

**Description — Computer Science  
of  
Courses**

**801. Independent Study**  
Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 8 credits. Approval of department.

**805. Clustering and Scaling Algorithms**  
Fall. 3(3-0) CPS 301 or CPS 304, STT 441 or approval of department.  
Algorithms that organize large amounts of data. Includes metric clustering, hierarchical clustering and multi-dimensional scaling.

**806. Fundamentals of Pattern Recognition**  
Spring. 4(4-0) CPS 301 or CPS 304, MTH 334, STT 442.

Decision-theoretic and nonstatistical approaches; discriminant functions; parameter and density estimation; feature extraction; supervised and unsupervised learning; sample size effects; error estimation; design of pattern recognition systems; computational considerations.

**809. Computer Arithmetic Algorithm Design**  
Fall. 4(4-0) E E 431 or CPS 423. Interdepartmental with and administered by Electrical Engineering.

Number systems; fast two-operand and multioperand addition/subtraction; standard, recoded and cellular array multipliers; high-performance dividers; floating-point arithmetic; error control; pipelining.

**812. Computer Networks**  
Spring. 3(3-0) CPS 412. Interdepartmental with Electrical Engineering.

Network architecture model, routing and congestion control, satellite and radio networks, local computer networks, virtual terminal and file transfer protocols, network security, transport and session protocols, distributed processing.

**813. Logic Design Methodologies**  
Spring. 3(3-0) CPS 423 or E E 431. Interdepartmental with and administered by Electrical Engineering.

Modeling and simulation of logic circuits; hardware description languages; design methodologies for logic arrays and bit-slice processors; fault tolerance, testability, computer aided design of logic circuits; automated routing algorithms.

**815. Architecture of Computational Systems**  
Winter. 3(3-0) CPS 423. Interdepartmental with Electrical Engineering.

Overview of computer system organization; theoretical constructs of computer systems; processors; control units; memory; interconnection networks.

**818. Introduction to Robotics**  
Spring. 3(3-0) E E 415 or M E 458 or approval of department. Interdepartmental with and administered by Electrical Engineering.

Robot configuration and geometry. Robot drive systems, kinematics, controller design, sensors, sensor-based robots. Economic, political and social implications. Industrial application.

**822. Computer Vision**  
Winter. 4(4-0) MTH 334, CPS 252, STT 441.

Imaging geometry, sampling, coding. Picture transformations, enhancement. Edge detection, segmentation. Object and scene description and recognition applications.

**831. Theory of Formal Languages I**  
Fall. 3(3-0) CPS 322 or approval of department.

Definition of formal languages; acceptors and grammars; regular, linear and context free languages; closure properties.

**832. Theory of Formal Languages II**  
Winter. 3(3-0) CPS 831.

Context sensitive languages; derivation restricted grammars; semantics of formal languages.

**835. Analysis of Graph Algorithms**  
Fall. 3(3-0) MTH 334, CPS 322.

Basic concepts in graphs, fundamental graph algorithms: shortest paths, minimum spanning trees, network flow, connectivities, matching, their limitations and complexities, other graph algorithms, NP-complete graph problems.

**841. Artificial Intelligence I**  
Winter. 4(4-0) CPS 252, STT 441.

Foundations of heuristic methods; syntactic means-end analysis; semantic means-end analysis; adaptive systems.

**842. Artificial Intelligence II**  
Spring. 3(3-0) CPS 312, CPS 841.

Computer representation of information from natural languages; representation of two and three dimensional environments; theory of design of robots; future trends.

**876. Performance Measurement Techniques**  
Fall. 3(3-0) CPS 313, CPS 322, STT 441.

Performance evaluations on computer systems, evaluation of the central processor. Systems analysis, simulation, programmed measurement, and instrumental measurement techniques. Case studies.

**881. Operating Systems Theory I**  
Winter. 3(3-0) CPS 313, STT 441.

Control of concurrent processes. Deterministic and probabilistic models of processor scheduling. Introduction to auxiliary and buffer storage models.

**882. Operating Systems Theory II**  
Spring. 3(3-0) CPS 881.

Auxiliary and buffer storage models. Storage allocation in paging systems. Multiprogrammed memory management.

