<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Description</th>
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<tbody>
<tr>
<td>852</td>
<td>Economic Problems of Underdeveloped Areas</td>
<td>Spring. (3-0) 320, 324, or approval of department. Overcoming problems relating to early stages of economic development; investment priorities, mobilizing savings, balance of payment considerations; and policies and programs of various types.</td>
</tr>
<tr>
<td>854</td>
<td>The Emergence of Commercial Capitalism</td>
<td>Winter of odd-numbered years. 3(3-0) 318, 324. Interdepartmental with the Department of History. The rise of the mercantilist economies of Europe with stress on the growth of internal and international trade and finance during the 16th and 17th centuries.</td>
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<tr>
<td>855</td>
<td>The Industrial Revolution in Europe</td>
<td>Winter of even-numbered years. 3(3-0) 318, 324. Interdepartmental with the Department of History. The preconditions that led to the momentous changes in agriculture and industry of national income, the price level; nature and extent of government regulation of business.</td>
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<tr>
<td>857</td>
<td>Wage Theory</td>
<td>Fall, 3(3-0) 320, 324, or approval of department. Interdepartmental with the School of Labor and Industrial Relations. Advanced analysis of theories of wage determination; labor market research, economic effects of collective bargaining upon the national wage structure, output, employment, distribution of national income, the price level; nature and effects of government wage policies.</td>
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<tr>
<td>880</td>
<td>Organization and Control in the Political Economy: Institutions and Theory</td>
<td>Winter. 4(4-0) Interdepartmental with the Department of Management. Organization and technique in choice and implementation of economic (especially planning, programming) functions of political authority.</td>
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<tr>
<td>881</td>
<td>Organization and Control in the Political Economy: Selected Problems</td>
<td>Spring. 4(4-0) Approval of instructor. Interdepartmental with and administered by the Department of Management. Analysis of role and tasks, appropriate techniques and organizational structure of political agencies in planning and management of complex programs.</td>
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<tr>
<td>895</td>
<td>Graduate Reading in Economics</td>
<td>Fall, Winter, Spring, Summer. Variable credit.</td>
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<tr>
<td>900</td>
<td>Selected Problems in Advanced Macroeconomic Theory</td>
<td>Fall, Winter, Spring, Summer. 3(3-0) May re-enroll for a maximum of 12 credits. 812A, 813B, 813C; 813A. Advanced applications of economic methodology to the analysis of household and firm behavior, risk, uncertainty, and transactions costs.</td>
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<tr>
<td>901</td>
<td>Selected Problems in Advanced Macroeconomic Theory</td>
<td>Fall, Winter, Spring, Summer. 3(3-0) May re-enroll for a maximum of 12 credits. 813A, 813B. Analysis of the behavior and interaction of multimarket systems.</td>
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</tbody>
</table>

**Education — Descriptions of Courses**
102B. Personal Dimensions of Secondary Teaching
Winter. 2 credits. May not receive credit for 102B and 200, 102A.
Laboratory setting emphasizing personal values, beliefs, and behaviors related to teaching in secondary schools. Includes micro-teaching, small group processes and individual assessment activities.

102C. Secondary School Youth Culture
Spring. 2 credits. May not receive credit for 102C and 450, 102B.
Laboratory setting emphasizing characteristics of adolescent social system in and out of school. Participants include students from local schools, ESTEP members, and upperclassmen in secondary teacher education.

124. Introduction to Careers in Vocational and Practical Arts Education
Opportunities in teaching agriculture, business, home economics or industrial education and in closely related fields; analysis of student's potentialities for these fields.
A. Agricultural
Fall. 2(1-2) Interdepartmental with Agriculture.

D. Industrial Arts
Winter and Fall of even-numbered years, Spring of odd-numbered years. 2(2-0)

141A. General Industrial Arts
Winter and Fall of odd-numbered years, Spring of even-numbered years. 3(0-6)
Approval of department.
Introductory experiences in all major areas of industrial arts. Organized under a comprehensive general shop situation similar to that utilized in the modern secondary school.

141B. General Woodwork
Winter and Fall of odd-numbered years, Spring of even-numbered years. 3(0-6)
Approval of department.
Workshops in patternwork, carpentry, introductory machine work, finishing. Designed to exemplify, in both organization and equipment, desirable practices in today's secondary schools.

200. Individual and the School
Fall, Winter, Spring, Summer. 3(3-0)
Sophomores. Must be admitted to a teacher education program.

201. Educational Psychology
Spring of odd-numbered years. 3(3-0)
Approval of department.

202A. Educational Psychology: Adolescence
Fall. 2(2-0) May not receive credit for 202A and 200, 102B.

202B. Workshops in Secondary Education
Winter. 2(2-0) May not receive credit for 202B and 450, 202A.
Students select from a variety of single session workshops focusing on psychological and sociological aspects of teaching in secondary schools.

202C. Alternative Secondary School Structures
Spring. 1 credit. May not receive credit for 202C and 450, 202B.
On-site examination of a variety of secondary school organizational patterns, together with off-campus analysis of underlying theories of social organization and curriculum construction.

241A. Advanced Woodwork
Winter and Fall of even-numbered years, Spring of odd-numbered years. 3(0-6)
141B or approval of department.
Safe operation of woodworking machines in home and school shop. Care and maintenance of shop tools and equipment.

241B. General Metalwork
Winter and Fall of odd-numbered years, Spring of even-numbered years. 3(0-6)
Approval of department.
Bench metal, sheet metal, forging, welding, plating, casting, and machining. Designed to exemplify desirable facilities and course organization for the modern secondary school.

241C. Industrial Arts Crafts
Winter and Fall of even-numbered years, Spring of odd-numbered years. 3(0-6)
Approval of department.
Typical crafts in outstanding public school programs of industrial arts. Work in plastics, leather, silver, aluminum, copper, metal enameling, lapidary, ceramics, and model making.

241D. Printing and Graphics
Winter and Fall of even-numbered years, Spring of odd-numbered years. 3(0-6)
Approval of department.
Hand composition, press work, printing, bookbinding, block printing, plate making, silk screen work, and photography. Designed to exemplify a desirable approach to the work of this area in the modern secondary school.

302A. Teaching Skills Laboratory
Fall. 2(3-4) May not receive credit for 302A and 436, 202C.
Compepency based instruction and field experience in selected generic teaching skills, including classroom management, secondary reading, data analysis, grouping and sociometric techniques, instructional planning, assessment and evaluation.

302B. Laboratory in Ethnic Values of Adolescents
Winter. 1(0-5) May not receive credit for 302B and 436, 302A.

302C. Clinical Field Experience in Secondary Teaching
Spring. 12 credits. May not receive credit for 302C and 436, 302B.
Clinical experience in secondary teaching. Supervised by subject specialists, SEEP program staff, and selected public school personnel. Is equivalent to 436, Student Teaching, in regular secondary education program, but is coupled with 302A and 302B into a one year integrated sequence of experiences under common supervision.
327. Methods of Teaching—Secondary Common Elements
Fall, Winter, Spring, Summer. 2(2-0)
200; a 180-credit minimum. 327A to
327V concurrently.
Instructional issues common to all subject areas.
Selection of instructional techniques based on:
valid teacher values and beliefs systems, learner needs
and characteristics, and sound educational principles
and policies.

327A-V. Methods of Teaching—Secondary Subject Areas
Selection of instructional techniques based on
subject matter fields. Selection of instructional
techniques and policies.

A. Agriculture.
Fall. 3 credits. 200; 327 or concurrently.
B. Art.
Fall, Winter, Spring. 3 credits. 200; 327 or concurrently.
C. Business and Distributive Education.
Fall, Winter, Spring. 3 credits. 200; 327 or concurrently.
D. English.
Fall, Winter, Spring. 3 credits. 200; 327 or concurrently.
E. Foreign Languages.
Fall. 3 credits. 200; 327 or concurrently.
F. Health.
Spring. 3 credits. 200; 327 or concurrently.
G. Physical Education.
Fall, Winter, Spring. 3 credits. 200; 327 or concurrently.
H. History.
Fall, Winter, Spring. 3 credits. 200; 327 or concurrently.
I. Home Economics.
Fall, Winter, Spring. 3 credits. 200; 327 or concurrently.
Fall, Spring. 3(3-0); ED 327 or concurrently.
K. Special Education.
Fall, Spring. 3 credits. 200; 327 or concurrently.
L. Mathematics.
Fall, Spring. 3 credits. 200; 327 or concurrently.
M. Music-Instrumental.
Winter. 3 credits. 200; 327 or concurrently.
N. Music-Voice.
Winter. 3 credits. 200; 327 or concurrently.
O. Science.
Fall, Winter, Spring. 3(2-3)
200; 327 or concurrently.
P. Sociology.
Fall, Winter, Spring. 3 credits. 200; 327 or concurrently.
Q. Social Science.
Fall, Winter, Spring. 3 credits. 200; 327 or concurrently.
R. Speech Communication.
Fall, Winter, Spring. 3 credits. 200; 327 or concurrently.
S. Speech-Oratory.
Fall, Winter, Spring. 3 credits. 200; 327 or concurrently.
T. Speech-Preparatory.
Fall, Winter, Spring. 3 credits. 200; 327 or concurrently.
U. Speech-Teacher.
Fall, Winter, Spring. 3 credits. 200; 327 or concurrently.
V. German and Russian.
Fall. 3 credits. 200; 327 or concurrently.

