A-44

857. Wage Theory
Fall. 3 credits. 320, 324, or approval of department.
Interdepartmental with the School of Business and Industrial Relations.
Advanced analysis of: theories of wage determination; labor market research, economic effects of collective bargaining; legislation and the national wage structure, output, employment, distribution of national income, the price level; nature and effects of government wage policies.

858. Industrial Relations
Winter. 3 credits. 305 and approval of department.
Open to graduate students in economics and related fields such as labor and industrial relations, psychology, sociology, anthropology, political science, business, and history. Interdepartmental and administered jointly with the School of Labor and Industrial Relations.
Problems and issues in the administration and negotiation of collective bargaining agreements; includes both economic and noneconomic aspects of industrial relations policies and practices.

859. Economics of the Firm
Fall, Winter, Summer. 4 credits.
Graduate students in Business Administration. Not open to Economics majors.
Analysis of the firm. Problems facing management; economics of use of resources, optimal combinations of products, pricing, competitive forces in markets affecting the firm.

860. American Economy
Fall, Winter, Spring. 4 credits. Thirty credits in MBA core program.
Not open to Economics and Agricultural Economics majors.

861. Business and Public Policy
Winter, Spring. 4 credits. 860 or approval of department.

862. Statistical Inference in Economics I
Fall. 3 credits. 812A or 801; STT 443 or 883; or approval of department.
Interdepartmental with the Agricultural Economics, and Statistics and Probability Departments.

863. Statistical Inference in Economics II
Winter. 3 credits. 876 or approval of department.
Interdepartmental with the Agricultural Economics, and Statistics and Probability Departments.

864. Statistical Inference in Economics III
Spring. 3 credits. 877 or approval of department.
Interdepartmental with the Agricultural Economics, and Statistics and Probability Departments.
Validation and application of dynamic econometric models. Bayesian approach to estimation problems. Recent developments in econometric methods and in applied econometric research.

865. Organization and Control in the Political Economy: Institutions and Theory
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.

866. Organization and Control in the Political Economy: Selected Problems
Spring. 4(4-0) Approval of instructor.
Interdepartmental with and administered by the Department of Management.
Analysis of roles and tasks, appropriate techniques and organizational structures of political agencies in planning and management of complex programs.

867. Graduate Reading in Economics
Fall, Winter, Spring, Summer. Variable credit.

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

869. Selected Problems in Advanced Microeconomic Theory
Fall, Winter, Spring, Summer. 3 credits.
May re-enroll for a maximum of 12 credits: 812A, 812B, 812C, 813C.
Advanced applications of economic methodology to the analysis of household and firm behavior; risk, uncertainty, and transactions costs.

870. Selected Problems in Advanced Macroeconomic Theory
Fall, Winter, Spring, Summer. 3 credits.
May re-enroll for a maximum of 12 credits: 813A, 813B.
Analysis of the behavior and interaction of the macroeconomic system.

871. Methodological Approaches to Research
Fall of even-numbered years. Summer
Fall of odd-numbered years. 3 credits.
Two terms of graduate study in social science and approval of department.
Interdepartmental with and administered by the Agricultural Economics Department.
Selection, planning and conduct of research. Alternative research approaches. Role of theory, beliefs and valuations. Critical appraisal of research studies.

872A. Monetary Theory and Policy Workshop
Winter. 3 to 16 credits. Admission by department.
Critical evaluation of research reports by staff and other students. Students writing doctoral dissertations in the appropriate areas are encouraged to participate in workshop and may do so while registered for 999.

872B. Industrial Organisation and Public Policy Workshop
Fall, Winter. 3 to 16 credits.
Critical evaluation of research reports by staff and other students. Students writing doctoral dissertations in the appropriate areas are encouraged to participate in workshop and may do so while registered for 999.

900C. Mathematical Economics and Econometrics Workshop
Fall, Winter, Spring. 3 to 18 credits. 812A, 812B, or approval of department.
Interdepartmental with the Agricultural Economics Department.
Critical evaluation of research reports by staff and other students. Students writing doctoral dissertations in the appropriate areas are encouraged to participate in workshop and may do so while registered for 999.

900D. Economic Development Workshop
Fall, Winter, Spring. 3 to 16 credits. 850, 851, or approval of department.
Critical evaluation of research reports by staff and students. Students writing doctoral dissertations in Development are encouraged to participate in the workshop and may do so while registered for 999.

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

EDUCATION

College of Education

101A. Exploring Elementary Teaching
Fall, Winter, Spring. 3 credits. Precondition major.
Emphasis on the nature of teaching in the elementary school achieved through field experience while serving as a teacher aide in an elementary classroom. Concurrent lecture sessions focus on techniques of classroom management and operation.