**884. Large Data Base Theory**  
Summer. 3(3-0) CPS 313, CPS 452, or approval of department.

Data base management constituent parts; data definition, data manipulation, data retrieval and report generation. Hierarchical, network and relational data base models. Schemas, subschemas and access methods. Analytic and theoretical treatment.

**890. Special Topics**  
Fall, Winter, Spring, Summer. 2 to 4 credits. May reenroll for a maximum of 10 credits. Approval of department.

Special topics in computer science of current interest and importance.

**899. Master's Thesis Research**  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

**906. Advances in Pattern Recognition**  
Fall. 3(3-0) CPS 805, CPS 806, CPS 822.

Current research topics in pattern recognition, exploratory data analysis, syntactic pattern recognition and digital image processing; practical applications of pattern recognition methodology.

**911. General Automata Theory I**  
Fall of odd-numbered years. 3(3-0) CPS 423 or SYS 827 or approval of department. Interdepartmental with Electrical Engineering. Characterization of machines and programs as automata; mathematical decomposition of finite automata.

**921. Advanced Computer Systems I**  
Fall. 3(3-0) Two graduate level courses in computer system design (hardware or software). Interdepartmental with Electrical Engineering.

Models of single and multiple processors, their computational power, and measures of performance. Interconnection networks, data driven machines, and pipelines.

**922. Advanced Computer Systems II**  
Winter. 3(3-0) CPS 921. Interdepartmental with Electrical Engineering.

Design and characterization of parallel algorithms. Matching of algorithms with appropriate hardware configurations. Programming languages which support parallel computation.

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

**COUNSELING, EDUCATIONAL  
PSYCHOLOGY AND  
SPECIAL EDUCATION CEP**

**College of Education**

**400. Classroom Testing and Grading**  
Winter, Summer. 3(3-0) T E 200 or T E 200A or T E 200B or T E 200C or approval of department.

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.

**401. Standardized Tests and Testing Programs**  
Fall, Spring, Summer. 3(3-0) Approval of department.

An overview of standardized tests and sources of information about them. Selection and uses of standardized tests. Interpretation of standardized test scores. Local and widescale testing programs.

**410. Instructional Design and Technology**  
Winter, Spring, Summer. 2 to 4 credits. May reenroll for a maximum of 6 credits. T E 200 or T E 200A or T E 200B or T E 200C.

Students design plans for implementing instruction via systems approach and application of learning principles.

**Counseling, Educational Psychology and Special Education — Description  
of  
Courses**

**411. School Learning I**

Fall, Winter, Spring, Summer. 3(3-0)  
T E 200 or T E 200A or T E 200B or T E 200C.  
Verbal learning, concept formation, problem  
solving and transfer with implications for teach-  
ing in schools.

**412. Human Growth and Development**

Fall, Winter, Spring, Summer. 4(2-4)  
T E 200 or T E 200A or T E 200B or T E 200C.  
Patterns in human growth and mental and emo-  
tional development of children 3 through 12 and  
adolescents 12 through 18; observation and par-  
ticipation in schools is an integral part of the  
course.

**413. Mental Health of School Children**

Fall, Winter. 3(3-0) T E 200 or T E  
200A or T E 200B or T E 200C.  
Social and emotional adjustments of children.  
Emphasis on balancing factors favoring preven-  
tion and resolution of behavior difficulties and  
evaluation of school programs on basis of their  
contribution to mental health.

**428B. Curriculum for the Mentally  
Impaired**

Winter. 3(3-0) CEP 460 or approval of  
department.  
Development of curriculum for mentally  
impaired children and youth emphasizing cur-  
rent practice in pre-school through secondary  
school programs for the moderately and mildly  
mentally impaired.

**428C. Educational Procedures for the  
Mentally Impaired**

Winter. 3(3-0) CEP 460 or approval of  
department.  
Methods of instruction for mentally impaired  
children and youth including the assessment of  
individual abilities, the development of instruc-  
tional objectives, and the teaching of nonaca-  
demic and academic skills.

**428D. Education of the Severely  
Impaired**

Fall, Spring. 3(3-0) CEP 460 or  
approval of department.  
Procedures in teaching severely impaired chil-  
dren and youth.

**431A. Educational Media in Instruction**

Fall, Winter, Spring. 3(3-0) Juniors.  
Educational media for preservice and inservice  
teachers, and media specialists. Selection and  
utilization of flat pictures, slides, filmstrips,  
motion picture films, sound, models, radio, and  
television. Equipment operation acquired  
through self instructional laboratory. Field trips  
required.