328. Introduction to Driver and Traffic Education
Fall, Winter, Summer. 4(3-2)
Valid driver’s license. Introduction to and an
analysis of the driving task. Theory and prac­
tical application will be provided.

341A. Advanced Metaldwork
Winter and Fall of even-numbered years. 327 or concurrently.
Winter and Fall of odd-numbered years. 327 or concurrently.
Winter and Fall of odd-numbered years. 327 or concurrently.
Winter and Fall of odd-numbered years. 327 or concurrently.

341B. Industrial Mechanics
Winter and Fall of even-numbered years.
Spring of odd-numbered years. 327 or concurrently.
Spring of odd-numbered years. 327 or concurrently.
Spring of odd-numbered years. 327 or concurrently.

341C. General Electricity
Winter and Fall of even-numbered years.
Spring of odd-numbered years. 327 or concurrently.
Winter and Fall of odd-numbered years. 327 or concurrently.
Winter and Fall of odd-numbered years. 327 or concurrently.

400H. Honors Work for Elementary Education Majors
Fall, Winter, Spring. 18 credits. 200;
approval of elementary education honors advisor.

411. School Learning I
Fall, Winter, Spring, Summer. 3(3-0)

412. Human Growth and Development
Fall, Winter, Spring, Summer. 4(2-4)
Patterns in human growth and mental and
emotional development of children 3 through
12 and adolescents 12 through 18; observation
and participation in schools is an integral part of
the course.

413. Mental Health of School Children
Fall, Winter, Spring, Summer. 3(3-0)

415. Student Leadership Training
Fall, Winter, Spring. 2(0-3)

417. Introduction to Libraries and Materials Centers
Fall. 3(3-0) Juniors or approval of department.

418. Selection of School Library Materials
Winter. 4(3-2) 417.

419. Basic Reference Sources and Services
Spring. 4(3-2) 417.

420. Organization and Cataloging of Library Materials
Fall. 4(3-2) 418.

421. School Library Administration
Winter. 4(3-2) 420.
422. Field Assignment in School Libraries and Materials Centers
Spring. Eight credits. 419, 431.
School library experiences for the student. Supervised practice and observation in school library activities: book selection; circulation and reference assignments; audiovisual work; budget preparation; and exhibits.

423A. Educational Provisions for the Visually Handicapped
(430A.) Fall, Summer. 3(3-0) 424A, ASC 454.
Causes and effects of visual impairment; definitions, statistics and trends; history and legislation; program and services for children and adults through schools and institutions; medical and psychological aspects.

423B. Curriculum, Methods and Materials for the Visually Handicapped
(430A.) Fall, Summer. 4(3-2) 424A, 423C; or concurrently.
Comprehensive curriculum essentials; required teacher competencies; and special principles of instruction. Resources, materials and methods of teaching at the elementary school level. Concurrent laboratory experience in classrooms with visually handicapped pupils.

423C. Braille
(430A.) Fall, Summer. 4(3-2) 424A, ASC 454.
A laboratory course designed to teach the skills of reading and writing standard English Braille using required tools.

423D. Low Vision and Its Facilitation
Winter. Summer of odd-numbered years. 3(3-0) PSL 323.
Medical lectures and laboratory demonstrations regarding various pathologies leading to reduced vision. Visual and optical aids for utilization of residual vision. Educational implications of pathologies, reduced vision and optical aids.

423E. Daily Living Skills for Visually Handicapped Children
(430A.) Fall, Summer. 3(3-0) 424A.
Basic techniques for developing competencies in daily living skills, including grooming, eating, orientation and mobility. Readiness activities. Use of cane as mode of travel.

423F. Communication Modifications for Visually Handicapped Children
Spring. 3(2-2) 423C.
A laboratory course including Nemeth Code of Mathematics; science, music and language note-taking; preparation of classroom materials; establishing text reference materials. Emphasis upon instruction at the secondary level.

423G. Education of the Blind-Deaf
(430A.) Fall, Winter, Spring. 3(2-2) May enroll for a maximum of 9 credits. ASC 222, 277, 454; or concurrently.
Methods of teaching blind-deaf children including auditory training, speech reading, and language, including language methods and principles.

424A. Education of Exceptional Children
(484.) Fall, Winter, Spring. 3(3-0)
Emphasis on the nature of handicapping conditions and educational needs and approaches. Includes mental retardation; emotional disturbance; visual, auditory and physical handicaps.

424B. Psycho-Educational Evaluation of the Handicapped
(430C.) Spring. 3(3-0) 424A.
Screening and placement procedures. Terminology and interpretation of tests used for assessment of intelligence, aptitude, achievement, personality and interests of the handicapped.

424C. Organization of Services for the Handicapped
Fall, Winter, Spring. 3(3-0) 424A.
Identification and study of organizations important to the operation of special education programs including educational, state and voluntary agencies.

425A. Educational Provisions for Deaf Children and Youth
(430B.) Winter, Spring. 3(3-0) 424A, 436, ASC 454.
Adaptation of educational methods, materials and curriculum to the needs of individuals with severe and profound hearing impairment.

425B. Language Development for the Deaf
(430B.) Fall, Winter, Spring, Summer. 3(2-2) 424A, 454.
Theories of language development; considerations of systems in both oral and total communication philosophies; practice in manual communication.

425C. Speech Development for the Deaf
(430B.) Winter, Spring. 3(3-0) 425B; or concurrently.
Techniques for aiding development of intelligible speech in individuals with severe and profound hearing loss.

427A. Educational Provisions for the Physically Handicapped
(430C.) Fall. 3(3-0) 424A, 436.
Facilities, programs, trends, methods, materials and terminology in education of the physically handicapped. Field trips to special classes and hospital school programs.

427B. Educational Provisions for Learning Disabilities
(430C.) Fall, Spring. Summer of odd-numbered years. 3(3-0) 424A.
Characteristics and terminology of basic learning theories and learning disabilities. Educational practices and programs of major contributors. Field practicum with learning disability children.

428A. Psycho-Educational Characteristics of the Mentally Retarded
(430D.) Fall, Summer. 3(3-0) 424A or approval of department.
Cognitive, affective and social characteristics of the mentally retarded. Implications for school learning and life adjustment. Differentiation of mental retardation from related conditions.

428B. Curriculum for the Mentally Retarded
(430D.) Fall, Summer. 3(3-0) 424A or approval of department.
The development of curriculum for mentally retarded children and youth emphasizing current practices in pre-school through secondary school programs for educable and trainable mentally retarded.

428C. Educational Procedures for the Mentally Retarded
(430D.) Fall, Summer. 3(3-0) 424A or approval of department.
Methods of instruction for mentally retarded children and youth, including the development of objectives, assessment of individual abilities, the development of learning skills, and the teaching of non-academic and academic skills.

429D. Education of the Severely Retarded
Fall, Winter, Spring. 3(3-0) 424A.
Procedures in teaching severely mentally retarded children and youth.

429G. Laboratory Programs in Driver and Traffic Education
Winter, Spring. Summer. 3(3-4) 429G.
Examination of the aims, objectives and role of laboratory programs in driver and traffic education. Directed laboratory experiences with new drivers will be provided.

432A. Remedial Practices with the Emotionally Disturbed
(430E.) Fall, Spring, Summer. 3(3-0) 424A.
Psycho-educational characteristics of the emotionally disturbed are surveyed and evaluated. Additional study of various techniques which purport to educate the disturbed child are studied and evaluated.
43C. Classroom Management: Emotionally Disturbed
(430E.) Fall, Winter, Spring. 3(3-0)
43A, 432A, 432B; and student teaching with emotionally disturbed.

