a permanent certificate issued to an applicant who shall have completed five (5) years of satisfactory teaching and shall have been granted a master's degree with emphasis in a subject or teaching area by a regionally accredited institution.

THE LIBRARY

The J. Albert Reed Library, opened in August of 1961, houses a growing collection of carefully chosen supplementary reading and research materials expanded to meet the needs of the graduate program. Library acquisitions average 17,000 volumes a year, special encouragement being given by the librarians to graduate ordering.

Microfilm editions of rare and out-of-print titles are slowly attracting student use. Twelve microfilm readers and six microform readers are adjacent to the graduate headquarters on the second floor of the building. Microfilmed theses supplement shelves of bound theses in the reserve area, both of which serve both as examination samples and as source materials. For the students' convenience, book copies and microfilm reader-printers provide copying service at a nominal cost.

Two members of the library staff have been assigned to the Education Department as order librarians, cataloguers, reference assistants, and consultants in that field. Professional librarians also serve the Industrial Arts and Science Departments in the same capacities. Five staff members classify titles in the humanities, thus completing a pattern which provides trained assistance in each subject field to professor and student alike.

Open stacks foster an atmosphere of independent study and do much to encourage serious acquaintance with books on the part of the graduate student. Interlibrary loan service is granted him for the completion and extension of research; privately placed carrels make his library hours more productive, and a generous library budget supplies every reasonable request for materials intended to broaden and deepen the mastery of his chosen field. The influence of the graduate program has filtered through all institutional policy-making and has had a particularly invigorating effect on the scope and progress of the Library.

Library Hours

Monday through Friday	8 a.m. to 10 p.m.
Saturday	8 a.m. to 4 p.m.
Sunday	2 p.m. to 10 p.m.

COLLEGE EDUCATIONAL-MEDIA CENTER

Services in the Learning Resources area have increased and kept abreast with the remarkable progress of the overall college programs. With the addition of a full-time secretary and a technician for repair work, services are extended to include complete maintenance of all equipment and opportunities for using machines, materials, and services daily Monday through Friday and one-half on Saturday. Opportunities for using the services of the Center include films, filmstrips, tapes, transparencies, and other media. Projection for classes, campus activities, and community affairs are a part of the services offered by the Center. Student laboratory assistants help improve the offerings of the Center personnel. They are available for projection, previews, repair, check-in, and check-out activities in the Learning Resources area. Graphics production has increased during the past several years and provide help in teaching situations for students and faculty.

Educational television now becomes a part of the program since a specialist in this field has been added to the staff. Consultation in any or all of these facets in learning resources are offered to the personnel of the College.

Graduate students will find all media, machines, and services available in the Center in addition to a competent and willing Educational-Media Center staff willing to contribute their help in the production of individual teaching material.

PLACEMENT SERVICES

Each year the Placement Office receives numerous notifications of positions of all types on all levels of instruction. Many of these positions offer excellent opportunities for professional advancement. All students pursuing graduate work at California State College are encouraged to utilize the services of the College Placement Office.

Some services provided by the Placement Office are:

1. Registration for placement.
2. Reactivation of credentials.
3. Advice on updating old credentials.
4. Aid in developing a complete set of credentials.
5. Provision of credentials to on-campus recruiters.
6. Mailing of credentials to prospective employers.

Graduate students desiring further information should visit the Placement Office.

GRADUATE ASSISTANTSHIPS

A limited number of Graduate Assistantships have been established by the Commonwealth of Pennsylvania. Students may earn up to \$1200 per academic year. The graduate assistants are assigned to regular faculty members to assist in research, instruction, and other professional duties. They work under the direct supervision of full-time faculty members. In terms of work hours, the graduate assistant is expected to work about fifteen hours per week. Only full-time graduate students are eligible for assistantships. Applications and information are available in the Graduate Office.

IV. The Graduate Programs

Introduction

Biology—M. Ed.

Biology—M. S.

Chemistry—M. Ed.

Elementary Education—M. Ed.

Elementary Guidance—M. Ed.

English—M. Ed.

English—M. A.

Geography—M. Ed.

History—M. A.

Industrial Arts Education—M. Ed.

Mathematics—M. Ed.

Mentally Retarded—M. Ed.

Political Science—M. A.

Reading Specialist—M. Ed.

School Psychology—M. S.

Social Studies—M. Ed.

Socially and Emotionally

Maladjusted—M. Ed.

Speech and Hearing—M. Ed.

The Graduate Programs

INTRODUCTION

The Graduate Division of California State College offers three types of 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 for graduate study which were established by the Graduate Council. The following Master of Education Programs are offered: Biology, Chemistry, Elementary Education, Elementary Guidance, English, Geography, Industrial Arts Education, Mathematics, Mentally Retarded, Reading Specialist, Socially and Emotionally Maladjusted, Social Studies, and Speech and Hearing.

The areas of specialization for the Master of Arts Program are English, History, and Political Science. The Biology and Psychology Departments offer Master of Science programs.

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: Elementary Guidance, Reading, School Psychology, and Socially and Emotionally Maladjusted.

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) semester hours is required of all degree students. 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 requirement listed in the preceding paragraph constitutes a minimum requirement and does 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 is required. Special emphasis is placed on the cultivation of scholarly attitudes and methods of research.

BIOLOGY

MASTER OF EDUCATION

Commencing with new admissions for the fall trimester of 1970, at least one trimester of organic chemistry is required for the M.Ed. Program. Deficiencies will have to be made up (as undergraduate credit) before final approval for Candidacy is granted.

Soon after admission, the graduate student will meet with a committee to determine his major professor and his research thesis or project. At this time he may be advised of other undergraduate courses in chemistry or other areas necessary for pursuit of his research, and be required to take same (for undergraduate credit). Any deviation from these requirements will have to be approved by the body of the biology department, acted upon in a regular meeting.

I. GENERAL EDUCATION—Two (2) semester hours to be selected from the following courses:

GE 502. Philosophy and Philosophers	2
GE 504. Science and Technology	2
GE 505. History of Mathematics	2
GE 506. Science Biographies	2

II. PROFESSIONAL EDUCATION—Six (6) semester hours:

PE 601. Philosophy of Education	2
PE 600. General History of Education	2
PE 610. Curriculum & Meth. of Tch. Biol. in High Sch.	2
*PE 602. Statistical Methods	2

III. BIOLOGICAL SCIENCE—*Field of Specialization*—Sixteen to eighteen (16-18) semester hours to be selected from the following courses:

Biol 702. Cellular Physiology	3
Biol 703. Animal Development and Histology	3
Biol 704. Animal Behavior	3
Biol 705. Parasitology	3
Biol 706. Comparative Vertebrate Anatomy	3
Biol 711. Plant Anatomy and Morphogenesis	3
Biol 712. Advanced Plant Physiology	3
Biol 713. Plant Systematics	3

Biol 714. Mycology	3
Biol 716. Animal Systematics	3
Biol 720. Bacteriology	3
Biol 721. Cytology	3
Biol 725. Biochemistry	4
Biol 731. Advanced Problems in Genetics	3
Biol 732. Organic Evolution in 20th Century	3
Biol 733. Population Genetics	3
Biol 736. Field & Laboratory Techniques in Botany	3
Biol 737. Field Botany	3
Biol 740. Laboratory Techniques in Biology	3
Biol 742. Radiobiology	3
Biol 750. Ecology	3
Biol 752. Limnology	3
Biol 760. Electron Microscopy	3
Biol 761. Conference on Electron Microscopy	3
Biol 762. Course in Ultrastructure	3
Biol 763. Lab Instrumentation for Biology	3
Biol 764. Radioisotope Techniques	3
Biol 765. Biometry	3
Biol 770. Seminar in Biology	2
Biol 790-799. Special Problems in Biology	1-3

IV. RESEARCH—Four to six (4-6) semester hours to be selected from the following:

*Res 800. Methods of Research	2
**Res 801. Research Project	2
**Res 802. Master's Thesis	4
*Required.	
**Either Required.	

BIOLOGY

MASTER OF SCIENCE

Commencing with new admissions for the fall trimester of 1970, at least two trimesters of organic chemistry are required for complete matriculation in the M.S. program. Deficiencies will have to be made up (as undergraduate credit) before final approval for Candidacy is granted.

Soon after admission, the graduate student will meet with a committee to determine his major professor and his research thesis. At this time he may be advised of other undergraduate courses in chemistry or other areas necessary for pursuit of his research, and be required to take same (for undergraduate credit). Any deviation from these requirements will have to be approved by the body of the biology department, acted upon in a regular meeting.

I. BIOLOGICAL SCIENCE—Eighteen (18) semester hours to be selected from the following biology courses or from biology and correlative or auxiliary courses:

Biol 702. Cellular Physiology	3
Biol 703. Animal Development and Histology	3
Biol 704. Animal Behavior	3
Biol 705. Parasitology	3
Biol 706. Comparative Vertebrate Anatomy	3
Biol 711. Plant Anatomy and Morphogenesis	3
Biol 712. Advanced Plant Physiology	3
Biol 713. Plant Systematics	3
Biol 714. Mycology	3
Biol 716. Animal Systematics	3
Biol 720. Bacteriology	3
Biol 721. Cytology	3
Biol 725. Biochemistry	4
Biol 731. Advanced Problems in Genetics	3
Biol 732. Organic Evolution in 20th Century	3
Biol 733. Population Genetics	3
Biol 736. Field & Laboratory Techniques in Botany	3
Biol 737. Field Botany	3
Biol 740. Laboratory Techniques in Biology	3
Biol 742. Radiobiology	3
Biol 750. Ecology	3
Biol 752. Limnology	3
Biol 760. Electron Microscopy	3
Biol 761. Conference on Electron Microscopy	3
Biol 762. Course in Ultrastructure	3
Biol 763. Lab Instrumentation for Biology	3
Biol 764. Radioisotope Techniques	3
Biol 765. Biometry	3
Biol 770. Seminar in Biology	2
Biol 790-799. Special Problems in Biology	1-3

II. RESEARCH—Six (6) semester hours:

Res 800. Methods of Research	2
Res 802. Master's Thesis	4

Correlative or Auxiliary Courses

With the advice and consent of adviser, department head and the graduate dean, a student may elect a correlative or auxiliary course or courses up to six (6) semester hours in a field or fields related to his major program of studies such as chemistry, physics, mathematics, geology, etc. These may be substituted for equal credit hours in biology courses listed above.

A minimum of thirty (30) hours will be required for the M.S.

CHEMISTRY

MASTER OF EDUCATION

I. GENERAL EDUCATION—Two (2) semester hours to be selected from the following courses:

GE 502. Philosophy and Philosophers	2
GE 504. Science and Technology	2
GE 506. Science Biographies	2

II. PROFESSIONAL EDUCATION—Four (4) semester hours:

PE 602. Statistical Methods	2
PE 616. CBA and Chemistry Materials	2

III. CHEMISTRY—*Field of Specialization*—Minimum of eighteen (18) semester hours to be selected from the following courses:

Chem 700A. Physical Chemistry I	3
Chem 700B. Physical Chemistry II	3
*Chem 701. Advanced Inorganic I	3
Chem 702. Advanced Inorganic II	3
Chem 703. Inorganic Preparations	2
*Chem 711. Advanced Analytical I	3
Chem 712. Advanced Analytical II	3
Chem 713. Radiochemistry	3
*Chem 721. Advanced Organic I	3
Chem 722. Advanced Organic II	3
Chem 723. Qualitative Organic Analysis	3
Chem 724. Organic Preparations	2
*Chem 731. Advanced Physical Chemistry I	3
Chem 732. Advanced Physical Chemistry II	3
Chem 733. Quantum Mechanics	3
Chem 743. Mathematics for Chemists	3
Biol 725. Biochemistry	4

IV. RESEARCH—Four to six (4-6) semester hours to be selected from the following:

*Res 800. Methods of Research	2
**Res 801. Research Project	2
**Res 802. Master's Thesis	4
*Required.	
**Either Required.	

ELEMENTARY EDUCATION

MASTER OF EDUCATION

I. GENERAL AND PROFESSIONAL EDUCATION—Four to ten (4-10) semester hours to be selected from the following courses. (At least 2 credits from GE and at least 2 credits from PE).

GE 500. Comparative Studies in Literature	2
GE 501. Great Works in Drama	2
GE 502. Philosophy and Philosophers	2
GE 503. Comparative Music	2
GE 504. Science and Technology	2
GE 505. History of Mathematics	2
GE 506. Science Biographies	2

GE 507. World Resources and Population Problems	2
GE 508. American Civilization	2
GE 509. Comparative Institutions	2
GE 510. Language in Society	2
GE 511. Community Problems of Health and Safety	2
GE 512. Mass Communications	2
GE 513. Community Resource Problems	4
GE 514. Seminar on Creativity	2
GE 520. Computer Science	2
PE 600. General History of Education	2
PE 601. Philosophy of Education	2
PE 602. Statistical Methods	2
PE 603. Advanced Educational Psychology	2
PE 604. Comparative Education	2
PE 605. Educational Sociology	2
PE 606. Seminar in Audio-Visual Techniques	2
PE 607. Guidance and Counseling	2
PE 608. Psychology of Growth and Development	2
PE 609. Social Psychology	2
PE 611. Advanced Mental Hygiene	2
PE 613. Early Childhood Education	2
PE 614. Psychology of the Disadvantaged Child	2
PE 617. Advanced Psychology of Learning	2
PE 619. Selection & Use of Instructional Materials in the Classroom	2

II. ELEMENTARY EDUCATION—*Field of Specialization*—Sixteen to twenty-two (16-22) semester hours to be selected from the following courses:

*El 700. Historical Background of the Elementary School	2
El 701. Development and Organization of the Curriculum for the Elementary School	2
El 702. Evaluation and Measurements in the Elem. School	2
El 703. Creative Activities in the Elementary School	2
El 704. Developmental Reading in the Elementary School	2
El 705. Teaching Reading in Content Subjects (Pre: El 704)	2
El 706. Practicum — Diagnostic Case Studies	3
El 707. Recent Trends in Language Arts	2
El 708. Special Problems in Elementary Social Studies	2
El 709. Geography in the Modern Elementary School	2
El 710. Arithmetic in the Elementary School	2
El 711. Resource Materials in Elementary Science	2
El 712. The Creative Elementary Music Program	2
El 713. Art Education for the Elementary Grades	2
El 714. Guidance in the Elementary School	2
El 715. Problems in Health and Physical Education for the Elementary School	2
El 716. Teaching in Kindergarten and the Primary Grades	2
El 717. Psychology of the Exceptional Child	2
El 718. Organization and Administration of the Elementary School	2
El 719. Practicum — Remedial Case Studies	3
El 724. Seminar in Elementary Art Education	2

El 726. Children's Literature and Reading	2
El 731. Recent Trends in El. Sch. Sci.	2
El 732. Topics in Algebra for the El. Mathematics Teacher	2
El 733. Topics in Geometry for the El. Mathematics Teacher	2
El 734. Trends & Current Research Findings in El. Mathematics	2
El 735. Materials, Recreational Math. & Evaluative Techniques in El. School Science	2

III. RESEARCH—Four to six (4-6) semester hours to be selected from the following:

*Res 800. Methods of Research	2
**Res 801. Research Project	2
**Res 802. Master's Thesis	4
*Required.	
**Either Required.	