102A. Introduction to Secondary Education
Fall. 1 credit. May not receive credit for 102A or 450.
Series of monthly seminars on secondary school problems and issues.

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 or 450, 102B.
Laboratory setting emphasizing characteristics of adolescent social system in and out of school. Participants will include students from local schools, EABSTEP 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. Agriculture
Fall. 2(1-0) Interdepartmental with Agriculture.
B. Business and Distributive Education.
Fall, Winter. 2(2-0)
C. Home Economics.
Spring. 2(2-0)
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 organization 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.
Handwork, patternwork, metalwork, finishing. Designed to exemplify desirable facilities and course organization for the modern secondary school.

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.

321A. Curriculum Methods and Materials—Elementary Education
Fall, Winter, Spring, Summer. 3(0-7)
Approval of department.
September experience, 2.0 scholastic average. Must be taken concurrently with courses in 325B series.

325A. Methods of Teaching Reading in the Elementary School
Fall, Winter, Spring, Summer. 3(2-0)
Juniors.
Methods and materials of instruction of reading at elementary level. Analysis of learning and teaching problems, and study of concrete materials and classroom attack. Consideration of practical bearings of research and progressive theory on current practice.

325B. Teaching of Language Arts in Elementary Grades
Fall, Winter, Spring, Summer. 3(0-0)
Juniors.
Course to acquaint prospective elementary teachers with content material and methods in language arts for grades below the seventh. Students also given opportunity to acquire skills in manuscript and blackboard writing.

325C. Critical Reading and Children's Literature
Fall, Winter, Spring, Summer. 3(2-0)
Juniors.
Development of strategies for helping children to develop critical reading skills through literary experiences.

325D. Teaching of Social Studies in Elementary Grades
Fall, Winter, Spring, Summer. 3(0) or concurrently.
Juniors; three terms of social science.
To help students develop understanding of philosophy and social studies subject matter, and competence in using a variety of methods.

325E. Teaching of Mathematics in Elementary Grades
Fall, Winter, Spring, Summer. 3(2-0)
200, Juniors; MT 201.
Present methods and materials for teaching mathematics in the elementary school. Methods and techniques of presenting mathematics content meaningfully to elementary pupils will be illustrated.

325F. Teaching Science in the Elementary and Middle School
Fall, Winter, Spring, Summer. 3(0-7)
200, Juniors; three terms of Natural Science.
Extends the science education background of prospective elementary and middle school teachers. Emphasis is placed upon methods and materials for teaching science at the elementary and middle school levels.

325C. School Music Instrumental Methods
Fall. 2(3-2)
Instrumental music major.
Instrumental instruction program at elementary level.

325H. School Music Vocal Methods
Fall. 4(3-2) Approval of the Music Department.
Basic instructional program in primary and intermediate grades.

327. Methods of Teaching Secondary Common Elements
Fall, Winter, Spring. 2(2-0)
200; a subject area methods course 327A to 327Y concurrently.
Instructional issues common to all subject areas. Selection of instructional techniques based on teacher values and belief systems, learner needs and characteristics, and sound education principles and policies.

327A-V. Methods of Teaching Secondary Subject Areas
Specifies of classroom instruction in the various subject matter fields. Selection of instructional techniques based on recognized course objectives, needs and characteristics of learners, and sound educational principles and policies.

A. Agriculture
Winter. 3 credits. 200; 320 or concurrently.

B. Art
Fall, Winter, Spring. 3 credits. 200, STA 321, 326, ED 307 or concurrently.

C. Business and Distributive Education
Fall, Winter, Spring, 3 credits. 200; 327 or concurrently.

D. English
Fall, Winter, Spring, Summer. 3 credits. 200; 320 or concurrently.

E. European Languages
Winter, Spring. 3 credits. 200; 320 or concurrently.

F. Health
Spring. 3 credits. 200; 327 or concurrently.

G. Physical Education
Fall, Winter, Spring. 3 credits. 200; 327 or concurrently.

J. History
Fall, Winter, Spring. 3 credits. 200; 327 or concurrently.

K. Home Economics
Fall, Winter, Spring. 3 credits. 200; 327 or concurrently.
Descriptions — Education

Courses

Fall, Spring. 3(3-0) 200 for education majors; others, approval of department.