For student teachers in the area of emotionally disturbed only. The primary emphasis is on psycho-educational curriculum, and management of the emotionally disturbed in school settings.

433. Alcohol and Drugs:
A Social Dilemma
Winter. 3(3-0) Seniors or approval of college. Interdepartmental with and administered by the School of General Studies.

An overview investigation of the substance abuse phenomena with emphasis on alcohol. Sociological, psychological and medical aspects are discussed with implications for prevention, treatment and rehabilitation.

436. Student Teaching
Fall, Winter, Spring. Variable credit.
327 for secondary majors; approval of department; 2.0 scholastic average; ASC 477 for Special Education majors.

Participation in activities of school and community. Teaching and related activities, observation, and seminar on the problems of teaching. Undergraduates required to live in typical Michigan cities for an entire term.

441A. General Industrial Arts
Fall and Winter of odd-numbered years, Spring of even-numbered years. 3(0-3) 436 or approval of department.

Research in the facilities, materials, and organization of general industrial arts in the modern secondary school.

441B. Advanced Industrial Arts Mechanics
Winter and Fall of even-numbered years, Spring of odd-numbered years. 3(0-6) 341B, approval of department.

Typical applications of power and its control, internal combustion engines, external combustion engines, motors, drive, and transmission devices, hydraulic and pneumatic equipment experimentation with organizational patterns and teaching devices when taken for graduate credit.

441C. Advanced General Electricity
Winter and Fall of odd-numbered years, Spring of even-numbered years. 3(0-6) 341C or approval of department.

Development and construction of simple electric motors, radiators, and electronic devices. Experimentation with the development of organizational patterns appropriate to secondary schools when taken for graduate credit.

441D. Advanced Printing and Graphics
Winter and Fall of odd-numbered years, Spring of even-numbered years. 3(0-6) 241D or approval of department.

Printing, plate making, and photography. Attention to the use of programs in the area of graphics. Development of resource materials when taken for graduate credit.

441E. Advanced Industrial Arts Crafts
Winter and Fall of odd-numbered years, Spring of even-numbered years. 3(0-6) 341C or approval of department.

Designed to prepare the industrial arts teacher with sufficient breadth and skill to enable him to establish such a program in a secondary school.

442. Principles and Practices in Home Economics
Fall, Winter, Spring. 3(3-0) 436.

Analysis of the student teaching experience. Professional expectations, role of the teacher, and scope of home economics programs.

448. Teaching Internship
Fall, Winter, Spring. 3 to 15 credits.
May re-enroll for a maximum of 22 credits. 321A.

Internship teaching experience under the guidance and supervision of intern consultants and other MSU faculty. Involves a variety of activities, including informal teaching experience in a selected school.

450. School and Society
Fall, Winter, Summer. 5(3-2)
Successful completion of 430 and 448. Study of the structure, function and purposes of educational institutions. Course provides options for students in meeting professional needs organized in directed teaching and desired before entering full professional practice.

464. Standardized Tests and Testing Programs
Fall, Winter, Spring. 3(3-0) 200.

History and status of educational measurement. The sources of information about them. Interpretation of standard test scores. Norms and profiles. Local and widespread testing programs.

465. Testing and Grading
Fall, Winter, Spring. 3(3-0) 200.

Construction, use, and evaluation of teacher-made classroom tests, objective and essay, in elementary and secondary schools, and colleges. Statistical analysis of test scores and item responses. Grading problems.

470. Science Instruction in Selected Areas for Elementary and Middle School Teachers
Winter, Spring. 3(3-0) May re-enroll for a maximum of 6 credits. 325F.

Extends instructional techniques and knowledge of teaching materials in various science-related curricula for elementary and middle school children. Limited to examination of selected topics during any one term.

471B. Classroom Management in Business and Distribution Education
Fall, Spring. 4(3-3) 300, 327C concurrently or approval of department.

Principles and practices of using materials and media, using community resources, providing directed occupational experiences, how-to-individuallyize instruction; evaluating student achievement.

472. Organization and Administration of Cooperative Office and Distribution Occupations Programs
Fall, Spring. 3(3-0) 471B or concurrently or approval of department.

Development of knowledge and understanding of (1) purpose of preparatory in-school curricula and its relationship to cooperative programs of office and business occupations; (2) organization and administration of a cooperative program; (3) coordination techniques; and (4) correlation of subject-school learning with related instruction classes.

473. Individualized Study in Industrial Education
Fall, Winter. 3 credits. May re-enroll for a maximum of 9 credits. Approval of department.

Development of professional and technical competencies in industrial education using laboratory, library, school, government, and industrial settings.

475. Practicum in Developmental and Corrective Reading
Fall, Winter, Spring. 3(1-2) 325A.

Application in a field setting of instructional principles introduced in 325A. Also a broad theoretical base for teaching reading.

IDC. Canadian-American Studies
For course description, see Interdisciplinary Courses.

482. Seminars in Education
Fall, Winter, Spring, Summer. 1 to 6 credits. Approval of department.

Seminars in the various fields of emphasis in education.

483. Readings and Independent Study
Fall, Winter, Spring. 3(3-0) 2 credits. May re-enroll for a maximum of 3 credits. Juniors; approval of department.

Study on an individual basis in the various fields of emphasis in education.

484. Field Experience in Education
Fall, Winter, Spring. Variable credit. May re-enroll for a maximum of 12 credits. Approval of department.

Supervised undergraduate practicums in education.

485. Elementary Pre-Intern Seminar
Winter, Spring. 4(4-0) Approval of department. Completion of Phase I of Internship Teaching.

Selected professional and clinical educational problems are studied in a field setting as an integrated part of the pre-intern twenty-week block of courses.

486. Foreign Field Experience in Elementary Education
Winter, Spring. 4(4-0) Approval of department. 321A.

Supervised undergraduate practicum combining a study of a foreign country's culture and related educational practices as an integral part of Phase I (student teaching) of Internship Teaching in a foreign country.

800. Crucial Issues in Education
Fall, Winter, Spring, Summer. 3(3-0) approval of department.

Problem analysis of timely issues in education analyzing their legal, historical, sociological, and philosophical dimensions. Attention centered on problems of continuing concern. Particular attention devoted to the role of the teaching profession in issues involving public policy.

801. Seminars in Social and Philosophical Foundations of Education
Fall, Winter, Spring. 3(3-0) approval of department.

Identification of underlying philosophical problems in education. Use of philosophical methodologies in resolving these problems. Development of a consistent personal philosophy of education.

D. Social Criticism and Education
Fall, Summer. 3(3-0) 801A, approval of department.

Educational implications of critical analyses of contemporary society. Particular attention given to its implications for ideologies of society and for practice. Building school programs designed to cope with the cultural inadequacies.

E. Comparative Educational Philosophies
Winter, Summer. 3(3-0) 801A.

Critical analysis and evaluation of the educational philosophies of Plato and Dewey and their implications for practice.

F. Modern Philosophies of Education
Spring, Summer. 3(3-0) 801A.

Critical analysis and evaluation of leading modern philosophies of education and their implications for practice, such as: existentialism, idealism, personalism, realism, reconstructionism.
802A. Education in the U.S.A.  
Fall, 3(3-4) 802A.  
Directed to provide foreign students in graduate programs with theoretical and experiential background in American education.

802B. Education in the U.S.A.  
Winter, 3(2-4) 802A.  
Designed to provide foreign students in graduate programs with theoretical and experiential background in American education.

803. Curriculum Innovation in Elementary and Middle School Science  
Fall, Winter, Spring, Summer. 3(3-0)  
Experience in teaching, 325F or approval of department.  
Deeper examination of the objectives, learning theory, instructional strategies, classroom activities, and science content of a single elementary science program selected from among such curriculum revision projects.

804. Historical and Comparative Foundations of Education  
A. HISTORY OF AMERICAN EDUCATION  
Fall, Winter, Spring, Summer. 3(3-0)  
Approval of department.  
Development of educational thought and practice in the United States. Importance of cultural influences. A critical examination of progress toward educational goals. Implications of historical background for present problems.

B. HIGHER EDUCATION IN THE UNITED STATES  
Fall, Winter, Spring, Summer. 3(3-0)  
Approval of department.  
Development of higher education in the United States and its foreign antecedents. Survey of higher education today with attention to purposes, curriculum, organization, financing, and the major issues in these areas. Attention is also given to a world view of higher education with special focus upon the influences of United States higher education in foreign countries.