ELEMENTARY GUIDANCE MASTER OF EDUCATION

Certification in one of the following areas of specialization is a requirement for admission into the Elementary Guidance Program: 1. Elementary; 2. Elementary School Specialist (art, music, etc.); 3. Elementary School Principals; and 4. Secondary Guidance Counselors. All other teaching certification will be considered although preference will be given to the above.

Graduate study does not carry with it admission to candidacy for the Master's degree. 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 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 EG 700—Organization and Administration of Guidance in the Elementary School, EG 701 — Counseling Theory, and EG 714—Practicum I. Approval for admission to candidacy for the Master's degree will be determined by the Guidance Staff. A meeting with the Staff is required.

The Master of Education degree in Elementary Guidance requires a minimum of thirty-two (32) hours of credit. Of these, sixteen to eighteen (16-18) hours are to be approved Guidance courses. EG 700—Organization and Administration of Guidance in the Elementary School and EG 701—Counseling Theory should be taken as the first courses in the Guidance program.

I. BEHAVIORAL SCIENCE AND ELEMENTARY EDUCATION—Eight to ten (8-10) credit hours to be selected from the following:

PE 608. Psychology of Growth and Development	2
PE 611. Advanced Mental Hygiene	2
PE 613. Early Childhood Education	2
PE 614. Psychology of the Disadvantaged	2
PE 617. Advanced Psychology of Learning	2
GE 515. Cultural Anthropology	2
GE 516. Sociology of the Family	2
El 701. Dev. & Org. of Curr. for the Elem. School	2
El 702. Evaluation & Measurement in the Elem. School	2
El 704. Developmental Reading in the Elem. School	2
El 717. Psychology of the Exceptional Child	2

II. COUNSELING—Sixteen to eighteen (16-18) credit hours to be selected from the following:

*EG 700. Organization & Admin. of Guidance in the Elementary School	2
*EG 701. Counseling Theory	2
*EG 702. Consulting Theory	2
EG 703. Seminar: Social, Cultural, & Econ. Info.	2
*EG 704. Developmental Group Counseling	2
EG 705. Independent Study	2
*EG 714. Practicum I	2
*EG 715. Practicum II	2
*EG 716. Practicum III	2
EG 717. Integrated Seminar	2

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

*PE 602. Statistical Methods	2
*Res 800. Methods of Research	2
**Res 801. Research Project	2
**Res 802. Master's Thesis	4

*Required.

**Either Required.

ENGLISH

MASTER OF EDUCATION

In addition to the present requirement that a candidate for admission to the program have a certificate to teach English, he should present a transcript showing satisfactory completion of at least 12 semester hours in upper-division courses in English.

Upon satisfactory completion of six hours of graduate work in the English department, the student may be automatically admitted to candidacy if he has a "B" average when he has worked out a satisfactory program with his adviser, who shall then be responsible for directing his thesis in the field of English language or literature, history or criticism.

I. GENERAL EDUCATION—Four (4) semester hours to be selected from the following courses:

GE 502. Philosophy and Philosophers	2
GE 508. American Civilization	2
GE 512. Mass Communications	2
GE 514. Seminar on Creativity	2

II. PROFESSIONAL EDUCATION—Two (2) semester hours to be selected from the following courses:

PE 600. General History of Education	2
PE 601. Philosophy of Education	2
PE 602. Statistical Methods	2
PE 603. Advanced Educational Psychology	2
PE 604. Comparative Education	2
PE 605. Educational Sociology	2
PE 606. Seminar in Audio-Visual Aids	2
PE 607. Guidance and Counseling	2
PE 608. Psychology of Growth and Development	2
PE 609. Social Psychology	2

III. ENGLISH—*Field of Specialization*—Minimum of eighteen (18) semester hours to be selected from the following courses:

A. FIELD OF LANGUAGE—Minimum of six (6) semester hours to be selected from the following courses:

Eng 701. Introduction to Old English	3
Eng 702. Middle English	3
Eng 703. History of English Language	3
*Eng 704. Advanced Linguistics	3

B. FIELD OF LITERATURE—Minimum of twelve (12) semester hours to be selected from the following courses:

Eng 711. Chaucer	3
Eng 715. Dev. of English Drama before Shakespeare	3
Eng 717. Shakespeare	3
Eng 721. 17th Century Non-Dramatic Literature	3
Eng 733. Victorian Poetry	3
Eng 734. 19th Century Novel	3
Eng 740. Colonial American Literature	3
Eng 725. The Age of Reason — Prose	3
Eng 726. The Age of Reason — Poetry	2
Eng 731. Romantic Poetry	3
Eng 741. American Renaissance	3
Eng 742. The Rise of Realism	3
Eng 743. Modern American Poetry	3
Eng 751. Modern Novel	3
Eng 760. History of Literary Criticism	3
Eng 761. Seminar in Literary Criticism	3
Eng 770. Seminar in English Literature	3
Eng 775. Seminar in American Literature	3

IV. RESEARCH—Six (6) semester hours:

*EngRes 800. Methods of Research	2
*Res 802. Master's Thesis	4
*Required.	

ENGLISH
MASTER OF ARTS

The applicant must meet all the requirements of the graduate school for admission. The applicant should present at least eighteen semester hours of superior work on the undergraduate level in English language and literature and submit evidence of having completed at least two years of college work in a foreign language. Applicants who have not had two years of a foreign language, but who otherwise have outstanding qualifications for graduate study, may apply.

The Master of Arts degree requires a minimum of thirty (30) hours of credit. Of these 30 hours, 26 are to be approved English courses and four hours credit will be given for the thesis. English 800, Methods of Research, should be taken in the first term of residence.

Upon satisfactory completion of six hours of graduate work in the English department, the student may be automatically admitted to candidacy if he has a "B" average when he has worked out a satisfactory program with his adviser, who shall then be responsible for directing his thesis in the field of English language or literature, history or criticism.

I. FIELD OF LANGUAGE—Minimum of six (6) semester hours to be selected from the following:

Eng 701. Introduction to Old English	3
Eng 702. Middle English	3
Eng 703. History of English Language	3
Eng 704. Advanced Linguistics	3

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

Eng 711. Chaucer	3
Eng 715. Dev. of English Drama before Shakespeare	3
Eng 717. Shakespeare	3
Eng 721. 17th Century Non-Dramatic Literature	3
Eng 725. The Age of Reason — Prose	3
Eng 726. The Age of Reason — Poetry	3
Eng 731. Romantic Poetry	3
Eng 733. Victorian Poetry	3
Eng 734. 19th Century Novel	3
Eng 740. Colonial American Literature	3
Eng 741. American Renaissance	3
Eng 742. The Rise of Realism	3
Eng 743. Modern American Poetry	3
Eng 751. Modern Novel	3
Eng 760. History of Literary Criticism	3
Eng 761. Seminar in Literary Criticism	3

Eng 770. Seminar in English Literature	3
Eng 775. Seminar in American Literature	3
III. RESEARCH—Six (6) semester hours:	
*EngRes 800. Methods of Research	2
*Res 802. Master's Thesis	4
*Required.	

GEOGRAPHY

MASTER OF EDUCATION

I. PROFESSIONAL EDUCATION—Four (4) semester hours:

<i>Two semester hours from the following:</i>	
PE 600. General History of Education	2
PE 601. Philosophy of Education	2
<i>Two semester hours from the following:</i>	
PE 602. Statistical Methods	2
El 702. Evaluation and Measurements	2

II. SUPPORTING COURSES—Four to six (4-6) semester hours to be selected from outside the offerings in geography (i.e., general education or graduate social studies courses) with the advice and consent of the geography department.

III. GEOGRAPHY—*Field of Specialization*—Sixteen to eighteen (16-18) semester hours from the following:

Geog 700. Philosophy of Geography (Required)	2
*Geog 790. Field Methods	2
*Geog 791. Field Problem	2
Geog 795. Advanced Cartography	2
Geog 796. Aerial Photo Interpretation	2
Geog 710. Cultural Geography	2
Geog 720. Readings in Cultural Geography	2
Geog 722. Seminar in Cultural Geography	2
Geog 728. Research in Cultural Geography	2
Geog 730. Economic Geography	2
Geog 740. Readings in Economic Geography	2
Geog 742. Seminar in Economic Geography	2
Geog 748. Research in Economic Geography	2
Geog 750. Physical Geography	2
Geog 760. Readings in Physical Geography	2
Geog 762. Seminar in Physical Geography	2
Geog 768. Research in Physical Geography	2
Geog 770. Regional Geography	2
Geog 780. Readings in Regional Geography	2
Geog 782. Seminar in Regional Geography	2
Geog 788. Research in Regional Geography	2

*Either Required.

IV. RESEARCH—Four to six (4-6) semester hours:

Geog Res 800. Methods of Geographic Research (Required)	2
*Res 801. Research Project	2
*Res 802. Master's Thesis	4

*Either Required.

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 a special committee of the Social Science Department; (2) the applicant must have earned at least a "B" average in his undergraduate area of specialization.

The Master of Arts in History will consist of thirty (30) graduate hours in history. Of these thirty hours, twenty-six (26) are to be approved courses in history, while four (4) hours credit will be granted for the thesis. A course in the Methods of Research in History for two (2) hours credit, to be taken at the beginning of the student's program, will be required of all students. A course in American Historiography for three (3) hours credit will be required of all students.

After the completion of from eight to twelve graduate hours of approved courses in history (hours which must include the course in the Methods of Research), the student should make application for status as a degree candidate. Admission to candidacy will not be granted to any student whose quality point average is under 3.00. No candidacy test will be required of the student.

Prior to the completion of the program, the student must satisfactorily complete an oral comprehensive examination over the courses he has taken.

The student must successfully complete a thesis, which must be approved by a committee selected by the chairman of the department. The student then must pass an oral examination of the thesis before his thesis committee and other interested persons.

I. REQUIRED COURSES: 9 semester hours:

Hist 800. Methods of Research	2
Hist 802. Thesis	4
Hist 803. American Historiography	3

II. AMERICAN HISTORY, CHRONOLOGICAL AREAS: 9 semester hours to be selected from the following:

Hist 700. The Colonial Era	3
Hist 701. The Revolution & Early National Period	3
Hist 712. The Middle Period in U.S. Hist., 1820-60	3
Hist 715. The Civil War and Reconstruction	3
Hist 716. The Era of Reform, 1873 until World War I	3
Hist 717. The 1930's in the United States	3
Hist 718. The United States Since World War II	3

III. AMERICAN HISTORY, TOPICAL AREAS: 9 semester hours to be selected from the following:

Hist 720. Studies in Am. Constitutional History	3
Hist 721. Stud. in the Social & Intellectual History of the United States	3
Hist 723. Studies in American Diplomatic History	3
Hist 724. Studies in American Urban History	3
Hist 725. Studies of the Afro-American in American History	3
Hist 726. Studies in American Economic History	3
Hist 728. Studies in American Labor History	3
Hist 729. Studies in Pennsylvania History	3

IV. NON-AMERICAN: 3 semester hours to be selected from the following:

Hist 755. Studies in the History of England	3
Hist 760. Studies in the History of Contemporary Europe	3
Hist 780. Studies in the History of Eastern Asia	3
Hist 785. Studies in the History of the Middle East	3

V. INDEPENDENT STUDY:

Hist 790. Independent Studies in History	1-2
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INDUSTRIAL ARTS

MASTER OF EDUCATION

I. GENERAL EDUCATION—Two to six (2-6) semester hours to be selected from the following courses:

GE 500. Comparative Studies in Literature	2
GE 501. Great Works in Drama	2
GE 502. Philosophy and Philosophers	2
GE 503. Comparative Music	2
GE 504. Science and Technology	2
GE 505. History of Mathematics	2
GE 506. Science Biographies	2
GE 507. World Resources and Population Problems	2
GE 508. American Civilization	2
GE 509. Comparative Institutions	2
GE 510. Language in Society	2
GE 511. Community Problems of Health and Safety	2

GE 512. Mass Communications	2
GE 513. Community Resource Problems	4
GE 514. Seminar on Creativity	2
GE 520. Computer Science	2

II. PROFESSIONAL EDUCATION—Two to six (2-6) semester hours to be selected from the following courses:

PE 600. General History of Education	2
PE 601. Philosophy of Education	2
*PE 602. Statistical Methods	2
PE 603. Advanced Educational Psychology	2
PE 604. Comparative Education	2
PE 605. Educational Sociology	2
PE 606. Seminar in Audio-Visual Techniques	2
PE 607. Guidance and Counseling	2
PE 608. Psychology of Growth and Development	2
PE 609. Social Psychology	2
PE 611. Advanced Mental Hygiene	2
PE 614 Psychology of the Disadvantaged Child	2
PE 617. Advanced Psychology of Learning	2
PE 619. Selection and Use of Instructional Materials in the Classroom	2

Four to ten (4-10) semester hours to be selected from the combined areas of General Education and Professional Education.

III. INDUSTRIAL ARTS—Field of Specialization—Sixteen to twenty-two (16-22) semester hours to be selected from the following areas:

PROFESSIONAL AREA—Four to six (4-6) semester hours to be selected from the following courses:

IA 700. Organization & Administration of I. A.	2
IA 701. Curriculum Development in Industrial Arts	2
IA 702. History & Philosophy of I. A. Education	2
IA 703. Planning the Industrial Arts Laboratory	2
IA 704. Supervision of Industrial Arts Education	2

DRAWING AND DESIGN AREA—Two to nine (2-9) semester hours to be selected from the following courses:

IA 705. The History and Philosophy of Contemporary Industrial Design	2
IA 710. Research in Technical Drawing Problems	3
IA 712. Representational Drawing I	2
IA 713. Representational Drawing II	2
IA 714. Problems in Architectural Design	3
IA 722. Problems in Industrial Arts Design	2

LABORATORY AREAS—Three to nine (3-9) semester hours to be selected from the following courses:

Arts and Crafts Area

IA 723. Advanced Ceramics	3
IA 721. Advanced Crafts	3

<i>Wood Area</i>	
IA 730. Research in the Problems of Woodworking	3
IA 731. Studies in Industrial Patternmaking Techniques	3
<i>Metal Area</i>	
IA 740. Studies in Metals Technology	3
IA 741. Research in the Problems of Metal Machining	3
<i>Electricity-Electronics Area</i>	
IA 752. Seminar in New Electrical Practices	2
IA 753. Adv. Studies in Transistor Circuit Theory and Applications	3
IA 754. Design and Application in Radio and Television Circuits	3
IA 756. Digital and Analog Computer Circuits as Applied to Industrial Arts Programs	3
<i>Graphic Arts Area</i>	
IA 760. Research in and Development of Graphic Arts Techniques	3
IA 761. Design Problems Relating to Graphic Arts Reproduction	2
IA 762. Research in Photographic Techniques	3
IA 763. Visual Communication Techniques	3
<i>Plastics Area</i>	
IA 770. Industrial Plastics and Their Application to Industrial Arts	3

IV. SPECIAL PROBLEMS AND WORKSHOPS — One to six (1-6) semester hours may be selected from the following:

IA 708. Special Problem in I. A.	1-2
IA 709. Special Problem in I. A.	1-2
IA 771. I. A. & Ind. Practices Workshop	2

V. RESEARCH—Four to six (4-6) semester hours to be selected from the following:

*Res 800. Methods of Research	2
**Res 801. Research Project	2
**Res 802. Master's Thesis	4
* Required.	
** Either Required.	

MATHEMATICS

MASTER OF EDUCATION

Only the courses in the major area will be counted toward the "B" average in considering approval for Candidacy for the Master of Education degree.