**431B. Basic Educational Graphics**

Fall. 3(3-0) CEP 431A or approval of  
department.  
A course for teachers and prospective teachers in  
the local production of visual instructional mate-  
rials.

**434. Computers in the Classroom**

Fall, Winter, Spring, Summer. 3(3-0)  
Juniors.  
How to teach computer literacy and program-  
ming in public schools. Computer aided instruc-  
tion in the classroom. Applying instructional  
design principles to the selection, evaluation,  
modification, and development of computer  
courseware.

**446A. Teaching Science with  
Microcomputers**

Winter, Summer. 3(3-0) CEP 434.  
Interdepartmental with and administered by  
the Department of Teacher Education.  
Survey and critique of software availa-  
ble for science instruction; students adapt  
generic and create original microcomputer rou-  
tines and/or teaching strategies for use in science  
teaching.

**446B. Teaching Social Studies with  
Microcomputers**

Winter, Summer. 3(3-0) CEP 434.  
Interdepartmental with and administered by  
the Department of Teacher Education.  
Survey and critique of software availa-  
ble for social studies instruction; students adapt  
generic and create original microcomputer rou-  
tines for use in social studies teaching.

**460. Education of Exceptional Children**

Fall, Winter, Spring. 5(5-0) T E 200.  
Characteristics and educational needs of stu-  
dents with handicapping conditions and excep-  
tionalities. Special education programs and  
supportive community services.

**460B. Educational Provisions for the  
Physically Handicapped**

Fall. 3(3-0) CEP 460, T E 470.  
Facilities, programs, trends, methods, materials  
and terminology in education of the physically  
handicapped. Field trips to special classes and  
hospital school programs.

**460C. Psychoeducational Characteristics  
of the Mildly Impaired**

Winter. 3(3-0) CEP 460.  
Cognitive, affective, and social characteristics of  
the mildly impaired. Instructional practices that  
affect school learning and personal adjustment.

**460D. Classroom and Behavior  
Management in Special Education**

Spring. 3(3-0) CEP 460.  
Behavior management procedures for handi-  
capped students in school settings. Specific  
methods for assessment, teaching, maintenance,  
and generalization of academic and non-acade-  
mic behaviors.

**460I. Academic Assessment of Mildly  
Impaired**

Fall, Spring. 3(3-0) CEP 460, T E 310,  
T E 312, T E 315. Taken concurrently with  
CEP 460J, CEP 460K, CEP 460L.  
Screening and placement procedures; terminol-  
ogy and interpretation of tests used for assess-  
ment of intelligence, aptitude, achievement,  
personality, and interests of the mildly  
impaired.

**460J. Academic Instruction of Mildly  
Impaired**

Fall, Spring. 3(3-0) CEP 460, T E 310,  
T E 312, T E 315. Taken concurrently with  
CEP 460I, CEP 460K, CEP 460L.  
Education practices and remedial strategies for  
teaching academic skills to mildly impaired stu-  
dents.

**460K. Field Experience: Special  
Education Core**

Fall, Spring. 4(0-16) CEP 460, T E  
310, T E 312, T E 315. Taken concurrently with  
CEP 460I, CEP 460J, CEP 460L.  
Supervised practicum in an educational pro-  
gram for mildly impaired learners.

**460L. Core Seminar in Special Education**

Fall, Spring. 2(2-0) CEP 460, T E 310,  
T E 312, T E 315. Taken concurrently with  
CEP 460I, CEP 460J, CEP 460K.  
Consideration of affective interactions with chil-  
dren, parents, other professionals, and self.  
Attention to sharing field experiences, examin-  
ing belief-behavior consistency, teaching in the  
affective domain, and the parent-teacher part-  
nership.

**463A. The Exceptional Child in the  
Regular Classroom**

Spring. 2(2-0) T E 201B.  
Exceptional learners characteristics, and  
instructional strategies/curricular adaptations  
appropriate to such learners. Legislation man-  
dating educational programs and affecting  
school practices will be reviewed.

**465A. Educational Provisions for Deaf  
Children and Youth**

Winter. 3(3-0) CEP 460, T E 470, ASC  
454.  
Adaptation of educational methods, materials  
and curriculum to the needs of individuals with  
severe and profound hearing impairment.