M. Industrial Arts.
Fall, Spring. 3 credits. 200; 327 or concurrently.

N. Mathematics.
Fall, Winter, Spring. 3 credits. 200; 327 or concurrently.

P. Music—Instrumental.
Winter. 3 credits. 200; 327 or concurrently.

R. Music—Voice.
Winter. 3 credits. 200; 327 or concurrently.

S. Science.
Fall, Winter, Spring, Summer. 3(3-3) 200; 327 or concurrently.

T. Social Science.
Fall, Winter, Spring, Summer. 3 credits. 200; 327 or concurrently.

U. Communication.
Fall, Winter, Spring. 3 credits. 200; 327 or concurrently.

V. German and Russian.
Fall. 3 credits. 200; 327 or concurrently.

329F. Introduction to Driver and Traffic Education.
(429F) Fall, Winter, Summer. 4(3-2) Valid driver’s license. Introduction to and an analysis of the driving task. Theory and practical application will be provided.

341A. Advanced Metalwork.
Winter and Fall of even-numbered years. Spring of odd-numbered years. 3(0-6) 241B. Approval of department.
Work in bench metal, sheet metal, forging, welding, plating, casting, machining of metals. Designed to provide the industrial arts teacher with sufficient breadth and skill to enable him to establish such a program in a secondary school.

341B. Industrial Arts Mechanics.
Winter and Fall of odd-numbered years. Spring of even-numbered years. 3(0-6) 241B. Approval of department.
Work with small motors and internal combustion engine, drive and transmission devices. Designed to exemplify desirable practice in course organization and facilities for the modern secondary school.

341C. General Electricity.
Winter and Fall of even-numbered years. Spring of odd-numbered years. 3(0-6) 241B. Approval of department.
Low voltage wiring, household devices and appliances, motor and general maintenance, house wiring, elementary radio, and elementary television. Designed to exemplify a desirable approach to this area in the industrial education program of the modern secondary school.

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

401. Sociology of Education.
Winter, Summer. 3(3-0) SOC 241. Interdepartmental with and administered by the Sociology Department.
School as a social institution, school-community relations, social control of education, and structure of school society.

(462) Spring, Summer. 3(3-0) Juniors; non-majors. Intra- and interdepartmental with and administered by the Journalism Department. Staff organization, makeup, illustration, copy preparation, advertising, and editorial policies of school newspapers and yearbooks.

410. Instructional Design and Technology.
Fall, Winter, Summer. 3 to 4 credits. 200; 327 or concurrently.
Students design plans for implementing instruction via systems approach and application of learning principles.

411. School Learning I.
Fall, Winter, Spring, Summer. 3(3-0) 200; 327 or concurrently.
Verbal learning, concept formation, problem solving and transfer with implications for teaching in schools.

412. Human Growth and Development.
(312) Fall, Winter, Spring. 4(4-2) 200; 327 or concurrently.
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) 200; 327 or concurrently.
Social and emotional adjustments of children. Emphasis on balancing factors favoring prevention and resolution of behavior difficulties and evaluation of school programs on the basis of their contribution to mental health.

415. Student Leadership Training.
Fall, Winter, Spring. 2(0-3) Approval of the Dean of Students.
Prepares students for leadership roles and responsibilities by encouraging the development of skills and techniques consistent with the principles of our democratic society.

416. Personnel Work in Student Housing.
Fall, Winter, Spring. 3(3-0) Fifteen credits of Education or approval of department. Fall: Primarily for students selected to assist in administration of residence halls; Spring: for graduate students preparing for student personnel work.
Organization, policies, practices, procedures of residence halls at Michigan State University and other educational institutions.

417. Introduction to Libraries and Materials Centers.
Fall. 3(3-0) Juniors or approval of department.
Development of libraries, origin, services, operations, routines. Role and responsibility of the school library as related to the curriculum.

418. Selection of School Library Materials.
(426) Winter. 3(3-0) 417.

419. Basic Reference Sources and Services.
Spring. 3(3-2) 417.
Identification, evaluation, selection, and use of basic reference sources including the card catalog, indexes, encyclopedias, dictionaries, handbooks, almanacs, etc.

Fall. 4(3-2) 418.
Procedures in the acquisition of school library materials, cataloging and classification, and related processes in the proper organization of school library materials.

421. School Library Administration.
Winter. 4(3-2) 421.
Administrative problems pertaining to school libraries and materials centers. Budget planning and preparation, personnel, relation to teaching faculty, physical facilities. School library standards. Coordination of library services and the school curriculum.

Spring. 4(3-2) 419, 421.
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(3-2) 424A, 425.
Causes and effects of visual impairment; definitions, statistics and trends; history and legislation; program and services for children and adults through schools, agencies 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. Resource 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, 423C.
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(0-6) 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. Use of cane as mode of travel.