I. GENERAL EDUCATION—Two (2) semester hours from the following:

GE 502. Philosophy and Philosophers	2
GE 504. Science and Technology	2

GE 506. Science Biographies	2
GE 520. Computer Science	2

II. PROFESSIONAL EDUCATION—Four (4) semester hours:

*PE 612. SMSG and UICSM Methods and Philosophy	2
*PE 602. Statistical Methods	2

III. MATHEMATICS—*Field of Specialization*—Eighteen to twenty (18-20) semester hours from the following areas:

Area A: Analysis—Minimum of six (6) semester hours:

Math 701. Mathematical Analysis I	2
Math 702. Mathematical Analysis II	2
Math 703. Differential Equations I	2
Math 704. Differential Equations II	2
Math 705. Functions of a Real Variable I	2
Math 706. Functions of a Real Variable II	2
Math 707. Functions of a Complex Variable I	2
Math 708. Functions of a Complex Variable II	2
Math 709. Partial Differential Equations	2
Math 711. Topology	2

Area B: Algebra—Minimum of six (6) semester hours:

Math 721. Abstract Algebra I	2
Math 722. Abstract Algebra II	2
Math 723. Linear Algebra I	2
Math 724. Linear Algebra II	2
Math 725. Theory of Numbers	2
Math 727. Theory of Matrices	2

Area C: Geometry—Minimum of four (4) semester hours:

Math 741. Foundations of Geometry I	2
Math 742. Foundations of Geometry II	2
Math 743. Projective Geometry I	2
Math 744. Projective Geometry II	2
Math 745. Vector Geometry	2
Math 747. Advanced Analytic Geometry	2

Area D: Additional Electives—Two to four (2-4) semester hours:

Math 761. Mathematical Logic	2
Math 763. Set Theory	2
Math 765. Mathematical Statistics I	2
Math 766. Mathematical Statistics II	2
Math 767. History of Mathematics	2
Math 769. Theory of Arithmetic	2
Math 771. Seminar in Mathematics Education	2

IV. RESEARCH—Minimum of four (4) semester hours:

*Res 800. Methods of Research	2
**Res 801. Research Project	2
**Res 802. Master's Thesis	4

*Required.

**Either Required.

Only six (6) semester hours from the following courses will be counted towards a Master of Education degree with a mathematics major: 701, 702, 703, 723, 741, 765.

**MENTALLY RETARDED
MASTER OF EDUCATION**

I. GENERAL AND PROFESSIONAL EDUCATION—Four to eight (4-8) semester hours to be selected from the following courses. Minimum of two (2) semester hours from General Education and a minimum of two (2) semester hours from Professional Education.

GE 500. Comparative Studies in Literature	2
GE 501. Great Works in Drama	2
GE 502. Philosophy and Philosophers	2
GE 503. Comparative Music	2
GE 504. Science and Technology	2
GE 505. History of Mathematics	2
GE 506. Science Biographies	2
GE 507. World Resources and Population Problems	2
GE 508. American Civilization	2
GE 509. Comparative Institutions	2
GE 510. Language in Society	2
GE 511. Community Problems of Health and Safety	2
GE 512. Mass Communications	2
GE 513. Community Resource Problems	4
GE 514. Seminar on Creativity	2
PE 600. General History of Education	2
PE 601. Philosophy of Education	2
PE 602. Statistical Methods	2
PE 603. Advanced Educational Psychology	2
PE 604. Comparative Education	2
PE 605. Educational Sociology	2
PE 606. Seminar in Audio-Visual Techniques	2
PE 607. Guidance and Counseling	2
PE 608. Psychology of Growth and Development	2
PE 609. Social Psychology	2
PE 611. Advanced Mental Hygiene	2
PE 613. Early Childhood Education	2
PE 614. Psychology of the Disadvantaged Child	2
PE 617. Advanced Psychology of Learning	2
PE 619. Selection and Use of Instructional Materials in the Classroom	2

II. MENTALLY RETARDED—*Field of Specialization*—Eighteen to twenty-two (18-22) semester hours of work to be selected from the following courses:

MR 700. Administration and Supervision of Special Education Programs	2
MR 701. Development and Organization of Curriculum for the Mentally Retarded	2
MR 702. Seminar in Psychology of Mental Deficiency	3
MR 703. Education of Children with Retarded Development in Elementary Schools	2
MR 704. Education of Children with Retarded Development in Secondary Schools	2

MR 705. Occupational Education for the Mentally Retarded	2
MR 706. Group Mental Tests	2
MR 707. Current Trends in Advanced Psychology of Exceptional Children	2
MR 708. Tests and Remedial Work for the Mentally Retarded	2
*MR 709. Teaching Reading to the Mentally Retarded	2
MR 710. Programs for Children with Severe Mental Retardation (Trainable)	2
MR 711. Seminar on Social, Economic and Cultural Factors Affecting the Mentally Retarded	3
MR 712. Independent Research Problems	2-6
MR 713. Creative Activities in Special Class for Mentally Retarded (Music, Drama, and Art)	2
MR 714. Industrial Arts for Special Education	2
MR 720. Practicum	3

III. RESEARCH—Four to six (4-6) semester hours to be selected from the following:

*Res. 800. Methods of Research	2
**Res 801. Research Project	2
**Res 802. Master's Thesis	4
*Required.	
**Either required.	

POLITICAL SCIENCE

MASTER OF ARTS

The Master of Arts in Political Science consists of thirty (30) hours of graduate work in political science. The student shall take one course in the Methods of Political Science, and the student shall take at least one course in four of the five following areas: (1) Area Studies; (2) Domestic Political Institutions; (3) International Studies; (4) Political Parties and Interest Groups; and (5) Theory. The remaining hours may be taken in any of the political science areas which the study may choose. A reading knowledge of a modern foreign language is also required.

In addition to the general requirements for admission to graduate studies, applicants who wish to be approved for admission to the Political Science 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 Social Studies Department; (2) The applicant must have earned at least a "B" average in his undergraduate area of specialization; (3) Applicants who do not meet the above requirement will be required to take a test approved by the Social Studies Department and the Graduate Council.

I. **POLITICAL SCIENCE**—Minimum of twenty-two (22) hours to be selected from the following:

AREA STUDIES	
PolSc 706. Government and Politics in Western Europe	3
PolSc 707. Government and Politics in Southeast Asia	3
PolSc 708. Politics of African Nationalism	3
PolSc 728. Politics of Underdeveloped Nations	3
DOMESTIC POLITICAL INSTITUTIONS	
PolSc 740. American Defense Policy	3
PolSc 742. The Legislative Process	3
PolSc 744. Civil Liberties and Judicial Process	3
PolSc 746. American Chief Executives	3
PolSc 748. Problems in Public Administration	3
PolSc 750. State Legislatures	3
INTERNATIONAL STUDIES	
PolSc 715. Problems in International Organization	3
PolSc 730. Comparative Government	3
POLITICAL PARTIES AND INTEREST GROUPS	
PolSc 752. History of American Political Parties	3
PolSc 754. Modern Political Parties	3
THEORY	
PolSc 701. History of Political Theory	3
PolSc 705. Theory and Practice of Authoritarian Government	3
PolSc 721. Studies in Political Behavior	3
PolSc 703. Modern Political Theory	3
INDEPENDENT STUDY	
PolSc 790. Independent Studies in Political Science	1-3

II. **RESEARCH**—Nine (9) semester hours:

*PolScRes 800. Methods of Political Science	3
*Res 802. Master's Thesis	6

*Required.

READING SPECIALIST MASTER OF EDUCATION

Qualified teachers from all academic disciplines, as well as elementary teachers, may apply for admission to the program. The only certification requirement will be that the applicant holds at least the college provisional or Instructional Level I Certificate.

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

I. **READING AND LANGUAGE ARTS**—Sixteen (16) semester hours required:

*El 704. Developmental Reading in the Elementary School	2
El 705. Teaching Reading in Content Subjects	2

*El 727. Diagnosis and Treatment of Reading Problems	2
El 707. Recent Trends in Language Arts	2
El 726. Children's Literature and Reading	2
*El 706. Practicum—Diagnostic Case Studies	3
*El 719. Practicum—Remedial Case Studies	3
*El 728. Seminar in Reading and Language Arts	2
*El 729. Supervision and Administration of a Reading Program	2
R 730. Problems in Secondary Reading	2

II. PSYCHOLOGY—Eight (8) semester hours required:

*PE 603. Advanced Educational Psychology	2
PE 608. Psychology of Growth and Development	2
El 717. Psychology of the Exceptional Child	2
*PE 617. Advanced Psychology of Learning	2
*El 702. Evaluation and Measurements	2

III. GENERAL EDUCATION—Two (2) semester hours required:

GE 510. Language in Society	2
GE 512. Mass Communications	2
GE 502. Philosophy and Philosophers	2
GE 514. Seminar on Creativity	2

IV. EDUCATIONAL RESEARCH—Six to eight (6-8) semester hours required:

*Res 800. Methods of Research	2
*PE 602. Statistical Methods	2
**Res 801. Research Project	2
**Res 802. Master's Thesis	4
**Either Required.	

V. CURRICULUM AND FOUNDATIONS OF EDUCATION—Four (4) semester hours required:

**El 701. Development and Organization of the Curriculum for the Elementary School	2
**PE 618. Development and Organization of the Curriculum for the Secondary School	2
PE 600. General History of Education	2
PE 601. Philosophy of Education	2
*Required.	
**Either Required.	

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

SCHOOL PSYCHOLOGY

MASTER OF SCIENCE

In addition to the regular requirements for admission to graduate study, applicants for the School Psychology Program must also meet the following requirements: (1) Applicants must

have a Bachelor's Degree; (2) Applicants must have completed nine credits of undergraduate psychology, including courses in General Psychology, Educational Psychology, and Child Psychology, or its equivalent; (3) The applicant must have at least a 2.50 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 will 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 may be required to be interviewed by the Chairman of the Department of Psychology and/or Coordinator of the School Psychology Program.

Candidacy: (in addition to regular 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-six (36) graduate credits will be required for the Master of Science Degree. A minimum of sixty-six (66) graduate credits will be required for certification as a School Psychologist.

I. PSYCHOLOGY AND EDUCATIONAL FOUNDATIONS—

(4 credits elected with advisement for the Master's degree)
 (8-16 credits elected with advisement for Certification)

PE 600. General History of Education	2
PE 601. Philosophy of Education	2
PE 603. Advanced Educational Psychology	2
PE 608. Psychology of Growth & Development	2
PE 609. Social Psychology	2
PE 611. Advanced Mental Hygiene	2
PE 613. Early Childhood Education	2
PE 617. Advanced Psychology of Learning	2
Psy 700. Advanced Adolescent Psychology	2
Psy 701. Personality Theory	2
*Psy 702. Psychopathology	2
*Psy 703. Psychodynamics	2

II. PSYCHOLOGICAL METHODS AND TECHNIQUES—

(14 credits elected with advisement for the Master's degree)
 (16-22 credits elected with advisement for Certification)

*Psy 720. Tests and Measurements	2
*Psy 721. Individual Psychological Evaluation I (Binet & Infant Scales)	2

*Psy 722. Individual Psychological Evaluation II (Wechsler Scales)	2
*Psy 723. Individual Psychological Evaluation III (Assessment of sensory, motor, perceptual & language impairments in children)	2
*Psy 730. Projective Techniques I (General)	2
*Psy 731. Projective Techniques II (Advanced)	2
Psy 732. Seminar in Advanced Projective Techniques	2
*Psy 740. Theories of Counseling & Psychotherapy	2
*Psy 741. Techniques of Counseling & Psychotherapy	2
Psy 796. Research Seminar in School Psychology	2
PE 615. Counseling Parents of Exceptional Children	2

III. SCHOOL PROGRAMS AND ORGANIZATION—

(6 credits elected with advisement for the Master's degree)
(10-18 credits elected with advisement for Certification)

*Psy 750. Administration of Pupil Personnel (Child Study) Services	2
MR 700. Administration & Supervision of Special Education Programs	2
MR 701. Development & Organization of the Curriculum for the Mentally Retarded	2
MR 703. Education of Children with Retarded Development in Elementary Schools	2
SEM 706. Methods of Teaching Socially-Emotionally Maladjusted Children	2
MR 707. Current Trends in Advanced Psychology of Exceptional Children	2
MR 711. Seminar on Social, Economic and Cultural Factors Affecting the Mentally Retarded	3
Psy 745. Psychology of the Gifted Child	2
Psy 746. Psychology of Learning Disabilities	2
Psy 748. Personal Adjustment and Mental Health	2
*Psy 797. Seminar in Problems of School Psychology	2
Psy 795. Advanced Seminar in Learning Problems	2
SH 705. Neuropathologies of Speech & Language	3
PE 614. Psychology of the Disadvantaged Child	2
El 727. Diagnosis and Treatment of Reading Problems	2
El 730. Techniques in Diagnosis of Remedial Problems	2

IV. RESEARCH METHODOLOGY—

(4 credits elected with advisement for the Master's degree)
(4-8 credits elected with advisement for Certification)

*Psy 790. Experimental Methods in Psychology	2
*Psy 794. Psychological Statistics	2
**PE 602. Statistical Methods	2
**Res 800. Methods of Research	2

V. THESIS—

(4 credits—required for the M.S. degree)

**Res 802. Master's Thesis	4
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VI. CLINICAL PRACTICUM AND INTERNSHIP (TO BE TAKEN AFTER THE MASTER'S DEGREE)—

(15-18 hours for Certification — at least half of this with children in a school setting)

**Psy 798. Clinical Practicum	3-6
**Psy 799. Internship in School Psychology	12
* Recommended courses.	
** Required courses.	

SOCIAL SCIENCE MASTER OF EDUCATION

This program is designed specifically to meet "today's needs" of individuals working in, or interested in, social science education at the secondary level. While the general requirements are largely those of the entire graduate program, there are several exceptions: (1) Applicants must have completed thirty-six (36) undergraduate semester hours in one or a combination of two or more of the social sciences; (2) A "B" average must have been maintained in undergraduate social science courses; (3) Applicants not meeting the above requirements will, in addition to taking the Miller Analogies Test, be reviewed by a Social Science Screening Committee; (4) Only the courses in the major may be counted toward the "B" average in considering approval for candidacy for the degree; (5) Within six hours after having been admitted to Candidacy, the candidate must submit to his temporary adviser a departmental form giving a program of studies for the remainder of his program and an outline of a thesis topic. This form must be approved by a committee of three faculty members who will constitute the candidate's thesis committee.

I. SOCIAL SCIENCE—15 credits

*SSt Res 800. Seminar in Social Science Research Techniques	3
SSci 701. Seminar in World Culture	3
SSci 702. Economic, Social, and Political Order	3
SSci 703. Analysis of Power Structure	3
GE 517. Cultural Institutions	2
**Res 802. Thesis	4

*Prerequisite to all other courses in the program.