**465B. Language Development for the  
Deaf**

Fall. 3(3-0) CEP 460, T E 470, ASC  
222, ASC 454.  
Theories of language development; consid-  
erations of systems in both oral and total commu-  
nication philosophies; practice in manual  
communication.

**465C. Speech Development for the Deaf**

Fall. 3(3-0) CEP 465B or concurrently.  
Techniques for aiding development of intelli-  
gible speech in individuals with severe and pro-  
found hearing loss.

**465D. Manual Communication I**

Fall, Winter, Spring, Summer of odd-  
numbered years. 3(2-2) Approval of depart-  
ment.  
Development of basic skills in finger spelling and  
the language of signs, with emphasis on signed  
English; practice in simultaneous use with spo-  
ken English.

**465E. Manual Communication II**

Fall, Winter. 2 to 4 credits. May  
reenroll for a maximum of 8 credits. CEP 465D.  
Continued development of skills in total commu-  
nication for use in educational service delivery  
systems. Practice in simultaneous use of speech,  
finger spelling and the language of signs at an  
intermediate level.

**465K. Field Experience: Deaf Education**

Fall, Winter. 2(0-6) T E 470, CEP  
465B, CEP 465C or concurrently.  
Observation/participation in day classes for  
hearing impaired learners at elementary, sec-  
ondary or post-secondary levels. Minimum 60  
clock hours.

**466B. Remedial Practices: Emotionally  
Impaired**

Winter. 3(3-0) CEP 460.  
Emphasis is on the specific learning disabilities  
of the emotionally disturbed, both in the area of  
assessment and remediation. Specific methods  
and materials are surveyed and described in  
terms of their use.

**Description — Counseling, Educational Psychology and Special Education  
of  
Courses**

**466C. Behavior Management:  
Emotionally Impaired**  
Fall, Winter. 3(0-9) CEP 460.

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

**466K. Field Experience: Emotionally Impaired**  
Winter. 3(0-9) CEP 466B and CEP 466C concurrently.

Practicum in elementary and secondary school programs for the emotionally impaired.

**467K. Field Experience: Mentally Impaired**  
Fall, Winter, Spring. 3(0-9) May reenroll for a maximum of 9 credits. Approval of department.

Supervised practicum in an educational program for mentally retarded learners.

**470J. Teaching Low Vision Skills to Visually Impaired Learners**  
Fall, Winter, Spring. 1(0-3) T E 473 or CEP 870K or CEP 871 concurrently.

Utilizing specialized curricula, instructional strategies, materials and aids to assess and facilitate learning for low vision students in classroom settings.

**470K. Aiding Teachers of Visually Handicapped Learners**  
Winter, Spring. 1(0-3) May reenroll for a maximum of 4 credits. Juniors in education of visually handicapped or blind-deaf children.

Three separate experiences aiding teachers of preschool, primary, intermediate and adolescent-young adult, multi-impaired visually handicapped learners in public and residential school programs.

**470L. Teaching Daily Living Skills to Visually Handicapped Learners**  
Fall, Winter, Spring. 1(0-3) T E 473 or CEP 870K or CEP 871 concurrently.

Supervised practice with visually handicapped and blind/deaf learners to develop competencies in teaching orientation and mobility, and the other skills of daily living.

**471A. Education of Multiply Handicapped Visually Impaired and Blind/Deaf Students**  
Fall, Winter, Spring. 3(2-2) May reenroll for a maximum of 9 credits. ASC 222, ASC 274 or concurrently.

Methods of teaching severely multiply handicapped visually impaired and blind/deaf learners: readiness, sensory development, curriculum assessment, behavior management and modification, communication and language, including language methods and principles.

**471B. Teaching Optacon Reading to Blind School-Age Learners**  
Winter. 1(0-2) Junior Special Education majors.

A laboratory course emphasizing curriculum, teaching methods and materials designed to enable blind school-age learners to read print using the Optacon.

**471K. Aiding Teachers of Blind/Deaf Learners**  
Fall, Winter, Spring. 1(0-3) May reenroll for a maximum of 3 credits. Juniors in education of blind/deaf children.

Three separate experiences aiding teachers of blind/deaf learners in teaching low-functioning, preacademic and primary level children.