C. EDUCATIONAL HISTORY: PLATO TO LOCKE  
Winter, Summer. 3(3-0)  
Approval of department.  
Deals historically with relation of school to developing social trends. An intensive study of the works of leading figures in educational thought. Emphasis upon Plato’s Republic, Works by Aristotle, Conclusi, Locke and others examined.

D. DEVELOPMENT OF EDUCATIONAL THOUGHT AND PRACTICE IN THE MODERN WORLD  
Spring, Summer. 3(3-0)  
Approval of department.  
Deals historically with the development of modern education in the last three centuries. An intensive study of the works of leading figures in educational thought. Emphasis upon Rousseau’s Emile, Works by Pestalozzi, Herbart, Froebel, James and others examined.

E. EDUCATION IN THE WESTERN WORLD  
Fall, Summer. 3(3-0)  
Approval of department.  
Comparative study of educational systems and philosophies of Canada, England, France, Russia, and other Western countries. Visiting foreign educators. Field trip to Canada.

F. EDUCATION IN THE NON-WESTERN WORLD  
Winter. 3(2-0)  
Approval of department.  
Comparative study of educational systems and philosophies of Asia and African countries to gain insight into the American educational system. Visiting foreign educators.

805. Seminar in Urban Teaching  
Fall, Spring, Summer. 3(3-0)  
Approval of department.  
Exploration of literature related to problems, programs, and techniques of effective teaching in urban schools. Importance of student and teacher characteristics and program organization and goals will be assessed as they relate to quality education.

811. School Learning II  
Winter, Spring, Summer. 3(3-0) 410 or 411.  
Survey of research with special attention to applications to teaching and development of school programs.

812. Growth and Behavior  
Fall, Spring, Summer. 3(3-0) 412 or approval of instructor.  
Survey of research with special attention to applications to teaching and school programs.

813. Social and Emotional Behavior in the Classroom  
Winter, Spring, Summer. 3(3-0) 812.  
Survey of research on school class as a social group; the development of attitudes and values.

815B. Principles of Guidance and Personnel Services  
Fall, Winter, Spring, Summer. 3(3-0)  
Survey of guidance services and their application in educational settings—elementary and secondary. Introduction to the field of pupil personnel work in schools. Practical guidance problems are considered.

815C. Student Personnel Work in Higher Education  
Fall, Summer. 3(3-0)  
Survey of student personnel services in colleges and universities. Philosophy, organization, and administration of the personnel program at this level and of specific services provided. Opportunity to visit and study college personnel programs.

815D. Introduction to Rehabilitation Counseling  
Fall, 3(3-0)  
Open to rehabilitation counseling majors only.  
Overview of field of rehabilitation. Orientation to the Michigan Division of Vocational Rehabilitation. Rehabilitation counseling pre-practicum experience with Michigan Department of Vocational Rehabilitation.

815E. Rehabilitation Internship  
Fall, Winter. 3 to 21 credits. May re-enroll for a maximum of 21 credits. 819F.  
Supervised graduate internship in rehabilitation counseling.

815F. Overview of Rehabilitation Placement  
Winter. 3(3-0) 815D.  
An overview of the impact areas of job placement for the handicapped. Presentations on placement models, state agency approaches, pertinent legislation, and employer, counselor, and client perspectives.

815G. Assessing Vocational Potential  
Spring. 3(2-0) 815E.  
Techniques for assessing the vocational potential of disabled individuals including use of vocational tests, medical information, and occupational information for an integrated vocational appraisal.

815H. Assessing Employer Needs  
Summer. 3(3-0) 815F, 815G.  
Techniques for surveying employers, gaining entry for an interview, presenting oneself, client, and agency, and assisting clients in their search for employment.

816. Procedures in Guidance  
A. CARRIER GUIDANCE IN THE CLASSROOM  
Fall, Winter, Spring, Summer. 3(3-0) 815B; or concurrently.  
Group and individual methods providing information related to career planning, educational opportunities and personal-social concerns are analyzed. Utilization of information from placement agencies, follow-up survey, and graduate studies in career counseling are included.

B. GUIDANCE TECHNIQUES IN THE CLASSROOM  
Fall, Winter, Summer, Spring. 3(3-0) 815B; or concurrently.  
Examination of factors underlying counseling activities of teachers and administrators. Basic principles, methods, and techniques related to diagnosing, interviewing, consulting and referring counselor for special assistance are included.

C. PRACTICE IN GROUP GUIDANCE TECHNIQUES  
Fall, Winter, Spring, Summer. 3(3-0) 815A and 815B.  
Examination of group counseling techniques through analyzing and leading small groups. Presentation and discussion of current techniques and strategies for group counseling.

819A. Counseling Practice  
Fall. 3(3-0)  
Admission to 819A.  
The practice of counseling and guidance in schools, community colleges, and rehabilitation agencies.

819B. Introduction to Counseling Theory  
Fall. 3(3-0)  
Admission to 819A.  
Selected theories of counseling with special attention to the application of theories of learning in the counseling process.

819C. The Guidance Information Service  
Winter. 3(3-0) 819A and 819B.  
The use of occupational, educational and social information in counseling interviews and in guidance programs.

819D. The Counseling Process  
Winter. 3(3-0) 819A and 819B.  
The counseling process with emphasis given to students learning a systematic approach to counseling. Students practice interviewing skills in a counseling laboratory.

819E. Counseling and Consulting Strategies  
Spring. 3(3-0) 819C and 819D.  
Selected remedial and preventative counseling techniques will be studied. Methods and techniques for assisting with individual and environmental change will be examined. Procedures for consulting with parents, teachers, and agency personnel will be studied.
819F. Counseling Practicum I
Spring. 6(4-8) 819G and 819D.
Supervised counseling experienced in selected schools and agencies followed by analysis and critique of these experiences through group and individual consultation with instructor.

819G. Counseling Practicum II
Fall. 6(4-8) 819F.
Continuation of 819F.

819H. Development of Counseling Services
Fall. 3(3-0) 819F.
A systems approach to the management of pupil personnel services. Students will use the approach in solving simulated problems.

819J. Group Procedures in Counseling
Summer. 3(3-0) 819F.
An examination of theories of group counseling with special attention to goal-directed groups. Tapes of group counseling will be analyzed and practice in leading groups under simulated conditions will be provided.

819K. Research in Counseling
Summer. 3(3-0) 819F.
Emphasis on research methods useful to counselors: measuring counseling outcomes, developing local test norms and expectancy tables, evaluating guidance services, studying behavior change in the single case.

820. Principles of Curriculum Improvement
Fall, Winter, Spring, Summer. 3(3-0)
Experience in teaching and approval of department. Principles of curriculum improvement will be developed through the critical analysis of practices found in public schools.

821A. Curriculum Construction
Fall, Winter, Spring, Summer. 3(3-0)
Approaches to curriculum construction; organization and function of personnel; initiating and evaluating curriculum change; curriculum research.

821B. Adult Education: A General Survey
Fall, Spring, Summer. 3(3-2)
Conducting patterns of programs for early adolescents; age range and characteristics of middle school pupils; problems and potential of the middle school.

821C. Work Experience in the Curriculum
Fall. 3(3-0)
Work environment in schools, colleges, agencies and business and industry; educational objectives and outcomes; administrative aspects of work experience programs, research in the field.

821D. Seminar in Middle School Curriculum
Fall, Spring, Summer. 3(3-0)
Community College
Fall, Winter, Spring, Summer. 3(3-0)
Programs, functions, and offerings of the community college.

822B. Adult Education: A General Survey
Fall, Spring, Summer. 3(3-2) Approval of department.
Overview of extent, origins, forms, purposes, content, scope of methods and guiding theories of continuing education and its significance for individuals, institutions, communities and nations.

822F. Occupational Analysis and Course Construction in Vocational Education
Winter, Summer. 3(3-0) Approval of department.
Techniques of analyzing an occupation to determine the processes, instructional units and curricular arrangements.

822G. Curriculum Construction in Industrial Education
Winter, Summer. 3(3-0) Approval of department.
Selection of general and specialized areas of study in junior, senior high and adult industrial education courses. Industrial problems, their relation to a particular community and its needs in relation to instruction.

822I. Organization and Management of School Shops
Spring, Summer. 3(3-0) Approval of department.
Planning and organization of school shops in terms of adequacy, adaptability, efficiency, economy, and safety.