**Required.

II. SOCIAL STUDIES EDUCATION—Six (6) semester hours to be selected from the following:

SSt 706. Trends in Social Studies Curriculum	3
SSt 707. Laboratory Experiences in Selection and Organization of Teaching Material	3
SSt 708. Social Studies and the Community	3

III. ELECTIVES—9 credits

General Education	
GE 520. Computer Science	2
PE 602. Statistical Methods	2
GENERAL FIELD OF SOCIAL STUDIES—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	
GE 515. Cultural Anthropology	2
GE 518. Archaeology Field School	2 or 4
Anth 701. Archaeology Field School	3 or 6
Sociology	
Soc 707. The Community	3
Soc 718. Minority Groups	3
Soc 720. Special Problems in Sociology	3
Economics	
Econ 715. Economics for the Teacher	3
History	
Hist 700. Colonial America to 1763	3
Hist 701. The American Revolution and the Federal Period	3
Hist 712. The Middle Period in U.S. History 1820-1860	3
Hist 715. The Civil War and Reconstruction	3
Hist 716. The Era of Reform, 1873 to WWI	3
Hist 717. The 1930's in America	3
Hist 718. The United States since World War II	3
Hist 720. Studies in American Constitutional Hist.	3
Hist 721. Studies in Social and Intellectual History of the United States	3
Hist 723. Studies in American Diplomatic History	3
Hist 724. Studies in American Urban History	3
Hist 725. Studies of the Afro-American in American History	3
Hist 726. Studies in American Economic History	3
Hist 728. Studies in American Labor History	3
Hist 729. Studies in Pennsylvania History	3
Hist 755. Studies in the History of England	3
Hist 760. Studies in the History of Contemporary Europe	3
Hist 780. Studies in the History of Eastern Asia	3
Hist 785. Studies in the History of the Middle East	3
Political Science	
PolSci 701. History of Political Theory	3
PolSci 706. Government & Politics in Western Europe	3

SOCIALLY AND EMOTIONALLY MALADJUSTED

MASTER OF EDUCATION

A recommendation by a Screening Committee of California State College is included as one of the factors for approving students for Candidacy for the Master of Education Degree in the education of the socially and emotionally maladjusted. Cer-

tification requirements for applicants for admission to the Socially and Emotionally Maladjusted Program will be as follows: (1) Special Education Certification; (2) Elementary Certification; (3) Secondary Certification; (4) School Nurse Certification.

Area I — CHILD DEVELOPMENT AND PSYCHO-EDUCATIONAL INTERPRETATION—Minimum of nine (9) semester hours to be selected from the following:

PE 603. Advanced Educational Psychology	2
PE 605. Educational Sociology	2
PE 608. Psychology of Growth and Development	2
PE 611. Advanced Mental Hygiene	2
PE 613. Early Childhood Education	2
PE 614. Psychology of the Disadvantaged Child	2
PE 615. Counseling Parents of Exceptional Children	2
El 717. Psychology of the Exceptional Child	2
*SEM 700. Psychopathology of Youth	2
*SEM 701. Psychology of the Socially-Emotionally Maladjusted Child	3

Area II—TEACHING PROCEDURES WITH DISTURBED CHILDREN—Seven to nine (7-9) semester hours:

*SEM 706. Methods of Teaching Socially-Emotionally Maladjusted Children	3
*SEM 708. Psycho-Educational Diagnosis of Learning Problems	2
*SEM 709. Remediation of Learning Problems (Pre: SEM 708)	2
**SEM 707. Arts and Crafts	2

Area III—PRACTICUM—Six (6) semester hours:

*SEM 720. Practicum	6
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Area IV—RESEARCH AND RESEARCH TECHNIQUES — Four to six (4-6) semester hours:

PE 602. Statistical Methods	2
*Res 800. Methods of Research	2
**Res 801. Research Project	2
**Res 802. Master's Thesis	4

*Required.

**Either Required.

***Not required if taken at undergraduate level.

Note: For a thesis the minimum requirement is six (6) hours in Area IV (Res 800 and Res 802). For a project the minimum requirement is four (4) hours in Area IV (Res 800 and Res 801). PE 602 is strongly recommended as an elective in Area IV.

SPEECH AND HEARING

MASTER OF EDUCATION

I. GENERAL EDUCATION — Two (2) semester hours selected from the following:

GE 500. Comparative Studies in Literature	2
GE 502. Philosophy and Philosophers	2
GE 509. Comparative Institutions	2
GE 510. Language in Society	2

II. PROFESSIONAL EDUCATION—Four (4) semester hours selected from the following:

*PE 602. Statistical Methods	2
PE 605. Educational Sociology	2
PE 607. Guidance and Counseling	2
PE 608. Psychology of Growth and Development	2

III. SPEECH AND HEARING—*Field of Specialization*—Eighteen to twenty (18-20) semester hours selected from the following:

SH 700. Advanced Speech Correction	3
SH 701. Advanced Speech Pathology	3
SH 703. Profound Organic Speech Disorders	3
SH 704. Stuttering	3
SH 705. Neuropathologies of Speech and Language	3
SH 706. Advanced Clinical Methods	1-3
SH 707. Experimental Phonetics	3
SH 708. Administration of Clinical Procedures	3
SH 710. Diagnostic Audiometrics	3
SH 711. Bases of Aural Rehabilitation	3
SH 714. Seminar in Speech Pathology	2
SH 715. Seminar in Audiology	2
SH 740. Independent Study	1-3

IV. RESEARCH—Four to six (4-6) semester hours selected from the following:

*Res 800. Methods of Research	2
**Res 801. Research Project	2
**Res 802. Master's Thesis	4
*Required.	
**Either Required.	

V. Course Descriptions

Course Descriptions

GENERAL EDUCATION

GE 500. COMPARATIVE STUDIES IN LITERATURE, 2 credits

From non-dramatic literary classics 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.

GE 501. GREAT WORKS IN DRAMA, 2 credits

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

GE 502. PHILOSOPHY AND PHILOSOPHERS, 2 credits

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.

GE 503. COMPARATIVE MUSIC, 2 credits

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, 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.

GE 504. SCIENCE AND TECHNOLOGY, 2 credits

History of the contributions of Science and Technology to modern culture, with emphasis on the period since the beginning of the Industrial Revolution.

GE 505. HISTORY OF MATHEMATICS, 2 credits

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.

GE 506. SCIENCE BIOGRAPHIES, 2 credits

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.

GE 507. WORLD RESOURCES AND POPULATION PROBLEMS, 2 credits

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 availability of a reasonable standard of living in various regions as determined by potential resource development.

GE 508. AMERICAN CIVILIZATION, 2 credits

A treatment of those elements in American life which have given direction to the unique development of the United States.

GE 509. COMPARATIVE INSTITUTIONS, 2 credits

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.

GE 510. LANGUAGE IN SOCIETY, 2 credits

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.

GE 511. COMMUNITY PROBLEMS OF HEALTH AND SAFETY, 2 credits

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.

GE 512. MASS COMMUNICATIONS, 2 credits

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.

GE 513. COMMUNITY RESOURCE PROBLEMS, 4 credits

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 utilization of community resources in a form that can be readily integrated into the curriculum. To help the teachers gain a 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.

GE 514. SEMINAR ON CREATIVITY, 2 credits

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.

GE 515. CULTURAL ANTHROPOLOGY, 2 credits

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.

GE 516. SOCIOLOGY OF THE FAMILY, 2 credits

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.

GE 518. ARCHAEOLOGY FIELD SCHOOL, 4 credits

To instruct students in scientific archaeological field and laboratory techniques. The basic orientation will be that of research.

GE 520. COMPUTER SCIENCE, 2 credits

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 required.

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, problem flow charting, programming techniques and the history of calculating machinery and computers.

PROFESSIONAL EDUCATION

PE 600. GENERAL HISTORY OF EDUCATION, 2 credits

Examines the concepts of modern education as they are found in the historical development of the school.

PE 601. PHILOSOPHY OF EDUCATION, 2 credits

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.

PE 602. STATISTICAL METHODS, 2 credits

Includes the understanding and application of frequency distribution, series analysis, correlation, normal curve, sampling, collection of data, statistical tables and graphic presentations.

PE 603. ADVANCED EDUCATIONAL PSYCHOLOGY, 2 credits

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.

PE 604. COMPARATIVE EDUCATION, 2 credits

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.

PE 605. EDUCATIONAL SOCIOLOGY, 2 credits

Deals with the role of the school in child socialization, inter-group education, the integration of school and community, group processes and the teacher, teacher problems in human relations, and educating for leadership.

PE 606. SEMINAR IN AUDIO-VISUAL TECHNIQUES, 2 credits

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 discussions will include the utilization, preparation, and administration of audio-visual materials.

PE 607. GUIDANCE AND COUNSELING, 2 credits

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.

PE 608. PSYCHOLOGY OF GROWTH AND DEVELOPMENT, 2 credits

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.

PE 609. SOCIAL PSYCHOLOGY, 2 credits

A study of the effects of group membership upon individual behavior with particular emphasis on social attitudes, collective behavior, and social problems.

PE 610. CURR. & METH. OF TEACHING BIOL. IN H.S., 2 credits

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.

PE 611. ADVANCED MENTAL HYGIENE, 2 credits

This course is concerned with study of disorders due to physic causes—whether the symptoms 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.

PE 612. SMSC AND UICSM METHODS AND PHILOSOPHY, 2 credits

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.

PE 613. EARLY CHILDHOOD EDUCATION, 2 credits

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.

PE 614. PSYCHOLOGY OF THE DISADVANTAGED CHILD, 2 credits

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.

PE 615. COUNSELING PARENTS OF EXCEPTIONAL CHILDREN, 2 credits

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 a more realistic acceptance of the child's handicap.

PE 616. CBA AND CHEMISTRY MATERIALS, 2 credits

This course will cover the methods of chemical bond approach and chemical materials approach to the teaching of high-school chemistry.

PE 617. ADVANCED PSYCHOLOGY OF LEARNING, 2 credits

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.

PE 618. DEVELOPMENT & ORGANIZATION OF THE CURRICULUM FOR THE SECONDARY SCHOOL, 2 credits

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.

PE 619. SELECTION AND USE OF INSTRUCTIONAL MATERIALS IN THE CLASSROOM, 2 credits

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, felt-board materials, and study displays.

RESEARCH

Res 800. METHODS OF RESEARCH, 2 credits

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 of the library, collection and application of data, and the research report are studied. The course provides a background for the preparation of a research project or of a thesis.

Eng Res 800. METHODS OF RESEARCH, 2 credits

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.

Geog Res 800. METHODS OF GEOGRAPHIC RESEARCH, 2 credits

Consideration of purpose, scope, and procedures of geographic research including problem sensing, data collection, and statistical analysis. Prerequisites: Geog 700; Recommended: Geog 790 and PE 602.

Hist Res 800. HISTORICAL METHODOLOGY, 3 credits

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.

PolSci Res 800. METHODS OF POLITICAL SCIENCE, 3 credits

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.

SSt Res 800. METHODS IN SOCIAL SCIENCE, 3 credits

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 801. RESEARCH PROJECT, 2 credits

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 802. MASTER'S THESIS, 4 credits (certain areas 6 credits)

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 recommended 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.

BIOLOGY

Biol 702. CELLULAR PHYSIOLOGY, 3 credits

The physiology of the cell with emphasis on the relation of structure and general properties to metabolism, synthesis and regulation. The role of the nucleus and of the cytoplasm in heredity, including genetic mechanism, mutation and the physiology of gene expression. Physical and chemical foundations of cells; the relation of cells to their environment; membrane phenomena; photosynthesis; enzymes; osmosis and permeability. Prerequisites: Zoology and Organic Chemistry.

Biol 703. ANIMAL DEVELOPMENT AND HISTOLOGY, 3 credits

A study of the development of the vertebrate embryo emphasizing the frog, chick, and pig together with a survey of the basic mammalian tissues and organs. Prerequisite: Zoology.

Biol 704. ANIMAL BEHAVIOR, 3 credits

A comparative survey of the behavior of selected animals together with a consideration of the basic techniques of ethological analysis. Prerequisite: Zoology or General Biology.

Biol 705. PARASITOLOGY, 3 credits

A critical analysis of parasitism is undertaken, correlated with the role of parasites in public health. Physiological, morphological, and reproductive specializations of parasites, along with the parasite-host relationship are emphasized. Prerequisite: Zoology.

Biol 706. COMPARATIVE VERTEBRATE ANATOMY, 3 credits

A comparative study of the chordata, from prochordates to mammals will be emphasizing 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. Prerequisites: General Zoology, Vertebrate or Comparative Anatomy.

Biol 711. PLANT ANATOMY AND MORPHOGENESIS, 3 credits

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 be devised to show the effects of light, temperature, water and various other physical factors together with that of chemical

substances (especially growth substances and the various genetic factors).

Biol 712. ADVANCED PLANT PHYSIOLOGY, 3 credits

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.

Biol 713. PLANT SYSTEMATICS, 3 credits

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. Prerequisite: Botany.

Biol 714. MYCOLOGY, 3 credits

An extensive examination of the fungi is undertaken with emphasis on the filamentous form. The cytology, physiology, and morphology of the fungi is studied to determine their place in nature. Techniques in isolating, culturing, counting, photographing, and identifying fungi will be pursued in the laboratory. Prerequisite: Consent of the instructor.

Biol 716. ANIMAL SYSTEMATICS, 3 credits

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.

Biol 720. BACTERIOLOGY, 3 credits

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.

Biol 721. CYTOLOGY, 3 credits

A general consideration of cell biology relating to cell structure and function, with particular reference to cytological aspects of genetics, biosynthesis, and differentiation. Special emphasis also on human cytology and cytogenetics. Laboratory work in experimental cytology and modern cellular techniques. Prerequisite: Consent of the Instructor.

Biol 725. BIOCHEMISTRY, 4 credits

Includes the chemistry of carbohydrates, fats, proteins, and nucleic acids. The chemistry of enzymes, vitamins, and hormones and their functions in the living organism surveyed. Prerequisite: Organic Chemistry.

Biol 731. ADVANCED PROBLEMS IN GENETICS, 3-4 credits

This course includes a comprehensive review of late discoveries and theories of modern genetics. Among the topics emphasized are expression and interaction of genes, gene mutation, sex determination, selection and genetic death, inbreeding and heterosis, and biochemical genetics. Special emphasis is given to the role of the nucleic acids, DNA and RNA, in the modern concept of the gene and its expression. A series of McGraw-Hill films will be used freely to supplement lectures and class discussions. Laboratory work will consist of one or more problems of heredity selected by the student, with the approval of the instructor, and pursued to completion. *Drosophila*, *Sordaria*, Bacteria, Viruses, and selected plants will be utilized for laboratory investigations. Chromatographic treatment, ultra violet ir-

radiation, phase microscopy, and radioactive materials will be available to assist the investigators in analyzing their experimental work. Laboratory data will be processed by acceptable statistical methods, and a clear and concise report will be a vital part of the laboratory work. Prerequisites: Botany and Zoology, Genetics (undergraduate), Organic Chemistry.

Biol 732. ORGANIC EVOLUTION IN THE TWENTIETH CENTURY, 3 credits
An intensive study of the impact of evolutionary thought upon the various disciplines of biology, and how each of several disciplines has affected the Darwinian theory. Emphasis will be placed upon the genetic basis of evolution, the fundamental evolutionary processes, the evolutionary divergence. A comparative study of modern concepts of the evolutionary process will be an important part of the course. The laboratory work will consist of studies of fossils showing evolutionary progress, a study of models such as the evolution of the horse, the evolution of the vertebrate brain, the evolution of excretory and reproductive systems, and the evolution of the flowering plants. A series of films produced by McGraw-Hill and Encyclopaedia Britannica will supplement the laboratory materials available. A bi-weekly seminar is planned at which time selected readings and reports will be discussed. Prerequisites: Botany and Zoology.