423F. Communication Modifications for Visually Handicapped Children.
Spring. 4(3-2) 425.
A laboratory course including Nemeth Code of Mathematics; science, music and language notations; preparation of classroom materials; establishing test reference materials. Emphasis upon instruction at the secondary level.
423C. Education of the Blind-Deaf
Fall, Winter, Spring. 3(3-0)
May re-enroll for a maximum of 9 credits. ASC 922, 277, 454; or concurrently.

Methods of teaching blind-deaf children including guiding principles; curriculum structure; readiness activities; sensory development; discipline; methods of communication; speech and speech reading, and language, including language methods and principles.

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

424B. Psycho-Educational Evaluation of the Handicapped
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 and operative of special education programs including educational, state and voluntary agencies.

425A. Educational Provisions for Deaf Children and Youth
Winter, Spring. 3(3-0) 424A.
425B. Language Development for the Deaf
Winter, Spring. 3(3-0) 424A.
425C. Speech Development for the Deaf
(420B.) Winter, Spring. 3(3-0) 425B.
or concurrently.

427A. Educational Provisions for the Physically Handicapped
Fall. 3(3-0) 424A, 426.
Facilities, programs, trends, materials and terminology in education of the physically handicapped. Field trips to special classes and hospital school programs.

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

428A. Psycho-Educational Characteristics of the Mentally Retarded
Fall, Summer. 3(3-0) 424A or approval of department.

429L. Personality Factors in Driver and Traffic Education
Winter, Spring. 3(3-0) 429G.
Study of behavior with emphasis on attitudes, motivation, and adjustment and their relationships to unsafe driving. Investigation of principles, and methods appropriate to identifying, understanding, and modifying unsatisfactory behavior.

429K. Fundamentals of Traffic Law
Fall, Summer. 3(3-0) Interdepartmental with the School of Criminal Justice.
Nature, function and application of traffic law as it applies to the safe and efficient movement of people and goods in a broadly conceived traffic accident prevention program.

431. Educational Media in Instruction
Fall, Winter, Spring. 3(3-0) 431A.

432A. Psycho-Educational Characteristics of the Emotionally Disturbed
Fall, Spring, Summer. 3(3-0)
Psycho-educational characteristics of the emotionally disturbed are surveyed and evaluated. Additionally, various strategies which purport to educate the disturbed child are studied and evaluated.

432B. Remedial Practices with the Emotionally Disturbed
Fall, Spring, Summer. 3(3-0) 424A.
For majors in the area of the emotionally disturbed only.

433. Alcohol and Drugs: A Social Dilemma
Winter. 3(3-0) Seniors or approval of college. Interdepartmental with and administered by the School of Criminal Justice. An overview investigation of the substance abuse phenomena with emphasis on alcohol. Sociological, psychological and medical aspects are discussed with implication for prevention, treatment and rehabilitation.

434. Student Teaching
Fall, Winter, Spring. Variable credit.

441A. General Industrial Arts
Fall and Winter of odd-numbered years, Spring of even-numbered years. 3(0-6) 341B, 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, Summer of odd-numbered years. 3(3-0) 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.

444C. Advanced General Electricity
Winter and Fall of odd-numbered years, Spring of even-numbered years. 3(3-0) 341C or approval of department.
Development and construction of simple electric motors, radio, 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(3-0) 244D on approval of department.
Practical work in design, printing, plate making, and photography. 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(3-0) 241C on approval of department.
Designed to provide 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.

446. Teaching Internship
Fall, Winter, Spring. Variable credit.
May re-enroll for a maximum of 17 credits.
Internship teaching experience under the guidance and supervision of intern consultants and other MSU faculty. Involves a variety of activities, including full-time teaching experience in a selected school.

450. School and Society
Fall, Winter, Spring, Summer. 5(3-2) or 436 or 446.
As a social institution, teacher as a member of the community and as a representative of the community, society as basic orientation for both the teacher and the school. Purposes of the school in the public school, major concepts of educational philosophy, and political-economic support of the schools.

464. Standardized Tests and Testing Programs
Fall, Winter, Spring. 3(3-0) 464 or 446.
School as a social institution, teacher as a member of the profession and as a representative of the community, society as basic orientation for both the teacher and the school. Purposes of the public school, major concepts of educational philosophy, and political-economic support of the schools.

465. Testing and Grading
Fall, Winter, Spring, Summer. 3(3-0) 465.
Construction, use, and evaluation of teacher-made classroom tests, objective and essay, in elementary schools, 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.
Extends instructional techniques and knowledge of teaching materials in a variety of science-related curricula and of classroom and middle school children. Limited to examination of selected topics during any one term.