**472A. Braille**  
(CEP 470C.) Winter. 4(2-4) CEP 460 or concurrently.

Reading and writing standard English Braille including music, foreign language and scientific notations. Use of brailler, slate and stylus.

**472B. Teaching Communication Skills to Blind Learners**  
Fall. 4(3-2) CEP 472A; CEP 470K concurrently.

Curriculum, goals, behavioral objectives, methods, assessment and special media in teaching preprimary sensory development; braille and aural reading; and braille, signature and type-writing. Adaptations for multi-handicapped blind students.

**472C. Teaching Mathematics to Visually Impaired Learners**  
(CEP 470F.) Fall. 3(2-2) CEP 472A.

Development of basic skills in teaching mathematical readiness concepts and computations to visually handicapped learners. Use of Nemeth Braille Code and abacus.

**472D. Education of Mainstreamed Visually Impaired Learners**  
Spring. 4(3-2) CEP 460 or concurrently; CEP 470K concurrently.

Specialized service delivery to visually impaired and blind students in mainstream classes: teacher consultation, providing learning materials in adapted formats, teaching independent living skills, and planning for transition to work.

**472E. Provisions for the Visually Impaired and Blind Learners**  
(CEP 470A.) Spring. 3(2-2) CEP 460 or concurrently; CEP 434 or concurrently. CEP 470K concurrently.

History, legislation, statistics, trends in education of visually impaired. Methods and materials for assessment and utilization of low vision. Tactual, auditory and visual access to computers. Implications of technological advances.

**472G. Principles of Orientation and Mobility**  
Fall. 3(3-0) CEP 460 or concurrently.

Adaptive travel techniques, navigation, environmental awareness and concept development for handicapped and visually impaired students.

**472I. Techniques of Orientation and Mobility**  
Fall, Winter. 3(1-4) CEP 472G or concurrently; majors in special education with an emphasis in visually impaired.

Methods of general navigation and environmental awareness relating to blindness. Travel techniques taught under blindfold conditions.

**472J. Advanced Techniques of Orientation and Mobility**  
Winter, Spring. 4(1-6) CEP 472I.

Advanced navigation and environmental awareness relating to blindness and application of teaching methods; techniques taught under blindfold conditions in complex environmental settings.

**472K. Practicum in Orientation and Mobility**  
Spring, Summer. 3 to 15 credits. May reenroll for a maximum of 15 credits. CEP 472G; CEP 472I; CEP 472J; approval of department.

Supervised field experience in teaching independent travel to visually impaired students.

**473. Parent-Teacher Relationships in Special Education**  
Fall. 3(3-0) CEP 460 or approval of department.

Development of skills for parent-teacher conferences and consultant-teacher relationships. Strategies for managing home-school relationships particularly in the area of mental impairment.

**482. Seminars in Counseling, Educational Psychology and Special Education (MTC)**  
Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 8 credits if different topics are taken. Approval of department.

Seminars in the various fields of emphasis in counseling, educational psychology and special education.

**800. Principles of Educational Measurement**  
Winter, Summer. 3(3-0) CEP 401 or CEP 400; CEP 904.

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.

**801. Seminar in Test Development**  
Spring. 3(3-0) CEP 400.

Techniques in preparing and developing achievement test items and tests.

**802A. Appraisal of Individual Intelligence and Personality: Individual Measurement—Binet**  
Winter. 3(3-0) CEP 401 or CEP 400 or PSY 415; approval of instructor.

Fundamentals of individual intelligence measurement. Measurement of intelligence with the Stanford-Binet. Observation, practice, and interpretation in an educational setting.

**802B. Appraisal of Individual Intelligence and Personality: Individual Measurement—Wechsler**  
Fall, Summer. 3(3-0) CEP 401 or CEP 400 or PSY 415; approval of instructor.

Measurement of intelligence with the Wechsler scales. Observation, practice, supervision, and interpretation.

**802C. Appraisal of Individual Intelligence and Personality: Personality Assessment in Education**  
Spring. 3(3-0) CEP 400 or CEP 401, CEP 813 or PSY 427A.

Study of general personality structure and methods in personality assessment related to education.

**803. Educational Research Methods**  
Fall, Winter, Spring, Summer. 3(3-0)

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.