822N. Principles and Programs of Vocational Education and Practical Arts
Fall, Summer. 3(3-0)
Principles of vocational and technical education, comprehensive school program characteristics, program planning. Special emphasis is given to programs in agriculture, distributive, health, home economics, industrial, and office education. For vocational and practical arts teachers and local coordinators and directors of programs.

822Q. Current Issues and Developments in Occupational Education
Fall, Winter, Spring, Summer. 3(3-0)
Examination of issues and problems in vocational education. Special emphasis on the emerging role of various governmental and private agencies in manpower development. Designed for majors in fields other than vocational education.

822S. Developing Occupational Curriculum in Two-Year Colleges
Fall, Winter, Spring, Summer. 3(3-0) 822N, 822A, or approval of department.
Occupational curriculum development and course construction. Developmental projects involving professional college faculty, students and employers. For prospective teachers and administrative personnel in two-year colleges.

823. Instructional Simulation
Winter. 3(3-0) Teaching experience. Design and use of simulations and instructional games in the curriculum for development of social skills, values and affects.

824. Seminar in Instructional Development
Winter, Summer. 3(3-0)
Skills and competencies in applying instructional systems principles to learning and teaching problems.

825. Seminar in Instructional Television
Spring, Summer. 3(3-0) Approval of department. Interdepartmental with the Department of Television Use in Instruction, particularly as it concerns the learner, the classroom teacher, the instructional developer and the administration.

827. Improving Secondary Social Studies Instruction
Fall, Spring, Summer. 3(3-0) Teaching experience.
Recent literature, curricular materials, and research in secondary social studies. Individual projects on new curricular developments in one of the following areas: history, geography, civics, economics, sociology, anthropology, or psychology.

828B. Teaching Adult and Young Farmer Classes in Agriculture
Fall, Summer. 3(3-0) Approval of department.
Objectives of adult education in agriculture. Organizing and promoting classes, course planning, instructional procedures, follow-up and evaluation.

828C. Continuing Education: Learning Theory and Program Development
(928A) Winter, Summer. 3(3-2)
Twelve credits in Education, approval of department.
Theories of adult learning and community development, their implications for design and management of continuing education, and alternative methods for integrating social and physical environments, materials and personnel to increase knowledge and enhance personal and social maturity.

828D Instructional Methods in Business and Industry
Winter, Summer. 3(3-0) Approval of department.
Designed for personnel responsible for the training function. Various instructional methods examined with emphasis on the conference method of problem solving.

828E. Principles and Problems of Instruction in Higher Education
Fall, Winter, Spring. 3(3-0) Approval of department.
Instructional problems in the various areas of higher education with emphasis on common principles underlying each of them.

830A. Special Methods and Materials of Teaching
Fall, Winter, Spring. 3(3-0)
May re-enroll in different subject-matter areas for a maximum of 15 credits. Graduate student in education; experience in teaching; undergraduate course in the area; approval of department.
Develops an understanding of the basic principles and techniques of effective instruction in the various subject-matter areas in the school curriculum. Students will be expected to investigate research related to the improvement of instruction in a special field of study.

830C. Problems in Elementary Reading Instruction
Fall, Winter, Spring. 3(3-0)
Graduate student in education; undergraduate methods course in reading; approval of department.
For experienced teachers. Includes consideration of the basic aspects of ability to read, desirable reading attitudes, habits, and skills. Practices and materials used in reading programs are examined and appraised. Outstanding investigations dealing with problems in this area are studied and evaluated.

Education — Descriptions of Courses

A-51
830D. Methods in Reading at the Secondary Level
Fall, Winter, Spring, Summer. 3(3-0)
Graduate students; teaching experience; approval of department.
An analysis of the reading problems of high school and college students. Material and procedures for identifying the reading attainments and needs of the individual. Basic principles and techniques for improving reading skills.

830E. Diagnosis of Reading Difficulties
Fall, Winter, Spring, Summer. 3(2-2)
Graduate students in education; 830C or 830D; approval of department.
Causes and types of reading retardation are considered. Procedures for working with retarded readers are examined. Laboratory experiences in administering and interpreting standardized and informal tests are provided.

830F. Clinical Practice in Remedial Reading
Fall, Winter, Spring, Summer. 3(2-2)
Graduate students in education; 830C or 830D; approval of department. Students work with individual cases, observe and practice group procedures in the University reading clinic.

830G. Methods of Teaching Agricultural Mechanics
Winter. 3(3-0) Approval of department.
Methods of instruction including program planning, scheduling, use of teaching aids, management of buildings, facilities and equipment; the selection, organization, and evaluation of activities in farm mechanics.

831A. Educational Media in Instruction
Fall, Winter, Spring, Summer. 3(0-3) Students may not receive credit in both 431 and 831A.
Improvement of teaching through educational media. Learning principles; nature and application of films, filmstrips, slides, transparencies, flat pictures, development boards, models, tape recordings, radio and television, and equipment operation.

831B. Graphics Design and Use in Instruction
Fall, Winter, Spring, Summer. 3(3-0) 831A or approval of department.

831C. Photography in Instruction
Fall, Winter, Summer. 3(3-0) 831B, or approval of department.
Design, production, and use of photographic materials for instruction. Production of photographs, slides, filmstrips, overhead transparencies, sound tapes, and motion pictures. 35mm still camera (preferably a single lens reflex) required.

831D. Instructional Materials in Vocational and Practical Arts Education
Winter of odd-numbered years, Summer. 3(3-0) Approval of department.
For teachers of agriculture, business, home economics, industrial arts and vocational-industrial education. Selection, preparation and use of distinctive materials that characterize shop and laboratory instruction.

831E. Planetarium Instruction and Management
Summer. 4(4-0) Approval of department.
Planning and instruction using modern planetarium facilities.

832. Advanced Methods and Materials in Special Education
A. VISUALLY HANDICAPPED CHILDREN AND YOUTH.
Spring. 3(0-2) 423A, B, C, 494A: student teaching or clinical experience with visually handicapped children or approval of department.
An analysis of theories and research in education and related disciplines of educational practice. Relationship to curriculum development, instructional modifications and guidance of pupils in a variety of organizational arrangements.
B. DEAF CHILDREN AND YOUTH.
Winter, Summer. 3(3-0) 425A, student teaching or clinical experience with acoustically handicapped children or approval of department.
A review of recent research, and a study of its implications for the education of deaf children. History, legislation, service agencies, social adjustment, educational and vocational programs will be investigated and discussed.

833. Teaching Elementary School Mathematics
Fall, Summer. 3(3-0) Experience in teaching and approval of department.
Advanced methods and materials used in teaching mathematics concepts in the elementary school.

834. Teaching Elementary School Geometry
Winter. Summer of odd-numbered years. 3(3-0) Experience in teaching and approval of department.
Advanced methods and materials used in teaching concepts of informal geometry, coordinate geometry, metric geometry, transformational geometry and measurement topics.

835. Teaching Elementary School Arithmetic
Spring. Summer of even-numbered years. 3(3-0) Experience in teaching and approval of department.
Advanced methods and materials used in teaching concepts of the whole, integer, rational and real number systems including systems of numeration.

836. Elementary Education: School Mathematics Instruction
Winter, Summer. 3(3-0) Experience in teaching and enrolled in mathematics education.
Review of the literature-theoretical and research -on instruction in school mathematics including planning, group instruction, individual instruction, evaluation and instructional materials.

837A. Supervision of Student Teaching
Summer. 3(3-0) Approval of department.
Designed to assist supervising teachers in guidance of student teachers. In addition to a general overview of the problems of student teaching, the following topics will be studied: trends in teacher education, orientation of student teachers to student teaching, responsibilities of the supervising teacher, relationships between student teachers and guidance personnel, conferences with student teachers, and evaluation of student teaching.

1DC. Interdisciplinary Seminar on Africa
For course description, see Interdisciplinary Courses.