471B. Classroom Management in Business and Distributive Education
Fall, Spring. 4(3-2) 200, 327C concurrently.
Principles and practices of using materials and media; using community resources; providing directed occupational experiences; how-to-individualize instruction; evaluating student achievement.

472. Organization and Administration of Cooperative Office and Distributive Occupations Programs
Fall, Winter, Spring. 3(3-0) 471B concurrently or approval of department.
Development of knowledge and understanding of (1) purposes of preparatory in-school curricula and its relationship to cooperative programs of office and distributive occupations; (2) organization and administration of a cooperative program; (3) coordination techniques, and (4) correlation of on-the-job and in-school learnings through related instruction class.

473. Individualized Study in Industrial Education
Fall, Winter, Spring. 3(3-0) May re-enroll for a maximum of 9 credits.
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(1-3) 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. 1 to 8 credits. Approval of department.
Seminars in the various fields of emphasis in education.

483. Readings and Independent Study in Education
Fall, Winter, Spring. 1 to 8 credits. May re-enroll for a maximum of 8 credits.
Study on an individual basis in the various fields of emphasis in education.

484. Field Experience in Education
Fall, Winter, Spring. 1 to 12 credits. Approval of department.
Supervised undergraduate practicum 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.
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.

500. Crucial Issues in Education
Fall, Winter, Spring. 3(3-0) Approval of department.
Problem analysis of a timely issue in education analyzing their legal, historical, sociological, and philosophical dimensions. Attention centered on problem 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
A. PHILOSOPHY OF EDUCATION
Fall, Winter, Spring, Summer. 3(3-0) Approval of department.
Identify underlying philosophical problems in education. Use of philosophical methodology 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 analysis of contemporary society. Particular attention given to discrepancies between ideology and practice. Building school programs designed to cope with cultural inadequacies.

802A. Education in the U.S.A.
Fall, Winter, Spring. 4(3-4) Passed English Language Center examination or approval of department.
Designed to provide first term foreign students in graduate programs with theoretical and experiential background in American education.

802B. Education in the U.S.A.
Winter, Spring. 4(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
Summer of odd-numbered years. 3(3-0) Experience in teaching. 325F or approval of department.
In-depth 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. 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 relationship of school to developing social trends. An intensive study of the works and leading figures in educational thought. Emphasis upon Plato's Republic. Works by Aristotle, Comenius, 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(3-0) Approval of department.
Comparative study of educational systems and philosophies of Asian 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) 421 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.

815D. Introduction to Rehabilitation Counseling
Fall, 3(3-0) Open to rehabilitation counselors major only.
Overview of field of rehabilitation. Orientation to the Michigan Division of Vocational Rehabilitation, Rehabilitation counseling pre-practice 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. Supervised graduate internship in rehabilitation counseling.

815F. Overview of Rehabilitation Placement
Winter, 3(3-0) 815D.
An overview of the impact 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(3-0) 815F.
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, gathering data for an interview; presenting oneself, client, and agency, and assisting clients in their search for employment.

816. Procedures in Guidance
A. Career Guidance in the Curriculum
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 emphasized. Utilization of information from placement agencies, follow-up studies, and community surveys in curriculum revision is stressed.

B. Guidance Techniques in the Classroom
Fall, Winter, Spring, Summer, 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 counselors for special assistance are included.

C. Practice in Group Guidance Techniques
Fall, Winter, Spring, Summer, 3(3-0) 816B.
Emphasis upon development of counseling skills through analyzing and leading small groups. Students participate in a group to examine in depth their own self-image and motives. Didactic content is related specifically to the group.

D. Practice in Individual Guidance Techniques
Fall, Winter, Spring, Summer, 3(3-0) 816A and 816B.
Role-playing video tapes, audio tapes and demonstrations are utilized in helping each student develop skills in counseling with children and counseling with parents. Techniques appropriate for various age levels and problems will be practiced.

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

819B. Introduction to Counseling Theory
Fall, 3(3-0) Admission to M.A. Counseling Program.
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 strategies 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, 3(2-1) 819C and 819D.
Students will spend one day per week in a school or agency where they will counsel under supervision. One hour per week with a counselor supervisor is required.

819G. Counseling Practicum II
Fall, 3(3-1) 819F.
A second course in counseling practice. Students will spend one day per week in a school or agency where they will counsel under supervision. Students must spend one hour per week with a counselor supervisor.

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.

819I. 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 expensive given to students learning under supervision. One hour per week with a counselor supervisor is required.

819J. Research in Counseling
Summer, 3(3-0) 869.
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) 816A and 816B.
Experience in teaching; 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.