**804. Appraising Educational Research**  
Winter, Summer. 4(4-0) Approval of instructor.

Appraisal of educational research from a data analytical point of view. Issues of statistical models and experimental design needed to critically examine research.

**Counseling, Educational Psychology and Special Education — Description  
of  
Courses**

**808. Educational Program Evaluation**  
*Fall, Spring, 3(3-0) CEP 803.*

History and current status of program evaluation, including a review of various evaluation models, common problems of implementation and alternative evaluation designs.

**809. Case Studies in Program Evaluation**

*Winter, 3(3-0) CEP 808. Interdepartmental with the Department of Teacher Education.*

Analysis of previously conducted program evaluations in terms of decisions evaluators must make about evaluation models, purposes, design, conduct, and reporting.

**810. Evaluating School Effectiveness**

*Winter, 3(3-0) CEP 808 or approval of instructor. Interdepartmental with the Department of Educational Administration.*

Approaches to evaluating school effectiveness. Recent research on school effectiveness. Alternative strategies for examining measured student achievement and school characteristics.

**811. Psychology of Classroom Learning**

*Fall, Winter, Spring, Summer, 3(3-0) CEP 410 or CEP 411.*

Survey of research with special attention to applications to teaching and development of school programs.

**812A. Growth and Behavior**

*Fall, Summer, 3(3-0) CEP 412 or approval of instructor.*

Survey of research with special attention to applications to teaching and school programs.

**812B. Psychology of Adolescence in the Schools**

*Winter, Spring, 3(3-0)*

Adolescent growth and development with emphasis on physical maturation, intellectual growth, and self-concept development. Impact of family and peer relations, social-emotional adjustment, problems teachers face with adolescents.

**812C. Psychology of the Gifted Student**

*Spring, 3(3-0) CEP 812A or CEP 812B.*

This course will focus on the psychoeducational characteristics of gifted and talented students, the efficacy of administrative provisions, the development of creativity, and special talents.

**813. Social and Emotional Behavior in the Classroom**

*Fall, Winter, Summer, 3(3-0) Six credits in Psychology or Educational Psychology.*

Survey of experimental and clinical research related to life factors which affect social-emotional development; implications for teaching.

**814. Psychology of Classroom Discipline**

*Fall, Summer, 3(3-0) Experience in teaching or pupil personnel work.*

The study and practice of positive strategies for the resolution of classroom discipline problems.

**818A. Introduction to Education of Gifted Students**

*Fall, Summer, 3(3-0) Graduate students.*

History and theory of educating gifted students. Current developments in the field, promising programs and practices.

**818B. Roles and Functions of School Psychologists**

*Spring, 3(3-0) Admission to Ed.S. program or approval of instructor.*

History and current status of the field. Current concerns in assessment, reporting of findings, consultation and legal-ethical responsibilities.

**818C. Laboratory and Field Experience in School Psychology**

*Fall, Winter, Spring, 3 to 15 credits. May reenroll for a maximum of 15 credits. Approval of instructor.*

Supervised experience in a public school setting involving individual psychological instruments, preparation of written reports, participation in educational planning and placement conferences, and consultation regarding handicapped and normal children and youth.

**818D. School Psychological Consultation**

*Spring, 3(3-0) CEP 818A, CEP 818B.*

Description and evaluation of the major approaches to psychoeducational consultation as practiced by school psychologists.

**820E. Diagnosis of Reading Difficulties**

*Fall, Winter, Spring, Summer, 3(2-2) Graduate students in education; T E 820A or T E 820C or 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.

**820G. Clinical Practice in Remedial Reading**

*Fall, Winter, Spring, Summer, 3(2-2) Graduate students in education; T E 820A or T E 820C or approval of department; CEP 820E recommended.*

Students work with individual cases, observe and practice group procedures in the University reading clinic.

**820M. Seminar in Diagnostic and Remedial Reading**

*Fall, Winter, Spring, Summer, 3(3-0) CEP 820G.*

Focuses on the psychological and physiological nature of reading retardation, the relationships between clinical reading programs and the larger curriculum environment, and the role of the reading diagnostician.

**824. Process of Instructional Development**

*Winter, 3(3-0)*

Application of a validated instructional systems approach to the development of practical solutions to critical teaching and learning problems for teachers, administrators, and media specialists.