Biol 733. POPULATION GENETICS, 3 credits

This course is based upon the Hardy-Weinburg law of population genetics, and the recent works of Theodosios 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. Laboratory work will be predominantly the use of the algebra of genetics to clarify evolutionary trends. In addition to the Hardy-Weinburg equation, chi-square, probability, and analysis of variance will be used where their use is indicated. A class project in population studies of *Drosophila* will be maintained throughout the course. Prerequisites: Advanced Genetics, Organic Evolution in 20th Cent.

Biol 736. FIELD AND LABORATORY TECHNIQUES IN BOTANY, 3 credits

The course is designed to meet the needs of those who are involved in 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.

Biol 737. FIELD BOTANY, 3 credits

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.

Biol 740. LABORATORY TECHNIQUES IN BIOLOGY, 3 credits

The modern laboratory techniques for biological research includes: tissue culture method, light and electron microscopy, photomicroscopy, autoradiography, micro-techniques, and special methods for cytological and histological research. Prerequisite: Consent of the instructor.

Biol 742. RADIOBIOLOGY, 3 credits

The major portion of this course will be concerned with the biological

effects of ionizing radiation. The physiochemical interaction between radiation and organic matter will be considered on the molecular level. Cellular effects are analyzed and the alteration in the physiological processes produced in organs. The biological significance of some internal emitters are considered, as well as the therapeutical and diagnostic uses of isotopes in practice and research. The course covers radiation and population genetics as well as species response or radioecology. Both the immediate and long term effects will be discussed in terms of man and other organisms. Radio-biological dosimetry will be discussed thoroughly.

Laboratory: The laboratory will amplify the lecture portion of the program by: The statistical significance of radiation responses; Histological analysis of cellular changes; Radiation effects in both microbiological specimens and macrobiological specimens, in regard to both somatic and genetical changes. Practice in the use of radiation detection and measurement instruments and methods being an essential part of the laboratory, instruments will include, electronic power supplies, amplifiers, scalars. Geiger counters, proportional counters, ion chambers and scintillation spectrometry. Evaluation and control of radiation will be stressed through monitoring, sampling and record keeping. Prerequisites: Organic Chemistry, Physiology, Rad. Bio-Physics, Genetics.

Biol 750. ECOLOGY, 3 credits

This course involves a study of plants and animals with reference to their physical, chemical and biotic environments. Field and laboratory investigations include the concepts of migration, invasion, competition, succession, climax and post-succession aspects of plant and animal communities as they occur in southwestern Pennsylvania.

Biol 752. LIMNOLOGY, 3 credits

A study of the physical, chemical and biotic characteristics of fresh water environments. Field and laboratory investigations cover ponds, lakes and streams within a 30-mile radius of the college.

Biol 760. ELECTRON MICROSCOPY, 3 credits

Detailed training in the operation and care of the electron microscope, preparation of specimens including microtomy, electron staining, replication and shadow casting, measurements and interpretations, and special projects related to student's research interests. Prerequisite: Consent of the instructor

Biol 761. CONFERENCE ON ELECTRON MICROSCOPY, 3 credits

The purpose of this course is to familiarize the student with the principles and practices of electron microscopy. Techniques for preparation of specimens, ultrathin sectioning, and shadowing will be presented with sufficient of the physics necessary for understanding and intelligent operation. Each student will then participate in the use of the electron microscope.

Biol 762. COURSE IN ULTRASTRUCTURE, 3 credits

Cytological details of ultrafine structures of protoplasm will be discussed in relation to vital functioning. Details of nuclear and plasma membranes, the endoplasmic reticulum, ribosomes, mitochondria, microsomes, dictyosomes, etc. will be compared in plants and animals. Students will prepare their own materials and study them with the electron microscope. Prerequisite: Biol 761.

Biol 763. LAB INSTRUMENTATION FOR BIOLOGY, 3 credits

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; spectropho-

tometry and colorimetry in the U.V., visible, and IR regions; pH and buffering; cell disruption and fractionation techniques; ultracentrifugation; and special assays of interest to the student. Prerequisites: Analytical Chemistry and 2 lab courses in biology or permission of instructor.

Biol 764. RADIOISOTOPE TECHNIQUES, 3 credits

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, biology major.

Biol 765. BIOMETRY, 3 credits

A study of techniques, experimental design and analysis of statistical methods with special application to biology. Prerequisite: College Algebra.

Biol 770. SEMINAR IN BIOLOGY, 2 credits

The seminar involves library research, class discussions, 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.

Biol 790-799. SPECIAL PROBLEMS IN BIOLOGY, 1-3 credits

Courses numbered 790-799 include problems in original investigations in the biological field. The nature of the problem and the class and laboratory hours will be adjusted to each project individually. These courses are expected to provide evidence of the ability of the student to follow appropriate research procedures, to analyze the results of his investigations, and to follow accepted standards in the preparation of a written report of his work. Prerequisites: Dependent upon the nature of the problem and the judgment of the graduate adviser.

CHEMISTRY

Chem 700A. PHYSICAL CHEMISTRY I, 3 credits

Properties of gases; elementary thermodynamics; thermochemistry; kinetic molecular theory; atomic and molecular structure; introduction to the theory of chemical bonding. Prerequisites: Chemistry 201 and 202; mathematics through integral calculus.

Chem 700B. PHYSICAL CHEMISTRY II, 3 credits

Kinetics; properties of solids and liquids; phase equilibria; colligative properties of solutions; electrolytic conductance and electrochemistry. Prerequisite: Chemistry 700A.

Chem 701. ADVANCED INORGANIC I, 3 credits

A study of the geometry of atoms and molecules as related to electronic structure and the relationship between chemical and physical properties electronic structure.

Chem 702. ADVANCED INORGANIC II, 3 credits

A study of the nature and properties of coordination compounds.

Chem 703. INORGANIC PREPARATIONS, 2 credits

Syntheses of selected inorganic compounds.

Chem 711. ADVANCED ANALYTICAL I, 3 credits

Chemical and Physical methods of separation.

Chem 712. ADVANCED ANALYTICAL II, 3 credits

Instrumental Analysis and Spectroscopy.

Chem 713. RADIOCHEMISTRY, 3 credits

A study of the theory and techniques connected with the use of radio-nuclides.

- Chem 721. **ADVANCED ORGANIC I**, 3 credits
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.
- Chem 722. **ADVANCED ORGANIC II**, 3 credits
A survey of the modern concepts of organic chemistry and their use in the interpretations of data in terms of mechanisms of organic reactions.
- Chem 723. **QUALITATIVE ORGANIC ANALYSIS**, 3 credits
Identification of pure organic compounds and mixtures by classical as well as by instrumental methods.
- Chem 724. **ORGANIC PREPARATIONS**, 2 credits
Application of the theory of reactions to organic synthesis. Emphasis will be placed on the newer synthetic methods and those involving recently discovered reagents.
- Chem 731. **ADVANCED PHYSICAL CHEMISTRY I**, 3 credits
Classical and statistical thermodynamics as applied to chemical systems.
- Chem 732. **ADVANCED PHYSICAL CHEMISTRY II**, 3 credits
Kinetics and electrochemistry.
- Chem 733. **QUANTUM MECHANICS**, 3 credits
An introduction to the concepts of quantum mechanics with applications to chemical systems.
- Chem 743. **MATHEMATICS FOR CHEMISTS**, 3 credits
Differential equations, partial differential equations, boundary 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.

ELEMENTARY EDUCATION

- El 700. **HISTORICAL BACKGROUND OF THE ELEMENTARY SCHOOL**, 2 credits
Emphasis is given to historical and philosophical backgrounds as they have been developed in the elementary school. In this course the student will have an opportunity to interpret modern educational issues as influenced by the past.
- El 701. **DEVELOPMENT AND ORGANIZATION OF THE CURRICULUM FOR THE ELEMENTARY SCHOOL**, 2 credits
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.
- El 702. **EVALUATION AND MEASUREMENTS IN THE ELEMENTARY SCHOOL**, 2 credits
This course is concerned with the evaluation of pupil progress. The criteria of good evaluating devices are studied. Students have an opportunity to study, administer, score and interpret various types of tests for evaluating pupil behavior.
- El 703. **CREATIVE ACTIVITIES IN THE ELEMENTARY SCHOOL**, 2 credits
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.
- El 704. **DEVELOPMENTAL READING IN THE ELEMENTARY SCHOOL**, 2 credits
Emphasis is placed on reading trends and various procedures for teaching reading. Through research findings, current literature and discussions the

student will be able to organize, administer, and evaluate a developmental reading program.

El 705. TEACHING READING IN CONTENT SUBJECTS, 2 credits

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.

Prerequisite: El 704

El 706. PRACTICUM—DIAGNOSTIC CASE STUDIES, 3 credits

Major emphasis is placed on presenting and discussing the techniques for determining reading difficulties of elementary school children. Practical use of testing devices and their application to individual diagnosis of reading difficulties are emphasized. The case study technique is utilized.

Prerequisite: El 704

El 707. RECENT TRENDS IN LANGUAGE ARTS, 2 credits

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 are studied through laboratory techniques—observations and discussions.

El 708. SPECIAL PROBLEMS IN ELEMENTARY SOCIAL STUDIES, 2 credits

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.

El 709. GEOGRAPHY IN THE MODERN ELEMENTARY SCHOOL, 2 credits

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.

El 710. ARITHMETIC IN THE ELEMENTARY SCHOOL, 2 credits

Recent trends and research in teaching arithmetic in the elementary school are studied. The newest techniques for developing basic skills and problem solving are discussed and evaluated. Students have an opportunity to work on individual problems.

El 711. RESOURCE MATERIALS IN ELEMENTARY SCIENCE, 2 credits

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.

El 712. THE CREATIVE ELEMENTARY MUSIC PROGRAM, 2 credits

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 activities in the aforementioned areas.

El 713. ART EDUCATION FOR THE ELEMENTARY GRADES, 2 credits

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.

El 714. GUIDANCE IN THE ELEMENTARY SCHOOL, 2 credits

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

El 715. PROBLEMS IN HEALTH AND PHYSICAL EDUCATION FOR THE ELEMENTARY SCHOOL, 2 credits

A survey of the problems and research concerning teachers' responsibilities for the health and physical activities of elementary school children.

El 716. TEACHING IN KINDERGARTEN AND THE PRIMARY GRADES, 2 credits
The students have opportunities to become acquainted with modern methods of teaching the primary grades, activities, learning materials, and needs of the primary-grade children are analyzed and evaluated according to research findings.

El 717. PSYCHOLOGY OF THE EXCEPTIONAL CHILD, 2 credits

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.

El 718. ORGANIZATION AND ADMINISTRATION OF THE ELEMENTARY SCHOOL, 2 credits

This course reflects the most recent trends in elementary education and presents a comprehensive picture of major phases of organization, administration and supervision, the practical routine aspects of which are placed on a sound theoretical basis. Emphasis is on the importance of co-operation within the school organization and between the school and community.

El 719. PRACTICUM—REMEDIAL CASE STUDIES, 3 credits

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. Prerequisite: El 706.

El 724. SEMINAR IN ELEMENTARY ART EDUCATION, 2 credits

A course dealing with tools, materials, techniques, and processes suitable for elementary children.

El 726. CHILDREN'S LITERATURE AND READING, 2 credits

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 appreciations of an extensive range of prose and poetry of literary quality will be a prime focal point.

El 727. DIAGNOSIS AND TREATMENT OF READING PROBLEMS, 2 credits

This course will initiate 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.

El 728. SEMINAR IN READING AND LANGUAGE ARTS, 2 credits

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.

El 729. SUPERVISION AND ADMINISTRATION OF A READING PROGRAM, 2 credits

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.

El 730. TECHNIQUES IN DIAGNOSIS OF REMEDIAL PROBLEMS, 2 credits

The purpose of the course is to provide the guidance counselor and the elementary teacher with experiences in using and evaluating the various tests, tools, and techniques which may be utilized for diagnostic purposes.

El 731. RECENT TRENDS IN ELEMENTARY SCHOOL SCIENCE, 2 credits

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.

El 732. TOPICS IN ALGEBRA FOR THE ELEMENTARY MATHEMATICS TEACHER, 2 credits

A presentation of Algebraic Structures which will serve as a mathematical guide in the teaching of Arithmetic.

El 733. TOPICS IN GEOMETRY FOR THE ELEMENTARY MATHEMATICS TEACHER, 2 credits

A presentation of an axiomatic treatment of both Euclidean and Non-Euclidean Geometries which will give elementary school teachers of geometry a better background to teach geometry from an intuitive point of view.

El 734. TRENDS AND CURRENT RESEARCH FINDINGS IN ELEMENTARY MATHEMATICS, 2 credits

A review of current Elementary Arithmetic Curriculum projects such as: The Madison Project, Patrick Suppes Project (Stanford University), David

Page Project (University of Illinois), Nuffield Project, Elementary SMSG, Minnemast (University of Minnesota), and others.

EI 735. MATERIALS, RECREATIONAL MATHEMATICS AND EVALUATIVE TECHNIQUES IN ELEMENTARY SCHOOL MATHEMATICS, 2 credits

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.

R 730. PROBLEMS IN SECONDARY READING, 2 credits

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.

ELEMENTARY GUIDANCE

EG 700. ORGANIZATION & ADMINISTRATION OF GUIDANCE IN THE ELEMENTARY SCHOOL, 2 credits

The purpose of this course is to provide the guidance counselor with the necessary competencies for organizing, administering, and evaluating elementary guidance programs.

EG 701. COUNSELING THEORY, 2 credits

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.

EG 702. CONSULTING THEORY, 2 credits

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.

EG 703. SEMINAR: SOCIAL, CULTURAL, AND ECONOMIC INFORMATION, 2 credits

This course is a study of social, cultural, and economic information essential to the development of useful vocational goals and attitudes in elementary school children. Key subject matter areas in the elementary school curriculum are studied with a view analysis, dissemination, and interpretation of social, cultural, and economic information.

EG 704. DEVELOPMENTAL GROUP COUNSELING, 2 credits

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.

EG 705. INDEPENDENT STUDY, 2 credits

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.

EG 714. PRACTICUM I, 2 credits

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: EG700 and EG701.

EG 715. PRACTICUM II, 2 credits

This is a continuation of EG 714 with emphasis placed on counseling and consulting with children, teachers, and parents in a local school district. Both individual and group counseling experiences will be developed. Prerequisite: EG 714.

EG 716. PRACTICUM III, 2 credits

This is a continuation of EG 715. This course will serve as a culmination of practicum experiences. The course is flexible so it may meet individual needs of counselor trainees with varying degrees of skills, while ensuring the minimum standards of competence in counseling. Prerequisite: EG715.

EG 717. INTEGRATED SEMINAR, 2 credits

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 students' graduate work by synthesizing previous course work and experiences in counseling.

ENGLISH

Eng 701. INTRODUCTION TO OLD ENGLISH, 3 credits

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 702. MIDDLE ENGLISH, 3 credits

This course is an introduction to a variety of Middle English literary texts and types, and to the principal Middle English dialects. Since the course satisfies part of the requirement for the study of the English language and is therefore not simply a course in literature, the texts are inspected very closely, for matters of detail in Middle English vocabulary, phonology, morphology, and syntax; but some attention is paid to literary history.

Eng 703. HISTORY OF THE ENGLISH LANGUAGE, 3 credits

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 to English 700-1100; 1100-1500; 1500-1968 (or today). 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 problem 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 introduced to the major political-historical events which affected the growth and structure of British and American English.