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)
Contrasting patterns of programs for early adolescents; age range and characteristics of middle school pupils; problems and potential of the middle school.

822A. Community College
Fall, Winter, Spring. 3(3-0)
Purposes, functions, and offerings of the community college.

822B. Adult Education: A General Survey
Fall, Spring, Summer. 3(2-2) Approval of department.
Overview of extent, origins, forms, purposes, content, sponsor, 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 and senior high school and adult industrial education courses. Industrial problems, their relation to a particular community and its needs in relation to instruction.

822J. 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.

822P. Coordination in Occupational Training Programs
Fall, Winter. 3(3-0) Approval of department.
Analysis of objectives and scope of distributive, office, trade and industrial cooperative education programs, apprenticeship, and general education work experience. Emphasizes organization and administration, instructional procedures, coordination techniques, club activities, and evaluation of cooperative occupational education.

822Q. Current Issues and Developments in Occupational Education
Fall, Winter, Spring, Summer. 3(3-0)
Examination of issues and problems in occupational 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.

822R. Developing Occupational Curricula in Two-Year Colleges
Fall, Winter, Spring. 3(3-0) 822N, 822A, or approval of department.
Occupational curriculum development and course construction. Developmental projects involving community 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.

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
(W98A) 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, media 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. Instructional methods examined with emphasis on the conference method of problem solving.

828E. Principles and Problems of Instruction in Higher Education
Fall, Winter, Spring, Summer. 3(3-0)
Approach 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, Summer. 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 as it relates to the improvement of instruction in a special field of study.

830C. Problems in Elementary Reading Instruction
Fall, Winter, Spring, Summer. 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 practices. Materials and techniques of reading programs are examined and appraised. Outstanding investigations dealing with problems in this area are studied and evaluated.

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(3-2)
Graduate students in education; 830C or 830D; approval of department.
Causes and types of reading retardation are considered, and 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(3-2)
Graduate students in education; 830C or 830D; 830E recommended; 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(3-0)
Students may not receive credit in both 831A and 831E.
Improvement of teaching through educational media. Learning principles, nature and application of films, filmstrips, slides, transparency, 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, Summer. 3(3-0) 831B, or approval of department.  
Design, production, and use of photographic materials for instruction. Production of photographs, slides, filmsstrips, overhead transparencies, sound tapes, and motion picture. 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(3-0) 432A, B, C. 424A; 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 deaf 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.

C. LEARNING DISABILITIES  
Winter. Summer of odd-numbered years. 3(3-0) 427B, student teaching or clinical experience with handicapped or approval of department.  
Approaches to remediation of learning disabilities in the classroom. Identification, evaluation, methods, materials, aids, and programs, are considered within major theoretical structures.

D. MENTALLY HANDICAPPED CHILDREN AND YOUTH  
Winter. 3(3-0) 428A, B. C.  
An analysis of research, trends, and programs in the area of mental retardation. Emphasis upon the relationship these factors have to problems of curriculum, teaching methods, guidance of students, and general classroom management.

E. EMOTIONALLY IMPAIRED  
Summer. 3(3-0) 432A, B, C.  
Review and analysis of recent research findings, intervention strategies, and curriculum developments applicable to emotionally impaired children and youth.

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, supervision of student teachers, responsibilities of the supervising teacher, relationships between supervising teachers and college personnel, conferences with student teachers, and evaluation of student teaching.

IDC. Interdisciplinary Seminar on Africa  
For course description, see Interdisciplinary Courses.

839. Program Development in Distributive Education  
A. PRINCIPLES AND ORGANIZATION  
Fall, Summer. 3(3-0) 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 achievement, 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 the development, management and operation of the highway transportation system and its implications for the traffic safety educator.

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.

D. MOTOR VEHICLE ADMINISTRATION  
Spring, Summer. 3(3-0).  
Functions of motor vehicle administration in highway traffic administration. Driver licensing, motor vehicle inspection, vehicle titling and registration, and financial responsibility as legal and administrative methods of driver and vehicle control.

842A. Curriculum and Program Planning  
Summer. 3(3-0).  
Needs and goals in education and manpower training for business, general business and economic education; program structure; professional and youth organizations; related legislation and historical background.
842B. Contemporary Issues in Education for Business
Spring, Summer. 3(3-0) Twenty-four graduate credits on 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.

842C. Theory of Instruction in Business and Distributive Education
Spring, Summer. 3(3-0) Graduate course in learning theory or approval of department.
Analysis of research and literature in learning theory and application to problems: self-instructional programming, selection of learning activities and materials, skill building, measurement and curriculum. Emphasis upon independent study in selected specializations.