839. Program Development in Distributive Education
A. PRINCIPLES AND ORGANIZATION
Fall, Summer. 3(0-3)
Goals, historical background, and trends; contributions to individual development and manpower needs; program organization for secondary, post-secondary, and adult levels; overview of curriculum and instructional strategies; program evaluation.
B. CURRICULUM DEVELOPMENT
Winter, Summer. 3(3-0) 839A or approval of department.
Adapting content of marketing and related disciplines to develop occupational competencies; selection of learning experiences; materials and media; development of performance goals related to career objectives; scope and sequence patterns.
C. INSTRUCTIONAL STRATEGIES
Spring, Summer. 3(3-0) 839A and 839B or approval of department.
Selecting appropriate teaching strategies; use of the project method, laboratory simulations, on-the-job training, youth organizations, and other methods; evaluation of student achievement.
D. SEMINAR IN DISTRIBUTIVE EDUCATION
Summer. 2 to 3 credits. Advanced graduate standing or approval of department.
Focus on current issues and problems, curriculum development projects, and research; emphasis upon individual investigations and writing.

840. Improving Instruction in Office Subjects
Improving instructional processes through research findings, readings, and experience: Objectives, scope and sequence, diagnosis of learning difficulties, selecting learning activities, evaluating achievements, selecting materials, media and equipment.
A. TYPWRITING AND OFFICE PROCEDURES
Summer. 3(3-0) Experience in teaching.
B. SHORTHAND AND TRANSCRIPTION
Summer. 3(3-0) Experience in teaching.
C. DATA PROCESSING
Summer. 3(3-0) Experience in teaching.
841. Driver and Traffic Education

A. INNOVATIONS IN DRIVER AND TRAFFIC EDUCATION
   Fall, Summer. 3(3-0)
   Explanation of the broad spectrum of innovations in driver and traffic education. Particular emphasis will be placed on their adoption and application for improving classroom and laboratory instruction.

B. THE HIGHWAY TRANSPORTATION SYSTEM
   Fall, Summer. 3(3-0)
   Overview of development, management, and operation of the highway transportation system and its implications for traffic safety educators.

C. PRINCIPLES OF TRAFFIC COMMUNICATIONS
   Winter, Summer. 3(3-0)
   Specialized problems involved in traffic safety communications in a transportation center society. Design and manipulation of the communication process to better understand and influence driver behavior. Planning public information and community support programs.

842A. Curriculum and Program Planning

Fall. 3(3-0)
Needs and goals in education and manpower training for business, general business, and economics education; program structure; professional and youth organizations; related legislation and historical background.

842B. Contemporary Issues in Education for Business

Summer. 3(3-0)
Twenty-four graduate credits or approval of department.

Analysis and discussion of selected issues relating to: 1. education for business—structure, manpower needs, legislation, curriculum, training by government and business, 2. curriculum and instruction. Emphasis upon problem-solving and extensive reading.

842D. Seminar-Research in Business Education

Summer. 2 to 8 credits. Prior course in research or approval of department.

Emphasis on review of research and developmental projects and application to business education program; study of design particularly to student's personal research interests.

843. Program Development in Office Education

A. STRATEGY AND STRUCTURE
   Fall, Summer. 3(3-0) Twelve graduate credits in Business or Vocational Education or approval of department.

Criteria of vocational office education planning/organizing/programming/curriculum patterns including block-time and senior intensive; content scope and sequence; program evaluation; special attention to legislation and curriculum research.

B. CLASSROOM SYSTEMS
   Winter, Summer. 3(3-0) Approval of department.

The initiation of new classroom systems in office education, their scope and sequence of office education systems, their curriculum content and instructional objectives. Emphasis on follow up and evaluation design.

C. SEMINAR
   Spring, Summer. 2 or 3 credits. Advanced grade standing or approval of department.

Focus as needed on current issues and problems in curriculum development projects; contemporary research. Emphasis on individual investigations and writing.

844. Research in Elementary Social Studies Instruction

Spring of even-numbered years. 3(3-0)

Focus on role, function, and design of research studies on the improvement of social studies instruction in elementary and middle schools.

845. New Social Studies Curricula

Spring of odd-numbered years. 3(3-0)

Focuses on new and emerging elementary and middle school social studies curricula. Specific attention will be given to selection and analysis of curricular models, programs, and materials; adaptation to specific needs of schools.

846. Specialized Methods and Materials for Teaching Elementary Science

Fall, Spring, Summer. 3(3-0) Experience in teaching; approval of department.

Develops additional competency in science education for the experienced teacher at elementary and middle school levels. Specialized methods for individual and group instruction are emphasized and evaluated.

847. Seminar in Elementary Science Education I

Winter, Summer. 3(3-0) Experience in teaching; 325F or 848 or approval of department.

Philosophical and psychological concepts relevant to the objectives and implementation of science education and a review of research in teaching science at the elementary level.

848. Individual Problems in Elementary and Middle School Science Education

Fall, Winter, Spring. 1 to 3 credits. May re-enroll for a maximum of 6 credits. 849 or 847; teaching experience. Identification of one or more problems in elementary or middle school science to be studied independently. Problem analysis would typically include readings, action research and original composition.

849. Trends and Issues in Language Arts

Fall, Summer. 3(3-0) or approval of department.

Fall, Summer. 3(3-0) or approval of department.

To investigate and criticize trends, issues and research in language arts programming and instruction.

550. Teacher and the Administrative Leadership

Fall, Winter, Spring. 3(3-0) Twelve credits in Education and approval of department.

Not intended for school administration majors. Theory and practice underlying administrative roles of administrative leadership in schools and communities, and teacher's roles in administration.

851. Foundations of Administration

Emphasizes basic administrative theory and research, focuses on current trends and emerging trends in such problems and issues as personnel, plant, finance, community school programs, and instructional improvement. Intended primarily for persons actively preparing for administrative positions in schools and other educational agencies.

A. THEORETICAL ORGANIZATION
   Fall, Winter, Summer. 3(3-0) Approval of department.

B. PRACTICE AND PROBLEMS
   Winter, Spring, Summer. 3(3-0) or approval of department.

852. Administration of Educational Institutions

Elements of the nature and scope of responsibilities of areas in educational administration. Designed to serve as an initial application of administrative theory for those aspiring to one of the several areas.

A. ELEMENTARY SCHOOL ADMINISTRATION
   Winter, Summer. 3(3-0) Twelve graduate credits in Education including 851A, 851B, or approval of department.

B. SECONDARY SCHOOL ADMINISTRATION
   Fall, Winter, Spring. Summer. 3(3-0) Twelve graduate credits in Education including 851A, 851B, or approval of department.

C. INSTRUCTIONAL SUPERVISION
   Fall, Summer. 3(3-0) Twelve graduate credits in Education including 851A, 851B, or approval of department.

D. BUSINESS ADMINISTRATION OF SCHOOLS
   Winter, Summer. 3(3-0) Twelve graduate credits in Education including 851A, 851B, or approval of department.

852E. Middle School Administration

Winter, Summer. 3(3-0) Twelve graduate credits in education including 851A, 851B, or approval of department.

Organization and administrative aspects of middle schools. Emphasis on basic characteristics of a middle school and how the administrator implements these characteristics. Research on middle schools studied.

853. Administration of Educational Programs

Designed to promote the study of application of theory and research to specialized program areas. Personnel will normally select the section allied to their major program area.

A. AUDIO-VISUAL PROGRAMS
   Winter, Summer. 3(3-0) Twelve graduate credits in Education including 850 or approval of department.

B. VOCATIONAL EDUCATION PROGRAMS
   Summer. 3(3-0) Twelve graduate credits in Education including 850 or approval of department.

C. PUPIL PERSONNEL PROGRAMS
   Fall, Spring. Summer. 3(3-0) or approval of department.

D. ADMINISTRATION OF SCHOOLS
   Winter, Summer. 3(3-0) Approval of department.

Organization and administrative aspects of special education programming. Federal, state, intermediate and local district level programs in special education are reviewed.
865. Research in Educational Administration
Fall, Winter, Spring, Summer. 3(3-0)
851A, 851B, 887.
The identification of an individual research problem and the application of principles and techniques of educational research in seeking a solution to the problem.

861. Elementary School Curriculum
Winter, Summer. 3(3-0) Regular admission to graduate program and approval of department.
Curriculum definition as related to purposes of the elementary school; foundations and rationale for curriculum study, revision, and improvement; procedures and organizational aspects of curriculum planning, key components of new educational curricular designs.

862. Elementary Education Trends and Current Research
Fall, Winter, Spring, Summer. 3(3-0)
Completion of 27 credits of graduate course work on a regular program and approval of department.
Advanced graduate students (those nearing completion of the M.A. program or on the doctoral program) are given an opportunity to explore current research activities.

863. Trends and Issues in Children's Literature
Winter and Summer of odd-numbered years. 3(3-0) 830A.
Provides graduate students an opportunity to discuss and evaluate current research related to children's literature as well as juvenile books and to conduct an in-depth study in the field of children's literature.