Eng 704. **ADVANCED LINGUISTICS, 3 credits**

This course is principally an introduction to synchronic linguistics and to modern grammar. It begins with phonemics and, essentially, the Trager-Smith analysis of English grammar, progresses to morphology (in much the manner of C. C. Fries), then to syntax, both structuralist and transformational. Attention is paid to such matters as usage, dialect study and linguistic geography, the relation between speech and writing, the application of linguistics to the study of literature, and psycho-linguistics. (Such shady fringe areas as "General Semantics" are avoided.) Reports on several books are required, as well as final long paper, involving library research and some modest individual field work.

Eng 711. **CHAUCER, 3 credits**

This course will survey the works of Geoffrey Chaucer, from *The Book of the Duchess* through the *Canterbury Tales*, but most of the course will be devoted to *Troilus and Criseyde*. Some attention will be given to the phonology, morphology, and syntax of Chaucer's English, but principally the goal of the course will be literary understanding.

Eng 715. **DEVELOPMENT OF THE ENGLISH DRAMA BEFORE SHAKESPEARE, 3 credits**

This course is designed to introduce the student to the drama of the Middle Ages and Early Renaissance in England and at the same time to acquaint him with its international character. The liturgical drama precedes the scriptural cycles; then the morality play and interlude follow. Evolution and continuity of development are carefully shown so that the student may see the vital nature of the early drama.

Eng 717. **SHAKESPEARE, 3 credits**

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 721. **17TH CENTURY NON-DRAMATIC LITERATURE, 3 credits**

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 725. **THE AGE OF REASON—PROSE, 3 credits**

This course is an investigation into the ideas and attitudes of the eighteenth century, as reflected in its literature, which are responsible for its having been labeled "The Age of Reason" or "Enlightenment." Students electing the course are presumed to have familiarity with works of standard literary figures of the century treated in undergraduate courses on eighteenth century literature. The work of the course is divided into categories as: political, social, religious, and humanistic, while the student familiarizes himself with such movements and concepts as enthusiasm, deism, nature and natural rights, sentimentalism, and benevolence.

Eng 726. **THE AGE OF REASON—POETRY, 3 credits**

A study of the chief poets and poetic compositions of the century. Considerable attention will be given to Pope as the chief and most influential poet, but those whose works represent a reaction to classicism and rationalism will also be examined, in order that students may see that works of the century moved steadily toward freedom of subject matter and poetic form.

Eng 731. NINETEENTH CENTURY NOVEL, 3 credits

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 peculiarly relevant to the nineteenth century. Individuals, novels, and novelists will be discussed in terms of their place in the general tradition of the novel—their dependence on the work of the 18th century novelists, their attempts at experimentation and innovation, their foreshadowing of the interests and techniques of the modern novelists. Secondly, the novels will be discussed in terms of their growing relevance as a commentary on the problems of the times, and as such, and important manifestation of the great aesthetic problem of the 19th century, the relationship between art and society.

Eng 733. VICTORIAN POETRY, 3 credits

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 contributions 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. Discussion will focus on the attempt of each of the poets to deal with those problems particularly relevant to the nineteenth century—the Romantic inheritance, the role of the poet, the function of art—in order to isolate common characteristics which might be helpful in evolving a definition of 'Victorianism.' The literary and aesthetic criticism of the period—notably the prose of Arnold, Ruskin, Swinburne, and Pater—will be used to provide a detailed analysis of each of the particular problems. Significant work by minor poets will be considered insofar as it sheds light on these problems or on the work of any of the major figures.

Eng 734. ROMANTIC POETRY, 3 credits

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 poetry over the last century. Introductory lectures will introduce the critical milieu in which the Romantic poets were spawned, and discuss their eighteenth-century forerunners, the Pre-Romantics. 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. Finally, an attempt will be made to evaluate the effect of these poets on the critical attitudes of the nineteenth and twentieth centuries, through an examination of the work of such men as J. S. Mill, Matthew Arnold, Irving Babbitt, Paul Elmer More, T. S. Eliot and others.

Eng 740. COLONIAL AMERICAN LITERATURE, 3 credits

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 741. AMERICAN RENAISSANCE, 3 credits

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, Hawthorne, Melville, and Whitman; Cooper and Poe at the instructor's option.

Eng 742. **THE RISE OF REALISM**, 3 credits

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 broad representation of the works of both major and secondary writers.

Eng 743. **MODERN AMERICAN POETRY**, 3 credits

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 751. **MODERN NOVEL**, 3 credits

This course examines in some depth important figures of twentieth century American and English literature.

Eng 760. **HISTORY OF LITERARY CRITICISM**, 3 credits

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 761. **SEMINAR IN LITERARY CRITICISM**, 3 credits

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 770. **SEMINAR IN ENGLISH LITERATURE**, 3 credits

This seminar course has been designed to have the student pursue in depth a major figure, movement, or genre in English literature (such as the life and writings of W. B. Yeats). Following the intent of a seminar course, the student must confer with his instructor three or four times during the term. Emphasis is on a highly specific area of independent research. As such, the course is determined by research and writing performance.

Eng 775. **SEMINAR IN AMERICAN LITERATURE**, 3 credits

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 Res 800. **METHODS OF RESEARCH**, 2 credits

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.

GEOGRAPHY

Geog 700. **PHILOSOPHY OF GEOGRAPHY**, 2 credits

Classical and contemporary development of the principal concepts which define geography as an academic discipline.

Geog 710. **CULTURAL GEOGRAPHY**, 2 credits

Intensive study of selected topics in cultural geography. Topics considered may include population and settlement, political and historical elements.

Geog 720. **READINGS IN CULTURAL GEOGRAPHY**, 2 credits

Guided readings in selected topics designed to exemplify sense of geographic problem and to develop abilities of critical appraisal. Writing of critiques.

Geog 722. **SEMINAR IN CULTURAL GEOGRAPHY**, 2 credits

Oral and written reviews of selected readings in population, political, and

historical geography and presentation of student research conducted within those areas of study.

Geog 728. RESEARCH IN CULTURAL GEOGRAPHY, 2 credits

Organization of research project requiring significant effort in one or more of the techniques generally useful to geographers.

Geog 730. ECONOMIC GEOGRAPHY, 2 credits

Intensive study of selected topics in economic geography. Topics considered may include primary, secondary, tertiary, or quaternary production.

Geog 740. READINGS IN ECONOMIC GEOGRAPHY, 2 credits

Guided readings in selected topics designed to exemplify sense of geographic problem and to develop abilities of critical appraisal. Writing of critiques.

Geog 742. SEMINAR IN ECONOMIC GEOGRAPHY, 2 credits

Oral and written reviews of selected readings in economic geography and presentation of student research conducted within those areas of study.

Geog 748. RESEARCH IN ECONOMIC GEOGRAPHY, 2 credits

Organization of research project requiring significant effort in one or more of the techniques generally useful to geographers.

Geog 750. PHYSICAL GEOGRAPHY, 2 credits

Intensive study of selected topics in physical geography. Topics considered may include elements of the lithosphere, hydrosphere, or atmosphere.

Geog 760. READINGS IN PHYSICAL GEOGRAPHY, 2 credits

Guided readings in selected topics designed to exemplify sense of geographic problem and to develop abilities of critical appraisal. Writing of critiques.

Geog 762. SEMINAR IN PHYSICAL GEOGRAPHY, 2 credits

Oral and written reviews of selected readings in physical geography and presentation of student research conducted within those areas of study.

Geog 768. RESEARCH IN PHYSICAL GEOGRAPHY, 2 credits

Organization of research project requiring significant effort in one or more of the techniques generally useful to geographers.

Geog 770. REGIONAL GEOGRAPHY, 2 credits

Intensive study of a specific region integrating physical and cultural attributes of the area.

Geog 780. READINGS IN REGIONAL GEOGRAPHY, 2 credits

Guided readings in selected topics designed to exemplify sense of geographic problem and to develop abilities of critical appraisal. Writing of critiques.

Geog 782. SEMINAR IN REGIONAL GEOGRAPHY, 2 credits

Oral and written reviews of selected readings in regional geography and presentation of student research conducted within those areas of study.

Geog 788. RESEARCH IN REGIONAL GEOGRAPHY, 2 credits

Organization of research project requiring significant effort in one or more of the techniques generally useful to geographers.

Geog 790. FIELD METHODS, 2 credits

Study of techniques used in making geographic observations in the field. Emphasis on study of natural and cultural landscape features at selected localities.

Geog 791. FIELD PROBLEM, 2 credits

Independent supervised study. Formulation of problem, collection data, data analysis, and report writing.

Geog 795. ADVANCED CARTOGRAPHY, 2 credits

Advanced techniques of graphic presentation. Accent on methods of carto-

statistical methods of map analysis. Familiarization with modern cartographic techniques.

Geog 796. **AERIAL PHOTO INTERPRETATION**, 2 credits

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.

Prerequisite: Geog 372 Cartography

HISTORY

Hist 700. **THE COLONIAL ERA**, 3 credits

Topics concerning the exploration and settlement of America, and the social, political, economic and intellectual life of the American colonies before the Revolution.

Hist 701. **THE REVOLUTION AND EARLY NATIONAL PERIOD**, 3 credits

Topics in the social, political, economic and intellectual life of the American people to 1820.

Hist 712. **THE MIDDLE PERIOD IN U.S. HISTORY, 1820-60**, 3 credits

The era 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.

Hist 715. **THE CIVIL WAR AND RECONSTRUCTION**, 3 credits

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.

Hist 716. **THE ERA OF REFORM, 1873 UNTIL WORLD WAR I**, 3 credits

A detailed examination of certain key groups and events which influenced 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 populists, mugwumps, utopian reformers, the new clergy and the progressives.

Hist 717. **THE 1930's IN THE UNITED STATES**, 3 credits

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.

Hist 718. **THE UNITED STATES SINCE WORLD WAR II**, 3 credits

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.

Hist 720. **STUDIES IN AMERICAN CONSTITUTIONAL HISTORY**, 3 credits

Topics in the formation of the Constitution and its development through amendment, interpretation and practice.

Hist 721. **STUDIES IN THE SOCIAL AND INTELLECTUAL HISTORY OF THE UNITED STATES**, 3 credits

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.

Hist 723. STUDIES IN AMERICAN DIPLOMATIC HISTORY, 3 credits

A program of major themes in the history of American 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 the instructor.

Hist 724. STUDIES IN AMERICAN URBAN HISTORY, 3 credits

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.

Hist 725. STUDIES OF THE AFRO-AMERICAN IN AMERICAN HISTORY, 3 credits

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.

Hist 726. STUDIES IN AMERICAN ECONOMIC HISTORY, 3 credits

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.

Hist 728. STUDIES IN AMERICAN LABOR HISTORY, 3 credits

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.

Hist 729. STUDIES IN PENNSYLVANIA HISTORY, 3 credits

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 Pennsylvania.

Hist 755. STUDIES IN THE HISTORY OF ENGLAND, 3 credits

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.

Hist 760. STUDIES IN THE HISTORY OF CONTEMPORARY EUROPE, 3 credits

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.

Hist 780. STUDIES IN THE HISTORY OF EASTERN ASIA, 3 credits

Selected aspects of Chinese, Japanese and Korean civilizations. The development of native institutions and the impact of foreign ideas on traditional cultures.

Hist 785. STUDIES IN THE HISTORY OF THE MIDDLE EAST, 3 credits

Selected themes concerned with the process of western intrusion, dominance and continued influence in areas of Western Asia and North Africa, pre-

dominantly Islamic in culture. Developing political and intellectual movements and their influence on changing patterns of political, economic and social life in that area.

Hist 790. **INDEPENDENT STUDIES IN HISTORY**, 1-2 credits

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.

Hist 800. **METHODS OF RESEARCH**, 2 credits

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.

Hist 802. **THESIS**, 4 credits

The investigation of an historical problem by the Master's candidate and subsequent departmental approval of a Master's thesis resulting from that investigation.

Hist 803. **AMERICAN HISTORIOGRAPHY**, 3 credits

A critical study of the styles, methods and philosophies of leading American historians of the past and present, as well as an examination of the major interpretations of the different eras of the American experience. Emphasis might be placed on the different "schools" of American historiography, the development of standards for critical evaluation, comparative history and historiography, and perhaps a look into major debates concerning contemporary American historians, such as the question of whether the American experience has been one primarily of conflict or consensus.

INDUSTRIAL ARTS

IA 700. **ORGANIZATION AND ADMINISTRATION OF INDUSTRIAL ARTS**,
2 credits

A critical analysis of the administrative and organizational problem related to the various types of industrial arts programs, i.e., general shop, unit shop, and unit general shop. The role of the administrator and teacher in developing and organizing the industrial arts program as an integral part of the total school program is stressed. Experience is provided in the use of administrative techniques and devices peculiar to the field of industrial arts.

IA 701. **CURRICULUM DEVELOPMENT IN INDUSTRIAL ARTS**, 2 credits

An investigation is made into the significant aspects of our culture which affect the curriculum. Key concepts in curriculum study are related to practice in establishing a curriculum consistent with accepted educational objectives and philosophies. The complete development of an industrial arts curriculum including preparation of courses of study, course outlines, unit organization, and lesson planning constitutes a major phase of the course.

IA 702. **HISTORY AND PHILOSOPHY OF INDUSTRIAL ARTS EDUCATION**,
2 credits

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 of 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, Froebel, Dewey, and Woodward are contrasted to current philosophies, methods, and objectives of industrial arts education.

IA 703. PLANNING THE INDUSTRIAL ARTS LABORATORY, 2 credits

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 problem of statutory demands and limitations, architectural techniques, acoustics, machine utilization, area planning, storage, and planning methods.

IA 704. SUPERVISION OF INDUSTRIAL ARTS EDUCATION, 2 credits

An analysis is made of current research in supervision as related to curriculum improvement in industrial arts. Emphasis is placed on methods of coordination and upgrading teaching techniques, safety education, inventory control, requisitioning methods, evaluative criteria, and student planning methods.

IA 705. THE HISTORY AND PHILOSOPHY OF CONTEMPORARY INDUSTRIAL DESIGN, 2 credits

Industrial design is presented as a distinct and significant part of American industry and of contemporary American culture. The development of industrial design is traced from the outset of the industrial revolution to the present. The historical and philosophical roots of industrial design are studied in order to better understand its aesthetic impact upon the American culture.

IA 708, IA 709. SPECIAL PROBLEM IN I. A., 1-2 credits

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.

IA 710. RESEARCH IN TECHNICAL DRAWING PROBLEMS, 3 credits

Research is conducted to determine current and proposed technical advances in industrial drafting methods and techniques and their possible assimilation into secondary school and college drafting courses. Pilot courses are developed utilizing new concepts and techniques developed in industry.

IA 712. REPRESENTATIONAL DRAWING I, 2 credits

Refinement in the technique of rendering the essential appearance of an actual or imaginary product is stressed. Freehand sketching in a variety of media, including pastels, pen and ink, and wash drawing is explored.

IA 713. REPRESENTATIONAL DRAWING II, 2 credits

Emphasis is placed on experiencing more advanced graphic media in the technique of freehand sketching. Extensive experience is provided in air brush rendering. Experimentation in the use of graphic media is encouraged in order to achieve unusual but effective visual effects in representational drawing.

IA 714. PROBLEMS IN ARCHITECTURAL DESIGN, 3 credits

Emphasis is placed on new concepts and techniques in architectural design and drafting. Current developments in building materials and fabrication methods are applied to residence, commercial and industrial structures. The organic approach to architectural design is utilized to evolve functional designs in the various types of structures.