842D. Seminar-Research in Business Education
Winter. 3(3-0) Twenty-four graduate credits in Business Education or approval of department.
The initiation of new classroom systems in office education, the scope and sequence of office education systems, their curriculum content and instructional objectives. Emphasis on follow up and evaluation design.

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

844. Research in Elementary Social Studies Instruction
Spring of even-numbered years. 3(3-0)
Focuses 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 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; credit only 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, Summer. 3(3-0) Two or three credits. May re-enroll for a maximum of 6 credits. 848 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 of odd-numbered years. 3(3-0) 830A.
To investigate and criticize trends, issues and research in language arts programming and instruction.

850. Teacher and the Administrative Leadership
Fall, Winter, Spring, Summer. 3(3-0) Twelve graduate credits in Education or approval of department.
Not intended for school administration majors. Theory and practice underlying administration of schools in a democratic society. Intended for educational personnel seeking basic information in such areas as educational organization, roles of administrative leadership in schools and communities, and teacher's role in administration.

851. Foundations of Administration
Summer. 3(3-0) Twelve graduate credits in Education or approval of department.
Emphasizes basic administrative theory and research, focuses on current practice 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.

852. Administration of Educational Institutions
Spring, Summer. 3(3-0) Twelve graduate credits in Education or approval of department.
Exploration 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.

853. Administration of Educational Programs
Fall, Winter, Summer. 3(3-0) Twelve graduate credits in Education or approval of department.
Designed to promote the study of application of theory and research to specialized program areas. Persons will normally select the section allied to their major program area.

855. Research in Educational Administration
Fall, Winter, Spring. 3(3-0) 851A, 851B, 851C, 851D, 851E, 851F, or approval of department.
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
Fall, Winter, Summer. 3(3-0) Regular admission to graduate program and approval of department.
The curriculum is a continuous process, constructed as a reflection of the educational needs and aspirations of the students. It is the result of the close cooperation and coordination between the teacher, the student, the principal and the parents.

862. Elementary Education Trends and Current Research
Fall, Winter, Spring. 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. 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; 859.

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 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 or PSY 829.

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) Pretest 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 relationship that schools 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 relevances of school curricula 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.

Study of the individual 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 the individual and group influence and behavior; student organizations and group activities which affect student behavior and development; examination of personal qualities, professional organizations and other factors associated with being a professional person.

876. The American College Student

Fall, Winter, Summer. 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.

877. Workshops in Education

Fall, Winter, Spring, Summer. 2 to 10 credits. May re-enroll for a maximum of 10 credits. Approval of department.

Laboratory approach which provides opportunities for experienced educational personnel to concentrate their study on common administrative and supervisory problems.

878. Seminars in Education

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

Seminars in the various fields of emphasis.

879. 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.

880. 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.

881. Laboratory and Field Experience in Mathematics Education

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

Supervised graduate practicums, observation, internships, and externships in the various areas of emphasis.

882. Seminar in Comparative and International Education

Fall, Winter, Spring, Summer. 3(3-0) Approval of department.

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.

883. Educational Psychology Seminar

Fall, Winter, Spring, Summer. 3(3-0) Review of major areas and critical analysis of research problems and professional issues.

884. 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.

885. Counseling Proseminar II

Winter. 3(3-0) 915A. Continuation of 915A.

886. Counseling Proseminar III

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.

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 informal 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.

888. Research Seminar

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

889. Educational Sociology Seminar

Fall, Winter, Spring. 3 or 4 credits. Approval of department. Interdepartmental and administered by the Department of Sociology.

890. Historical and Comparative Foundations of Advanced Comparative and International Education

Spring. 3(3-0) 804F.

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.

891. 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.

892. 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.

893. Counseling Proseminar II

Winter. 3(3-0) 915A. Continuation of 915A.

894. Counseling Proseminar III

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.

895. Research Seminar

Fall, Winter, Spring. 2 credits. Doctoral candidate.

Orientation to doctoral study in rehabilitation counseling.

896. Curriculum Research Seminar

Spring. 3(3-0) 867; 821A.

Identification of researchable variables in the curriculum of an educational institution or program. Design of descriptive, evaluative and experimental studies within ongoing complex social systems.

897. Research on Teaching

Fall. 3(3-0) 867.

Implications from findings of the major investigations into teaching processes. Related to the curriculum of in-service and pre-service teacher education.

898. 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 counseling 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 years. 3(3-0) 847, enrolled 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 as 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 scientific 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, Summer. 3(3-0) Approval of department.

953. Education Law
Spring, Summer. 3(3-0) Approval of department.
Designed to discover general legal principles and examine laws and regulations 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, building 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.