**825. Seminar in Instructional Television**

*Spring, 3(3-0) Approval of department. Interdepartmental with the Department of Telecommunication.*

Television use in instruction, particularly as it concerns the learner, the classroom teacher, the instructional developer and the administration.

**826. School Application of Portable ITV**

*Fall, 3(3-0) CEP 410, CEP 431A, CEP 431B or approval of instructor.*

Application of concepts, principles, and skills relevant to portable ITV systems and television teaching techniques.

**830. Administration of Instructional Media Centers**

*Winter, 3(3-0) CEP 831A.*

Administration models used by media centers; comparison of theoretical and operational characteristics of recommended models and development of models for the students' use.

**831A. Effective Use of Instructional Media**

*Fall, Spring, 3(3-0) CEP 431A.*

Use of a range of instructional media within the context of a systematically planned program of objectives, learning principles, methods and evaluation.

**831B. Graphics Design and Use in Instruction**

*Winter, Spring, 3(3-0) CEP 831A or approval of department.*

Concepts, principles and techniques for preparation and use of graphics in instruction. Design and presentation of materials for developmental boards, slides, transparencies, models, and exhibits. Simple production techniques for teaching.

**831C. Photography in Instruction**

*Fall, Spring, 3(3-0) CEP 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 Cinematography**

*Fall, 3(3-0) Approval of instructor.*

Potentials and limitations of motion pictures for instructional and informational programs. Writing and budgeting film proposals, scripting, filming techniques, sound, animation, composition, film editing. Super 8mm format used.

**832. Diffusion of Educational Innovations**

*Fall, Spring, 3(3-0) Approval of instructor.*

Operational principles, techniques, and heuristics for gaining and maintaining change in educational and training organizations.

**833. Information Handling Systems**

*Spring, 3(3-0) CEP 830 or approval of instructor.*

Design, implementation and study of information handling systems for print and non-print resources.

**834. Computer Applications in Education I**

*Fall, Winter, Summer, 3(3-0) CPS 115, CEP 434, or approval of instructor.*

Fundamentals of computer applications in education, with hands on experience. History of computer education, computer functioning related to educational problems. Hardware and software available for educational application.

**834A. Computer Applications in Education II**

*Winter, Spring, 3(3-0) CEP 834.*

Computer applications in instruction (CAI), administration and research. Direct experience with a broad spectrum of computer software widely used in educational applications.

**834B. LOGO for Teachers**

*Fall, Summer, 3(3-0) CEP 434.*

Lesson planning and guided discovery teaching techniques in LOGO.

**Description — Counseling, Educational Psychology and Special Education of Courses**

**834C. Teaching Problem Solving Skills with Microcomputers**

Winter. 3(3-0) CEP 434.

Using computers to develop selected problem solving skills through appropriate data bases, spreadsheet, and programming strategies.

**835. Instruction in College Teaching**

Winter. 3(3-0) Graduate student, approval of instructor.

Instructional psychology and system design principles applied to college teaching. Selecting lecture, discussion and other teaching modes. Techniques for planning, delivering and evaluating college teaching.

**836. Computer Assisted Instruction**

Fall, Spring. 3(3-0) CEP 434.

Teaching applications of computer in instruction including evaluation of commercial courseware, instruction in use of author languages (PILOT, AUTHOR1, Talk/Tutor), and the process of development of CAI packages.

**837. Instructional Product Development**

Winter. 3(3-0) CEP 410 or approval of instructor.

Determining a need for, and designing, developing, evaluating, installing and maintaining instructional products in a variety of settings including schools, universities, business, industry and government.

**838A. Instructional Design and Technology I**

Winter, Summer. 3(3-0) Approval of instructor.

Basic skills and principles of instructional unit design: objectives, task description and analysis, and evaluation of instruction.

**838B. Instructional Design and Technology II**

Spring, Summer. 3(3-0) CEP 838A or approval of instructor.

Basic skills and principles of instructional lesson design, including motivation, mental set, explanation, demonstration, practice and feedback.

**840A. Counseling Practice**

Fall, Summer. 3(3-0) Admission to M.A. Counseling Program. Interdepartmental with the School of Health Education, Counseling Psychology and Human Performance.

The practice of counseling and guidance in schools, community colleges, and rehabilitation agencies.

**840B. Introduction to Counseling Theory**

Fall, Summer. 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.