IA 721. ADVANCED CRAFTS, 3 credits

This course develops a considerable depth and breadth of technique and overall design ability for those who wish to pursue any major craft media. Creative and aesthetic design coupled with technical refinement is stressed. Research in a particular craft medium accompanies the laboratory experience. Any craft area except Ceramics may be selected for advanced work.

IA 722. PROBLEMS IN INDUSTRIAL ARTS DESIGN, 2 credits

A problem solving approach to design is emphasized. Students completely plan and develop products that are original in conception and aesthetic in appearance. The individual is encouraged to work experimentally and independently. Final products are crystallized with the aid of representational drawings, working drawings, and detailed plans.

IA 723. ADVANCED CERAMICS, 3 credits

Advanced techniques in the art and craft of ceramics is provided in this course. Experiences in three and four piece mold making, glaze experimentation, and advanced work on the potter's wheel are included. The technology of ceramics is presented through the process of individual research on some phase of the ceramic industry.

IA 730. RESEARCH IN THE PROBLEMS OF WOODWORKING, 3 credits

Research experiences are provided in current industrial developments in the woodworking industries. Emphasis is placed upon research techniques and finding in such areas as wood finishing, production, methods, wood chemistry, machinery maintenance, and safety programming. Special problems relating to wood storage, requisitioning, inventories and budgeting procedures are also presented.

IA 731. STUDIES IN INDUSTRIAL PATTERNMAKING TECHNIQUES, 3 credits

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.

IA 740. STUDIES IN METAL TECHNOLOGY, 3 credits

Provides for study of new industrial metalworking techniques and processes through research and field trips. Basic study into physical metal testing and metallurgy designed for introduction into public school programs.

IA 741. RESEARCH IN THE PROBLEMS OF METAL MACHINING, 3 credits

Special problems relating to secondary school metal machining programs such as product design, operational sequences, personnel organization, instructional sequences, special jigs and fixtures, and new industrial machining methods are studied. Individual research on a selected metal machining problem is required.

IA 752. SEMINAR IN NEW ELECTRICAL PRACTICES, 2 credits

The latest commercial electrical equipment and technical methods are presented by local power companies, manufacturers, and other agencies related to the electrical industry. This cooperative venture is designed to bring the student abreast of current practices, trends, and research in the electricity-electronics area.

IA 753. ADVANCED STUDIES IN TRANSISTOR CIRCUIT THEORY AND APPLICATION, 3 credits

A study is made of the circuit theory and application of transistors as used in power supplies, amplifiers, oscillators, detectors and radio receivers. The course is designed primarily to develop individual depth and experiences in this area for the industrial arts teacher.

IA 754. DESIGN AND APPLICATION IN RADIO AND TELEVISION CIRCUITS, 3 credits

Experiences are provided in the design, development and operation of radio and television receivers. Special emphasis will be placed upon individual study and designing of the basic circuits incorporated in a super-heterodyne receiver and portions of the television receiver.

IA 756. DIGITAL AND ANALOG COMPUTER CIRCUITS AS APPLIED TO INDUSTRIAL ARTS PROGRAMS, 3 credits

An intensive study of the theory of operation of digital and analog computer circuits and their application to modern trends in Industrial Arts Education. Opportunity for the student to work experimentally will be provided. The individual is encouraged to develop practical computer applications for teaching within the industrial arts area.

IA 760. RESEARCH IN AND DEVELOPMENT OF GRAPHIC ARTS TECHNIQUES, 3 credits

Research experiences are provided in the development of the materials, methods, and processes currently employed in the printing industry. A study of research findings is conducted in the reproduction phases of printing and allied graphic arts. Problems relating to offset lithography, photo lithography, intaglio methods, advanced book binding, letterpress, photography, hand-cut silk screen, and photographic silk screen provide activities for individual research.

IA 761. DESIGN PROBLEMS RELATING TO GRAPHIC ARTS REPRODUCTION, 2 credits

The basic elements of commercial graphic design, such as shape, color, texture, scale, and balance are studied. Practical work includes designing of book covers, title pages, book jackets, trade-marks, colophons, posters, and show card work.

IA 762. RESEARCH IN PHOTOGRAPHIC TECHNIQUES, 3 credits

View composition, developing and printing constitute the major phases of this course. The mechanics of both miniature and professional photographic equipment are studied. Contact and enlargement printing, the making of zinc cuts, halftones and photographic plates are stressed.

IA 763. VISUAL COMMUNICATION TECHNIQUES, 3 credits

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.

IA 770. INDUSTRIAL PLASTICS AND THEIR APPLICATION TO INDUSTRIAL ARTS, 3 credits

An intensive study of the changing field of plastics and its application to modern trend and progress of Industrial Arts Education.

IA 771 INDUSTRIAL ARTS AND INDUSTRIAL PRACTICES WORKSHOP, 2 credits

This workshop is designed to acquaint the students with industrial plants in the tri-state area. The students will be taken on conducted tours through steel mills, glass factories, paper mills, ceramic plants, and a variety of research and development laboratories. The chief aim is to afford the student an understanding of a variety of important industries and their implications for industrial arts.

MATHEMATICS

Math 701, 702. MATH. ANALYSIS I AND II, 2 credits each

These courses develop those ideas which are considered foundations to analysis. These ideas will include limits, continuity, functions of several variables, the calculus of curves and surfaces, and infinite series.

Math 703, 704. DIFFERENTIAL EQUATIONS I AND II, 2 credits each

These courses involve mainly the solution of differential equations of first and second orders with emphasis upon transforms. Applications of these types of equations will be considered.

Math 705, 706. FUNCTIONS OF A REAL VARIABLE I AND II, 2 credits each

These courses will provide a development of modern analysis. The topics to be covered will be theory of sets, the real number system, limits, continuity, convergence and derivatives of a function, and a comparative study of integration by Riemann, Lebesgue and Stieltjes.

Math 707, 708. FUNCTIONS OF A COMPLEX VARIABLE I AND II,
2 credits each

These courses include a study of the properties and theory of the differential and integral calculus of elementary and analytic functions. Topics such as Cauchy-Goursat Theorem, Power Series, Residues and Poles, Conformal Mapping, Schwarz-Christoffel Transformation, and Analytic Continuation.

Math 709. PARTIAL DIFFERENTIAL EQUATIONS, 2 credits

This course deals primarily with solution of differential equation of higher order and degree by power series, solution of partial differential equations, more discussion on Laplace Transforms and Fourier Series.

Math 711. TOPOLOGY, 2 credits

This course shall include point-set theory, properties of metric spaces, properties of topological spaces and properties of topological transformations.

Math 721, 722. ABSTRACT ALGEBRA I AND II, 2 credits each

The material covered in these courses will be a continuation and a more intensive study of the material covered in the undergraduate course such as theory of groups, rings, and fields.

Math 723, 724. LINEAR ALGEBRA I AND II, 2 credits each

These courses are a continuation and a more intensive study of the undergraduate course including topics of vector spaces and transformations, polynomials, determinants, invariant direct-sum decompositions, rational and Jordan Forms, Inner product spaces and bilinear forms.

Math 725. THEORY OF NUMBERS, 2 credits

A presentation of topics necessary to gain understanding of the theory of numbers. The topics included are: properties of integers, divisibility, Euclidean Algorithm, prime numbers, congruences, residues of powers, quadratic residues, and Diophantine problems.

Math 727. THEORY OF MATRICES, 2 credits

Topics included are: matrix algebra, rank and equivalence, linear dependence, vector spaces and transformations, unitary and orthogonal transformations, and characteristic equation of a matrix.

Math 741. FOUNDATIONS OF GEOMETRY I, 2 credits

This course is a Birkhoff axiomatic treatment of Euclidean Geometry.

Math 742. FOUNDATIONS OF GEOMETRY II, 2 credits

Two approaches to geometry will be considered: studying a body of theorems deduced from a set of axioms, and studying Invariant theory of a Transformation Group.

Math 743, 744. PROJECTIVE GEOMETRY I AND II, 2 credits each

A synthetic and analytic treatment of projective geometry including topics: duality, projection, section, perspectivity, projectivity, harmonic constructions, fundamental theorem of projective geometry, Theorems of Desargue, Pappas, Pascal and Brianchon, conic sections, projective coordinate systems of one, two and three dimensions, and transformations.

Math 745. VECTOR GEOMETRY, 2 credits

This course is primarily a vector space approach to geometry. Topics are: vector algebra, vector spaces, length, angle, area, volume, and matrices of linear and affine transformations.

Math 747. ADVANCED ANALYTIC GEOMETRY, 2 credits

A continuation of analytic Geometry but dealing primarily with three di-

mensions. The course shall also include an introduction to algebraic geometry.

Math 761. MATHEMATICAL LOGIC, 2 credits

This course shall include a review of symbolic logic and the axiomatic method followed by the propositional calculus and the predicate calculus.

Math 763. SET THEORY, 2 credits

Sets and their properties and functions, finite and infinite sets, ordered sets, and point sets.

Math 765, 766. MATHEMATICAL STATISTICS I AND II, 2 credits each

These courses will include topics that would require the calculus. The topics are: discrete and continuous distributions, sampling distributions and statistical inference, regression, correlation, analysis of variance, and analysis of covariance.

Math 767. HISTORY OF MATHEMATICS, 2 credits

The subject matter of this course is a historical summary of the development of mathematics, illustrated by the lives and discoveries of those to whom the progress of mathematics is due.

Math 769. THEORY OF ARITHMETIC, 2 credits

This course shall deal strictly with the content meaning of arithmetic and its structure in relationship to higher mathematics. A very intensive study of the real number system will be the main core of the course.

Math 771. SEMINAR IN MATHEMATICS EDUCATION, 2 credits

The discussions in this course will center upon the modern trends and recommendations in elementary and secondary mathematics education.

MENTALLY RETARDED

MR 700. ADMINISTRATION AND SUPERVISION OF SPECIAL EDUCATION PROGRAMS, 2 credits

Criteria for administrative and supervisory leadership are evaluated in relation to services rendered classroom teachers. Analysis is made of the administrator's role in screening, diagnosis, guidance, and placement. The functions of administrators to specialized personnel in an organization are reviewed.

MR 701. DEVELOPMENT AND ORGANIZATION OF THE CURRICULUM FOR THE MENTALLY RETARDED, 2 credits

The student has an opportunity to study the development of the special education curriculum in relationship to the philosophy and objectives of the local school. Special emphasis is placed on recent trends in curriculum development for the mentally retarded.

MR 702. SEMINAR IN PSYCHOLOGY OF MENTAL DEFICIENCY, 3 credits

A detailed psychological analysis is undertaken of problems involved in working with mentally retarded; including those related to the criteria of mental deficiency; classification and diagnosis; psychological testing; casual factors; training and education; interpreting mental deficiency to parents; institutionalizing and professional training for workers in the area consists of personality, general behavior patterns, and educational possibilities of mentally deficient children.

MR 703. EDUCATION OF CHILDREN WITH RETARDED DEVELOPMENT IN THE ELEMENTARY SCHOOL, 2 credits

Study is made of the philosophies and teaching methods of various curricular plans developed for readiness levels and primary learners. Included also are diagnostic evaluations of educational problems confronting teachers; consideration of techniques useful in evaluating daily pupil progress; the evaluation of research, materials and instruments.

MR 704. EDUCATION OF CHILDREN WITH RETARDED DEVELOPMENT IN THE SECONDARY SCHOOLS, 2 credits

Methods of teaching mentally retarded children from approximately fourteen years of age until they leave school and of correlating and co-ordinating the program with that of the regular junior and senior high school. Emphasis is placed upon social and economic adjustments to the community; provisions for necessary community experiences, and provision for a gradual transition from a relatively protected school environment to independent status as a contributing member of society.

MR 705. OCCUPATIONAL EDUCATION FOR THE MENTALLY RETARDED, 2 credits

Investigation and analysis are concerned with manual skills at various developmental levels. Research criteria and information are applied to job-performance and adjustment, and to the community, and to job-opportunities. Experience is provided in job-analysis for skills involved, and in surveying job-adjustments of retarded adolescents.

MR 706. GROUP MENTAL TESTS, 2 credits

A lecture-discussion course in the theory and practice and interpretation of group mental tests, practice in testing of mentally retarded students in the various subject and social achievement areas will be required.

MR 707. CURRENT TRENDS IN ADVANCED PSYCHOLOGY OF EXCEPTIONAL CHILDREN, 2 credits

Learning theories and research are interpreted and applied to regular and special class instruction. Aims and concepts in educational diagnosis are given intense study. Processes of identification, stimulation, and intellectual development are analyzed.

MR 708. TESTS AND REMEDIAL WORK FOR THE MENTALLY RETARDED, 2 credits

Evaluation and experience are provided in the use of diagnostic tests. Includes consideration of causes for educational retardation, remedial techniques for language arts and other curricular areas. Experience is arranged for development of skills in remedial work, in writing, and in interpreting case histories and reports.

MR 709. TEACHING READING TO THE MENTALLY RETARDED, 2 credits

Goals and methods for various developmental reading levels are interpreted and applied. Analysis and use of teacher-prepared materials includes story writing related to pupil experiences and interests. The reading method is co-ordinated with other curricular areas which includes special techniques for individual problems of hearing.

MR 710. PROGRAMS FOR CHILDREN WITH SEVERE MENTAL RETARDATION (TRAINABLE), 2 credits

Workshop for teachers of seriously retarded children; evaluation of individual abilities; home and community supervision; developing self-care; health habits; play activities; visits to and resources provided by public and private institutions and schools; special consultants and guest lecturers.

MR 711. SEMINAR ON SOCIAL, ECONOMIC AND CULTURAL FACTORS AFFECTING THE MENTALLY RETARDED, 3 credits

A lecture-discussion course on the effects of past and present practices of religion, governmental, and other social groups as related to mentally retarded persons. Emphasis will be placed upon dominant personalities and theories and their effects on modern practice.

MR 712. INDEPENDENT RESEARCH PROBLEMS, 2 to 6 credits

Purpose of the course is to enable each student to investigate intensively a

problem or an area in special education according to area of major specialization or interest.

MR 713. CREATIVE ACTIVITIES IN SPECIAL CLASS FOR MENTALLY

RETARDED (MUSIC, DRAMA, AND ART), 2 credits

The purpose of this course is to foster and develop the creative activities of mind and body of the retarded child. Opportunity to develop and adapt appropriate materials that are conducive to creativity will be emphasized.

MR 714. INDUSTRIAL ARTS FOR SPECIAL EDUCATION, 2 credits

A general industrial arts laboratory course designed especially for the special education teacher to supplement daily instructional activities. The course will acquaint the teacher with the basic skills, knowledges, and techniques of various industrial mediums. The areas of instruction will include the following: woodworking, general metal working, drawing and sketching, and general craft areas (leather, ceramics, plastics, and others). Emphasis will be placed upon the care and safe use of basic hand tools and machines with projects suitable for the special education classroom.

POLITICAL SCIENCE

PolSc 701. HISTORY OF POLITICAL THEORY, 3 credits

A study of early and modern political theories; their development and application as controlling factors in the growth of western civilization and American democracy.

PolSc 705. THEORY AND PRACTICE OF AUTHORITARIAN GOVERNMENT, 3 credits

The theoretical and practical aspects of authoritarian governments are examined with special emphasis placed upon the effects of totalitarian methods and procedures in the lives of the people.

PolSc 706. GOVERNMENT AND POLITICS IN WESTERN EUROPE, 3 credits
An analysis of the major governmental systems of Continental Europe with chief emphasis placed upon France, Germany, Italy and Spain.