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) 865, approval of department.
Advanced consideration of the logical and philosophical bases of educational measurement. Theory of test planning and development and evaluation. Problems of test administration and scoring. Issues in test use.

965C. Evaluation of Higher Education
Spring. 3(3-0) 826B.
Ways in which evaluation takes place in higher education: course examinations, grading, comprehensive examinations, teacher evaluation, institutional evaluation, state surveys, and regional 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, Summer. 4(3-1) 869 or pretent 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.

C. Experimental Design in Education
Winter, Spring, Summer. 4(3-1) 969B.
Theory and practice in the design, analysis, and interpretation of experimental and quasi-experimental research.

970. Reading and Research in Student Teaching
Spring. 3(2-0) 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, organizing, financing, research, evaluation and administration for programs and services which exist principally to serve individual student needs: counseling, orientation, health, placement, financial aid, etc.

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

975. College Student Personnel Administration III
Spring. 3(0-0) Approval of department.
Analysis of student rights and responsibilities; academic freedom; regulation of student conduct; systems of governance and judicial process; 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 practicums, observation, internships, and externships in the various areas of emphasis.

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

986A. Counseling Practicum I
Fall, Winter. 3(0-0) 965 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
Fall, Winter. Spring. 3(0-0) 969A.
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
Fall, Winter. Spring. 3(0-0) 969B.
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(3-0) May re-enroll for a maximum of 6 credits. Majors or approval of department.
Continuing education, as social force impacting and impacted by government and 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(3-0) May re-enroll for a maximum of 6 credits. Majors or approval of department.
Pattens, 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, preparing instructional 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(3-0)
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, Winter. 4(4-0) MTH 113.

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

302. Basic Electronic Circuits
Spring, Summer. 4(4-0) 301, MTH 215.
Volta-amper 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
Fall, Winter. 1(0-3) 306 or concurrently.
Experimental and measurement procedures as appropriate to topics covered in 374.

304. Electronics Laboratory II
Spring, Summer. 1(0-3) 302 concurrently.

305. Electromagnetic Fields and Waves I
Fall, Winter. 3(0-3) MTH 215, PHY 288.

306. Electromagnetic Fields and Waves II
Winter, Spring. 3(3-0) 305.
Magnetostatic fields; EM sources, vector potential, magnetic induction, and energy storage. Time-varying 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.

308. Fields and Waves Laboratory
Spring, Summer. 1(0-3) 300, 306; 307 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) May re-enroll for a maximum of 3 credits. Approved of department.
Topics include communication systems, instrumentation systems and data management, advanced laboratory techniques, modeling, circuit design, computer analysis.

403. Special Problems
Fall, Winter, Spring. 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 modern methods; specifications, controllability and stability; controller design via root locus and state-vector methods; survey of digital control.

416. Control System Design
Winter. 3(0-3) 415.
Realization of linear controllers, consistent models for plant and computer sampling, algorithms for digital control, organization of digital controllers.

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

419. Physical Phenomena and Electronic Instrumentation I
Winter. 4(3-1) PHY 289 or 293; MTH 215. Interdepartmental with and administered by the Physics Department.
Concepts of electronics relative to use in investigations of physical phenomena and their subsequent applications to provide reliable instrumentation. Nuclear radiation detectors, photometers and magnetometers are examples of specific topics covered.

435. Guided Transmission Systems
Fall. 3(0-0) 309.
Electric circuit theory from EM field theory. Guided wave theory: normal modes, propagation characteristics, power transport, wave impedances, traveling and standing waves, rectangular and circularwaveguides. Electromagnetic resonators: frequency Q.

436. Microwave Networks and Antennas
Winter. 3(0-0) 435; 436 concurrently.

437. Microwave Electronics and Plasma
Spring. 3(3-0) 436; 439 concurrently.
Electron dynamics, field-particle interactions, space-charge waves; cyclotron waves, klystron; magnetron; traveling-wave amplifier; quadrupole amplifiers, microwave solid-state devices; gas discharges; plasma; waves in plasma.

438. Transmission and Radiation Laboratory
Winter. 1(0-3) 435; 436 concurrently.
Microwave transmission and radiation laboratory. Measurement of frequency, wavelength, standing waves, impedance, and power. Experiment on transmission lines, waveguides, cavity resonators, microwave circuits, and circuit and radiation properties of antennas.

439. Microwave Electronics and Plasma Laboratory
Spring. 1(0-3) 438; 437 concurrently.
Experimental investigation on topics from 437. Laboratory experiments on klystron characteristicst, traveling wave amplifier, microwave semiconductor oscillator, plasma measurements, and plasma-field interactions.