864. The Teaching of Critical Reading
Winter and Summer of even-numbered years. 3(3-0) 830A.
Provides graduate students an opportunity to study current research in critical reading, to identify and evaluate appropriate instructional materials, and to conduct an in-depth study in the field of critical reading.

865. Principles of Educational Measurement
Winter, Spring, Summer. 3(3-0) 464 or 465; 869.
Nature of measurement and types of scales. Units, scores, norms, sampling, item analysis, batteries and profiles. Principles of reliability and validity. Use of test scores in decision making.

866. Appraisal of Individual Intelligence and Personality
A. INDIVIDUAL MEASUREMENT I
Winter, Summer. 3(3-0) 464 or 465 or 465 or PSY 415; approval of department.
B. INDIVIDUAL MEASUREMENT II
Fall, Spring, Summer. 3(3-0) 464 or 465 or PSY 415; approval of department.
Measurement of intelligence with the Wechsler scales. Observation, practice, supervision, and interpretation.
C. PERSONALITY ASSESSMENT IN EDUCATION
Spring. 3(3-0) 464 or 465; 813.
Study of general personality structure and methods in personality assessment related to education.

867. Educational Research Methods
Fall, Winter, Spring, Summer. 3(3-0)
Approval of department.
Rationale for and methods of research in education. Emphasis is given to the identification of researchable problems and the interpretation of research studies in the student's major field.

868. Evaluation of Programs of Vocational and Practical Arts Education
Fall, Winter, Spring, Summer. 3(3-0)
Approval of department.
Evaluation principles and practices in the specialized areas of agricultural, business, and industrial education.

869. Quantitative Methods in Educational Research
Fall, Winter, Spring, Summer. 4(3-1)
Protest and approval of instructor.
Application of descriptive statistical techniques to educational data. Introduction to estimation and tests of hypotheses. Interpretation of statistical reports.

871. The Secondary School: Role, Function and Structure
Fall, Winter, Spring, Summer. 3(3-0)
Teaching experience in secondary school classrooms.
Examines the role, function and structure of various secondary schools. Emphasizes the relationships that do and should exist with other segments of the educational enterprise as well as with external agencies, organizations and institutions.

872. The American Secondary School Student
Fall, Winter, Spring, Summer. 3(3-0)
Teaching experience in secondary school classrooms.
Focuses upon the issues and problems confronting the secondary school student as an adolescent and/or young adult. Attention is given to the relevance of school curriculums and staff competencies to meeting these needs of secondary students. Emphasis will be placed upon developing guidelines for needed change.

873. Student Development and College Personnel Services I
Fall. 3(3-0) Majors in College Student Personnel; approval of department.
History, development, philosophy, organization and administration of college student personnel as a profession. Emphasis upon the college student as an individual and a study of services, programs and staff skills needed to provide for his growth, needs and development.

874. Student Development and College Personnel Programs II
Winter. 3(3-0) Majors in College Student Personnel; approval of department.
Emphasis upon the student as a member of groups: peer and group influence and behavior; student organizations and group activities; services, strategies and staff skills for conducting such programs.

875. Student Development and College Personnel Programs III
Spring. 3(3-0) Majors in College Student Personnel; approval of department.
Study of living and learning environments and related staff skills, facilities and programs which effect student behavior and development; examination of personal qualities, professional organization and other factors associated with being a professional person.

876. The American College Student
Fall, Winter, Spring. 3(3-0) Students in graduate degree programs or approval of department.
Analysis of research data, theory, hypotheses and strategies regarding the nature of the college student and his learning environment.

881. Workshops in Education
Fall, Winter, Spring. Summer. 1 to 6 credits. May re-enroll for credit. Approval of department.
Laboratory approach which provides opportunities for experienced educational personnel to concentrate their study on common administrative and supervisory problems.

882. Seminars in Education
Fall, Winter, Spring, Summer. Variable credit. Approval of department.
Seminars in the various fields of emphasis.

883. Readings and Independent Study in Education
Fall, Winter, Spring, Summer. Variable credit. Approval of department.
Study on an individual or group basis in the various fields of emphasis.

884. Laboratory and Field Experience in Education
Fall, Winter, Spring, Summer. Variable credit. Approval of department.
Supervised graduate practicums, observation, internships, and externships in the various areas of emphasis.

887. Seminar: Continuing Education Leadership in Local Communities
Spring. 3(2-2) May re-enroll for a maximum of 6 credits. Major or approval of department.
Formal and non-formal community education for adults. Administration, agency cooperation, accountability, ethical and political concerns, managing controversy, and balancing objective study with advocacy in programs of personal and community development.

889. Research
Fall, Winter, Spring, Summer. 2 to 12 credits. Approval of department.

901. Educational Sociology: Seminar (500.D.) Fall, Winter, Spring. 3 or 4 credits.
Approval of department. Interdepartmental with and administered by the Department of Sociology.

Objectives, content, methodology, research problems of comparative and international education analyzed. Social and cultural forces affecting educational planning and institution building studied. Agencies involved in international education identified.

911. Educational Psychology Seminar
Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 15 credits. Doctoral candidates in educational psychology. First enrollment must be in fall. Review of major areas and critical analysis of research problems and professional issues.
915A. Counseling Proseminar I  
Fall. 3(3-0) Admission to doctoral study in counseling or pupil personnel administration.
Orientation to counseling and pupil personnel administration. Examination of historical and philosophical bases, selection and training practices, and evaluation of outcomes. Apprenticeship experiences in instruction and research.

915B. Counseling Proseminar II  
Winter. 3(3-0) 915A.
Continuation of 915A.

921. Curriculum Research Seminar  
Spring. 3(3-0) 867; 821A.
Identification of researchable variables in the curriculum of an educational institution or program. Description of descriptive, evaluative and experimental studies within ongoing complex social systems.

922. Research on Teaching  
Fall. 3(3-0) 867.
Implications from findings of the major investigations into teaching processes. Relates to the curriculum of in-service and pre-service teacher education.

931A. Seminar in Instructional Technology: Research and Development  
Fall. 3(3-0) Approval of department.
History and development of instructional technology emphasizing leaders, events, research and legislation affecting use of instructional technology in education.

931B. Seminar in Instructional Technology: Research and Development  
Winter. 3(3-0) Approval of department.
Analysis and appraisal of selected research studies in instructional technology with attention to purposes, rationales, assumptions, designs, methodologies and findings.

931C. Seminar in Instructional Technology: Research and Development  
Spring. 3(3-0) Approval of department.
Analysis and appraisal of student's dissertation proposals and reports on surveys of related literature.

933. Elementary Education: School Mathematics Learning  
Spring. 3(3-0) Experience in teaching and enrolled in mathematics education.
Extensive review of the research of Bruner, Piaget, Gagne, etc., on how students learn in general and how they learn mathematics in particular.

934. Elementary Education: School Mathematics Curriculum  
Fall. 3(3-0) Experience in teaching and enrolled in mathematics education.
Emphasizes the place of mathematics in the curriculum, the strands of mathematics that should be included—the ordering of topics of each strand and emphasis of the respective strands.

947. Seminar in Elementary Science Education II  
Spring of odd-numbered yrs. 3(3-0) 847; enrolled in graduate program.
Analysis of research in science education at the elementary level in such areas as curriculum, methodology, and evaluation. Application of research to individual investigations.

949. Advanced Seminar in Language Arts  
Spring. 3(3-0) 849.
Development of language arts programs in elementary education, preparation of language arts teachers, analysis of research in language arts and those substantive disciplines related to language arts.

950. Theory and Practice of Administration  
Fall, Winter, Spring, Summer. 3(3-0) Approval of department.
Administrative process exemplified in agencies such as schools, colleges, universities, government agencies, business enterprises, and voluntary organizations. Relation of administrative theory to the practice of administration and to the knowledge of human relations in a free society.

951. Community Relations  
Winter, Spring, Summer. 3(3-0) Approval of department.
Communications strategies and problems for administrators of educational institutions. Problem identification and analysis are stressed.

952. Educational Finance  
Fall. 3(3-0) Approval of department.

953. Education Law  
Spring. 3(3-0) Approval of department.
Designed to discover general legal principles and examine laws and lawmaking agencies that affect educators and educational institutions and appropriate means to influence law development.