PolSc 707. GOVERNMENT AND POLITICS IN SOUTHEAST ASIA, 3 credits

Studies in the political problems of the nations of the Southeast Asian peninsula and the adjacent islands; and the relationship of these to current international politics.

PolSc 708. GOVERNMENT AND POLITICS IN AFRICA, 3 credits

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.

PolSc 715. PROBLEMS IN INTERNATIONAL ORGANIZATION, 3 credits

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.

PolSc 721. STUDIES IN POLITICAL BEHAVIOR, 3 credits

A study of the principal characteristics of and influences on voting behavior in the United States; methods for studying voting behavior and predicting elections; analysis of present alignment in the electorate as revealed by recent elections.

PolSc 790. INDEPENDENT STUDIES IN POLITICAL SCIENCE, 1-3 credits

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.

PSYCHOLOGY

Psy 700. ADVANCED ADOLESCENT PSYCHOLOGY, 2 credits

A course designed to study in depth the personal and social adjustment problems of the preadolescent, early adolescent, and late adolescent youth. Emphasis will be on research pertaining to adolescent development and to the treatment of the adolescent with problems.

Psy 701. PERSONALITY THEORY, 2 credits

A presentation of the major theories of personality development. The purpose will be to give the student an overview of each of the theories and methods of studying personality. The course will undertake some measure of integration by making comparisons and showing similarities among the various theories.

Psy 702. PSYCHOPATHOLOGY, 2 credits

A comprehensive study of personality and behavior disorders and their clinical manifestations. Attention is directed to understanding and identifying a variety of emotional and social disturbances in children with implications for re-education and treatment.

Psy 703. PSYCHODYNAMICS, 2 credits

A course designed to provide the student with a comprehensive knowledge of the psychological factors which underlie abnormal and nonadjustive behavior in children. Stress is placed on developing understanding and applying psychological concepts to both normal and abnormal behavior.

Psy 720. TESTS AND MEASUREMENTS, 2 credits

This course is designed to provide a necessary background in the theory and principles of test construction and test use. A survey of representative educational aptitude, achievement, and interest tests is offered with opportunity to administer, score, and interpret some of the most widely used instruments. Information pertaining to the reliability and validity studies conducted on the test is stressed.

Psy 721. INDIVIDUAL PSYCHOLOGICAL EVALUATION I (BINET AND INFANT SCALES), 2 credits

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 intelligence such as the Cattell and Merrill-Palmer Scales included.

Psy 722. INDIVIDUAL PSYCHOLOGICAL EVALUATION II (WECHSLER SCALES), 2 credits

Emphasizes theory and competence in the administration, scoring, and interpretation 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.

Psy 723. INDIVIDUAL PSYCHOLOGICAL EVALUATION III, 2 credits

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, IPAT, and other special clinical tests will be covered.

Psy 730. PROJECTIVE TECHNIQUES I, 2 credits

An introduction to the theory of projective methods of personality study. Experience given in the administration, scoring, and interpretation of some of the more widely used projective tests such as Sentence Completion, TAT, CAT, and other picture story tests. Attention is directed to an understanding of personality dynamics.

Psy 731. PROJECTIVE TECHNIQUES II, 2 credits

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. Personality evaluation is studied with special attention given to indications of normal and pathological behavior of children.

Psy 732. SEMINAR IN ADVANCED PROJECTIVE TECHNIQUES, 2 credits

A study of advanced principles and practices of projective personality evaluation. A study of the major research findings and literature in projective personality testing and theory.

Psy 740. THEORIES OF COUNSELING AND PSYCHOTHERAPY, 2 credits

A study of the major theories of counseling and psychotherapy emphasizing the psychological bases of each theory. The focus is on the implications of each theory for understanding and treating the problems of school children.

Psy 741. TECHNIQUES OF COUNSELING AND PSYCHOTHERAPY, 2 credits

A systematic study of the techniques of counseling appropriate to the problems of school children and which can be used by school psychologists. The basic elements of psychotherapy are studied and their application to counseling. Some supervised experience in counseling is provided the student.

Psy 745. PSYCHOLOGY OF THE GIFTED CHILD, 2 credits

A study of the intellectual, social, and emotional development of the gifted child and his adjustment to school and life. Principles of development and learning of the gifted child and their implications for educational programming and curriculum development.

Psy 746. PSYCHOLOGY OF LEARNING DISABILITIES, 2 credits

A study of the sensory, motor, perceptual, conceptual, and language factors in the development of learning disabilities in children. Review of research on minimal brain injury and remedial methods for instruction with the learning disabled child. Psychological effects on the child with a learning disability.

Psy 748. PERSONAL ADJUSTMENT AND MENTAL HEALTH, 2 credits

A comprehensive study of personal and interpersonal factors related to the school adjustment of children and development of good mental health. Included are the various behavior mechanisms of children, their assessment, and procedures for behavior modification.

Psy 750. ADMINISTRATION OF PUPIL PERSONNEL (CHILD STUDY)

SERVICES, 2 credits

A study of the organization and administration of pupil personnel services in a school system. Information about the various rules and functions of pupil personnel staff members and a concept of the teamwork is stressed. The leadership function of a school psychologist and the development of child study procedures is included.

Psy 790. EXPERIMENTAL METHODS IN PSYCHOLOGY, 2 credits

An advanced course in the experimental method as it applies to psychology. The course is concerned with principles, theories, and methods in psychology. Laboratory time will be provided to give the student an opportunity to repeat experimental studies and to develop independent studies.

Psy 794. PSYCHOLOGICAL STATISTICS, 2 credits

This course is designed to give the graduate student in psychology a basic background in the various statistical procedures used in the description and interpretation of data gathered in the field of psychology.

Psy 795. ADVANCED SEMINAR IN LEARNING PROBLEMS, 2 credits

This course is designed to increase the student's knowledge of newer con-

cepts and practices in learning theory and their applications to learning problems of children in school. A discussion of instructional techniques for helping teachers become more effective in working with children with learning problems.

Psy 796. RESEARCH SEMINAR IN SCHOOL PSYCHOLOGY, 2 credits

A comprehensive review of the research and current literature in school psychology. Critical study and evaluation of research findings applicable to the school age child and classroom learning situation.

Psy 797. SEMINAR IN PROBLEMS OF SCHOOL PSYCHOLOGY, 2 credits

An opportunity for students to study and discuss current problems in the field of school psychology. Problems pertaining to the child, the school, the community as they relate to the role of the school psychologist are discussed. Problems of ethical practices, in-service education planning, and public relations functions are included.

Psy 798. CLINICAL PRACTICUM, 6 credits

Extensive supervised clinical and field experience is provided in diagnostic, therapeutic, and remedial techniques with children. At least half of the experience is provided with children in a school setting. Forty-five clock hours shall be equivalent to one semester hour of clinical credit.

Psy 799. INTERNSHIP IN SCHOOL PSYCHOLOGY, 12 credits

This is provided in conjunction with the clinical practicum experience and provides the student with at least one full semester of supervised clinical experience during the two-year school psychology graduate program.

READING SPECIALIST

See Elementary section for course descriptions: El 701, El 702, El 704, El 705, El 706, El 707, El 717, El 719, El 726, El 727, El 728, El 729, R 730.

SOCIAL SCIENCE

SSci 701. SEMINAR IN WORLD CULTURE, 3 credits

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.

SSci 702. ECONOMIC, SOCIAL, AND POLITICAL ORDER, 3 credits

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.

SSci 703. ANALYSIS OF POWER STRUCTURE, 3 credits

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.

SSt 706. TRENDS IN SOCIAL STUDIES CURRICULUM, 3 credits

The philosophies of various social studies educators are examined together with application of their ideas. The course will include visitation by scholars subscribing to these ideas as well as classroom observations of the application of the philosophies.

SSt 707. LABORATORY EXPERIENCES IN SELECTION AND ORGANIZATION OF TEACHING MATERIALS, 3 credits

This will be a laboratory course devoted to familiarization with social studies resource material.

SSSt 708. SOCIAL STUDIES AND THE COMMUNITY, 3 credits

The importance of the relationship of the social studies to the community is stressed.

Anth 701. ARCHAEOLOGY FIELD SCHOOL, 3 or 6 credits

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.

Soc 707. THE COMMUNITY, 3 credits

A study of those groups characterized by a high degree of interaction, contiguity, and unity. Emphasis will be given to those aspects of groups which are smaller than societies which make for uniqueness.

Soc 718. MINORITY GROUPS, 3 credits

Sociological principles underlying minority group relations with emphasis upon the United States. Race, Ethnic and religious factors will be examined in the context of power within pluralistic societies. The female as a minority will also be explored.

Soc 720. SPECIAL PROBLEMS IN SOCIOLOGY, 3 credits

Select areas in the field of sociology will be investigated. i.e., sociology of education; marriage and the family; rural sociology; etc. Primary attention will be given to the interrelationships of societal institutions and their impact on the individual.

Econ 715. ECONOMICS FOR THE TEACHER, 3 credits

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.

Pol Sci 701. HISTORY OF POLITICAL THEORY, 3 credits

A study of early and modern political theories; their development and application as controlling factors in the growth of western civilization and American democracy.

Pol Sci 706. GOVERNMENT AND POLITICS IN WESTERN EUROPE, 3 credits

An analysis of the major governmental systems of Continental Europe with chief emphasis placed upon France, Germany, Italy and Spain.

Res 800. SEMINAR IN SOCIAL SCIENCE RESEARCH TECHNIQUES, 3 credits

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.

SOCIALLY AND EMOTIONALLY MALADJUSTED

SEM 700. PSYCHOPATHOLOGY OF YOUTH, 2 credits

Emotional development of children with special attention to pathological reactions and implications for re-education and treatment. Will include ex-

amination of research literature on biological, psychological, sociological and neurophysiological aspects of emotional disturbance in children.

SEM 701. PSYCHOLOGY OF THE SOCIALLY-EMOTIONALLY MALADJUSTED CHILD, 3 credits

Examines the nature and traits of children with disorders of emotional development resulting from biogenic and psychogenic causes. Emphasis is placed upon the effects of emotional disorders on the social and intellectual processes. Practical problems in school and social situations will be examined. Therapy programs and various psychoeducational settings for disturbed children will be discussed.

SEM 706. METHODS OF TEACHING SOCIALLY-EMOTIONALLY MALADJUSTED CHILDREN, 3 credits

Educational procedures are viewed with emphasis upon methods of teaching, classroom organization and management, and curriculum planning. Opportunities are provided for the development of appropriate teaching materials and overall program planning. Emphasis is placed on observation of maladjusted children in various educational settings.

SEM 707. ARTS AND CRAFTS, 2 credits

A study of the psychology, philosophy, content, and media in art expression and its relationship to mental and creative growth and exceptional children. Opportunities for individual student projects are provided.

SEM 708. PSYCHO-EDUCATIONAL DIAGNOSIS OF LEARNING PROBLEMS, 2 credits

This course will consist of instruction in the use of standardized tests and informal methods of evaluation used to diagnose the learning problems of emotionally disturbed children; interpretation and correct usage of each test and method will be stressed. An in-depth case study of one child will be required. Prerequisite: SEM 700 or SEM 701.

SEM 709. REMEDIATION OF LEARNING PROBLEMS, 2 credits

Methods and materials used in developmental and remedial teaching will be taught with emphasis on Reading, Math, Spelling and Social Studies. Diagnostic teaching as it applies to emotionally maladjusted children will be stressed. Prerequisite: SEM 708.

SEM 720. PRACTICUM, 6 credits

Student teaching and clinical practice will be done in public or private schools, hospitals, and clinics. Concurrently with student teaching there will be weekly seminars incorporating authorities from various disciplines to discuss a wide range of topics relating to student teaching experiences.

SPEECH AND HEARING

SH 700. ADVANCED SPEECH CORRECTION, 3 credits

Theories of causation and therapies for Aphasia and Cerebral Palsy.

SH 701. ADVANCED SPEECH PATHOLOGY, 3 credits

Theories of causation and therapies for Organic Voice Disorders and Cleft Palate.

SH 703. PROFOUND ORGANIC SPEECH DISORDERS, 3 credits

The role of the speech pathologist in team approach in Delayed Speech Development, Developmental Aphasia, Mental Retardation, and brain damaged children.

SH 704. STUTTERING, 3 credits

This course is designed to deal with the prevalent theories and therapies of stuttering. A student learns therapeutic techniques for both children and adults.

- SH 705. NEUROPATHOLOGIES OF SPEECH AND LANGUAGE, 3 credits
Neuropathological and psychological considerations involved in the acquisition and loss of speech and language.
- SH 706. ADVANCED CLINICAL METHODS, 1-3 credits
Clinical practicum concerning various types of profound speech and/or auditory disorders.
- SH 707. EXPERIMENTAL PHONETICS, 3 credits
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.
- SH 708. ADMINISTRATION OF CLINICAL PROCEDURES, 3 credits
A seminar involving related disciplines and allied professions.
- SH 710. DIAGNOSTIC AUDIOMETRICS, 3 credits
A study of various audiometric and speech reception tests outlining the dimensions of hearing; experience in test administration and interpretation of tests.
- SH 711. BASES OF AURAL REHABILITATION, 3 credits
Study of perceptive and behavioral problems of the aurally handicapped in society and methods for alleviation and compensation for hearing losses.
- SH 714. SEMINAR IN SPEECH PATHOLOGY, 2 credits
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.
- SH 715. SEMINAR IN AUDIOLOGY, 2 credits
Emphasis of advanced concepts in audiological diagnosis, aural rehabilitation, and other audiological implications.
- SH 740. INDEPENDENT STUDY, 1-3 credits
Open to graduate students in either speech or hearing for pursuing independent problems.

VI. Directory

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VII. Index

Index

	<i>Page</i>		<i>Page</i>
Accreditation	4	Graduate Programs:	
Administration	95	Introduction	29
Admission to Candidacy for the Degree	13	Biology	30
Admission to Graduate Study: Procedure	13	Chemistry	32
Requirements	12	Elementary Education	33
Advisory System	17	Elementary Guidance	35
Assistantships	26	English	36
Audio-Visual Center	25	Geography	39
Binding of Projects and Theses .	19	History	40
Comprehensive Examination ...	21	Industrial Arts	41
Course Descriptions:		Mathematics	43
General Education	57	Mentally Retarded	45
Professional Education	59	Political Science	46
Research	61	Psychology	48
Biology	62	Reading	47
Chemistry	66	Social Science	51
Elementary Education	67	Socially and Emotionally	
Elementary Guidance	71	Maladjusted	52
English	72	Speech and Hearing	53
Geography	75	History of the Graduate Program	11
History	77	Housing Facilities	23
Industrial Arts	79	Library	24
Mathematics	82	Notice of Anticipation for	
Mentally Retarded	84	Graduation	23
Political Science	86	Objectives of Graduate Program	11
Psychology	87	Permanent Certification	23
Reading	89	Placement	25
Social Science	89	Planning a Program	17
Socially and Emotionally		Refunds	19
Maladjusted	90	Research Requirement	21
Speech and Hearing	91	Residence Requirement	17
Course Load	17	Scholarship Requirement	20
Directory	93	Student Responsibility	17
Fees	18	The College:	
Graduate Council	95	History	7
Graduate Faculty and Staff	96	Location	7
		Time Limit	20
		Transcript Service	19
		Transfer of Credits	18
		Withdrawals	20