954. Planning Facility Learning Environments  
Winter, Summer. 3(3-0) Approval of department.
A multi-discipline approach to the learning environment of the individual through life-long educational experiences. Role of the educator and specialists in facilitating the educational program. Sites, buildings and equipment.

955. Educational Personnel Administration  
Fall, Spring, Summer. 3(3-0) Approval of department.
Recruitment, selection, orientation, training, salary and fringe benefits, welfare, morale, negotiations, etc., to assist the administrator to function more effectively with personnel.

956. Planning Change in Educational Organizations  
Winter, Summer. 3(3-0) Approval of instructor.
Analysis of research, theory and practice of the change process in educational organizations. Planned change concepts and methods are examined and tested by laboratory and field experiences.

960. Counseling Theories  
Winter, Summer. 3(3-0) Approval of instructor.
Survey of counseling theories and research with emphasis on current issues which have implications for counseling practice or for counselor education.

965A. Psychometric Theory  
Spring. 3(3-0) 865, 969B.
Advanced theoretical aspects and derivation of formulas involved in reliability, validity, item analysis, weighting and differential prediction, sampling and norm construction, and the relation of item characteristics to test statistics.

965B. Problems of Educational Measurement  
Fall, Winter. 3(3-0) Approval of department.
Advanced consideration of the logical and philosophical bases of educational measurement. Theory of test planning and development and evaluation. Problems of administration and scoring. Issues in test use.

965C. Evaluation of Higher Education  
Spring. 3(3-0) 828E.
Ways in which evaluation takes place in higher education: course examinations, grading, comprehensives, examinations, teacher evaluation, institutional evaluation, state surveys, and national studies of higher education problems.

967. Advanced Research Methods in Education  
Fall, Spring. 4(3-1) 867 and 869, or 969B.
Principles and techniques in survey research with limited consideration of content analysis and observational studies. Sampling, instrumentation, data collection, and data analysis.

968B. Research Analysis in Personnel Work  
Winter, Summer. 3(3-0) Approval of department.
Critical review of research and literature in counseling and personnel services.

969. Quantitative Methods in Educational Research  
B. Advanced Quantitative Methods in Educational Research  
Fall, Winter. 4(3-1) 869 or present and approval of instructor.
Principles and techniques in the application of inferential statistics to educational data with emphasis on the analysis of variance and multiple comparison procedures. Overview of regression techniques.

970. Reading and Research in Student Teaching  
Spring. 3(3-0) Approval of department.
Literature, research and practice in teacher education field experiences. Concentration on issues, problems and skills needed in supervision of student teachers.

973. College Student Personnel Administration I  
Fall. 3(3-0) Approval of department.
Emphasis on planning, organization, financing, research, evaluation and administration for programs and services which exist primarily to serve individual student needs: counseling, orientation, health, placement, financial aids, etc.
Description — Education of Courses

974. College Student Personnel Administration II
Winter. 3(0-3) Approval of department.
Student organizations and activities; student unions; on and off-campus living environments.
Emphasis on planning, organization, financial, research, evaluation and administration of these programs and services.

975. College Student Personnel Administration III
Spring. 3(0-3) Approval of department.
Analysis of student rights and responsibilities; academic freedom; regulation of student conduct; systems of governance and judicial processes; legal basis for student personnel programs and administration.

982. Seminars in Education
Fall, Winter, Spring, Summer. Variable credit. Approval of department.
Seminars in the various fields of emphasis.

983. Readings and Independent Study in Education
Fall, Winter, Spring, Summer. Variable credit. Approval of department.
Study on an individual or group basis in the various fields of emphasis.

984. Laboratory and Field Experience in Education
Fall, Winter, Spring, Summer. Variable credit. Approval of department.
Supervised advanced graduate practicum, observation, internships, and externships in the various areas of emphasis.

985. Counseling Pre-Practicum
Spring. 3(2-1) Directs states in college counseling or a related area and approval of department.
Seminar emphasizing establishing good interpersonal relationships, self-understanding, an understanding of psychodynamics, and text interpretation as preparation for assuming counseling responsibilities. Approach is didactic and experiential with limited contacts with clients.

986A. Counseling Practicum I
Fall. 3(0-3) 986A or approval of department.
Supervised experience working with college students in a counseling relationship. Group discussions, group supervision and observation of counseling, interviews, and individual supervision.

986B. Counseling Practicum II
Winter. 3(0-3) 986A.
Supervised experience working with college students in a counseling relationship. Group discussions, group supervision and observation of counseling, interviews, and individual supervision.

986C. Counseling Practicum III
Spring. 3(0-3) 986A.
Supervised experience working with college students in a counseling relationship in the residence halls. Individual supervision, increased client contact hours, and participation in staff activities.

987A. Seminar: Continuing Education and Social Policy
Fall. 3(0-3) May re-enroll for a maximum of 6 credits. Major or approval of department.
Continuing education, as social force impacting and ingredient in corporate policy. Examination of domestic and foreign examples of interaction between social policy and continuing education.

987B. Seminar: Continuing Education in Higher Education Institutions
Winter. 3(0-3) May re-enroll for a maximum of 6 credits. Major or approval of department.
Patterns, problems, and potential for continuing education in two and four year colleges. Problems of governance, reward system, leadership roles, etc.

988. Behavioral Counseling Laboratory
Fall, Winter, Spring. 1 to 6 credits. May re-enroll for a maximum of 21 credits.
Supervised experience in behavioral counseling (individual and group), community consultation, applied behavioral research, journal manuscript preparation, psychophysical materials, and instructional management.

999. Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

ELECTRICAL ENGINEERING AND SYSTEMS SCIENCE
College of Engineering

Electrical Engineering EE

275. Consumer Electronics
Fall, Winter, Spring. 3(0-3)
Electronic circuit components and devices; their operation in transmitters, receivers, stereo amplifiers, etc. Electronic measurements, magnetic recording, speaker systems, and other topics will be considered.

300. Electric Circuits I
Fall. 4(4-0) MTH 113.

301. Electric Circuits II
Winter. Spring. 4(4-0) 300, MTH 214.

302. Basic Electronic Circuits
Spring. 4(4-0) 301, MTH 215.
Volt-ampere characteristics of diodes and transistors. Voltage, current and power amplification. Stability, transient and high-frequency effects. Feedback, oscillators and operational amplifiers.

303. Electronics Laboratory I
Winter. Spring. 1(0-3) 300 or concurrently.
Electronic test equipment and measurement fundamentals. Experimental verification of topics covered in 300 and 301. Computer-aided circuit analysis and design.

304. Electronics Laboratory II
Fall. 1(0-3) 302.
Experimental verification of topics covered in 302 and single stage and multistage transistor amplifier design and analysis. Applications of linear integrated circuits. Computer-aided circuit design.

305. Electromagnetic Fields and Waves I
Fall, Winter. 3(3-0) MTH 215, PHY 288.
Vector analysis. Electrostatic fields; EM sources, scalar potential, Poisson's and Laplace's equations, dielectric media, capacitance, and energy storage. Boundary value problems for electrostatic fields.

306. Electromagnetic Fields and Waves II
Winter. Spring. 3(3-0) 305.
Magnetostatic fields; EM sources, vector potential, magnetic media, inductance, and energy storage. Time-dependent fields and Maxwell's equations; energy conservation, potential theory, and radiation concepts.

307. Electromagnetic Fields and Waves III
Spring. Summer. 3(3-0) 306; 308 concurrently.
Experimental investigation of charged particle motion in EM fields, dielectric and magnetic properties and materials, probing of currents and charges, and propagation of transient and steady-state waves. Digital computer solutions for EM field and wave problems.

345. Introduction to Electronic Instrumentation Systems
Fall. Winter. 4(3-3) PHY 288.
Basic electronic concepts; passive and active components; operational amplifiers; switching devices, equivalent circuits, transducers, signal conditioning, recording, data management; basic elements of control.

400. Current Topics in Electrical Engineering
Winter. 1(0-3) 307 concurrently.
Topics include communication systems, instrumentation systems and data management, advanced laboratory techniques, modeling, circuit design, computer analysis.

403. Special Problems
Fall, Winter, Spring, Summer. 1 to 4 credits. Approval of department.
Investigation of a topic in electrical circuits or systems compatible with the student's prerequisites, interest, and ability.

415. Control Systems
Fall. 3(3-0) M E 455, MTH 334.
Formulation of automatic control problems; review of modeling and input specifications, controllability and observability, controller design via root locus and state-space methods; survey of digital control.

418. Introduction to Network Synthesis
Spring. 3(3-0)