**840C. The Guidance Information Service**

Winter. 3(3-0) CEP 840A, CEP 840B. Interdepartmental with the School of Health Education, Counseling Psychology and Human Performance.

The use of occupational, educational and social information in counseling interviews and in guidance programs.

**840D. The Counseling Process**

Fall, Winter. 3(3-0) CEP 840A, CEP 840B.

The counseling process with emphasis given to students learning a systematic approach to counseling. Students practice interviewing skills in a counseling laboratory.

**840E. Counseling and Consulting Strategies**

Fall, Winter. 3(3-0) CEP 840A, CEP

840B.

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.

**840F. Counseling Practicum I**

Fall, Winter, Spring. 6(4-8) CEP 840C, CEP 840D. Interdepartmental with the School of Health Education, Counseling Psychology and Human Performance.

Supervised counseling experienced in selected schools and agencies followed by analysis and critique of these experiences through group and individual consultation with instructor.

**840G. Counseling Practicum II**

Fall, Winter, Spring. 6(4-8) CEP

840F.

Continuation of CEP 840F.

**840J. Group Procedures in Counseling**

Spring of odd-numbered years. Summer. 3(3-0) CEP 840F.

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.

**840K. Research in Counseling**

Fall. 3(3-0) CEP 904.

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.

**840M. Development and Administration of Counseling Services**

Fall, Spring. Students in rehabilitation counseling should enroll Fall Term. 3(3-0) CEP 840F.

Identification and study of policy issues in counseling, service development strategies, administrative issues, management and supervisory practices. Students will write a program proposal or issue analysis.

**842F. International Aspects of Rehabilitation and Special Education**

Spring of odd-numbered years. 3 credits. May reenroll for a maximum of 6 credits. CEP 842S.

International dimensions of rehabilitation and special education including developmental perspectives, current status and issues in the field.

**842S. Introduction to Rehabilitation and Special Education in the United States**

Winter. 3(3-0) Approval of instructor.

Overview of rehabilitation and special education programs in the United States. Emphasis will be given to historical development, current status, and future directions of services for handicapped persons.

**844A. Introduction to Urban Counseling**

Fall. 3(3-0) CEP 840A, CEP 840B concurrently.

Problems—health, sociocultural, economic, educational, legal, vocational—as manifested by urban residents and their resolution through counseling. Emphasis on systems and personal change mechanisms.

**844B. Systemic Counseling**

Fall. 3(3-0) Approval of department.

An evaluation of the theory and philosophy of systemic counseling. Issues pertaining to systemic change will be examined.

**844C. Urban Counseling Practicum**

Fall, Winter, Spring, Summer. 3 credits. May reenroll for a maximum of 12 credits. CEP 844A or approval of instructor.

A minimum of 12 hours per week of supervised counseling will be performed in an urban agency setting. Emphasis on developing counseling skills applicable to urban residents and urban agencies.

**844D. Urban Career Development System Analysis**

Winter. 3(3-0) CEP 844A, approval of department.

Critique of existing theories of vocational (career) development and interest inventories for use with urban residents, examination of barriers to urban residents, and development of alternative models.

**844E. Urban Counseling in the Elementary School**

Summer. 3(3-0) Approval of department.

Seminar of issues and impact of the urban environment on the elementary child's personal and social responsibilities with implications for the role of the counselor.

**844F. Sexism, Racism and Alienation in the Therapeutic Process**

Winter. 3(3-0)

Historical perspective, definition, manifestations and consequences of sexism, racism and alienation in promoting social inequality. Emphasis upon creating counseling interventions to address needs of alienated groups.

**844G. Community Evaluative Research**

Spring. 3(3-0) CEP 844A, CEP 803, CEP 904 or approval of department.

Application of evaluative research methods to the solution of urban problems; review of current evaluative techniques; identification of problems, design, experiments; review of selected studies.

**851A. Development of Self-Understanding**

Fall, Spring, Summer. 3(3-0)

Development of self-awareness and understanding of how one's personal and interpersonal style influences and is influenced by human relationships in educational settings.

**851B. Self-Concept Development and Enhancement**

Fall, Spring, Summer. 3(3-0)

Self-concept development from childhood through adulthood; how teachers, parents, and personal life experiences impact self-concept; enhancement strategies.

**863A. The Handicapped Student in the Regular Classroom**

Summer. 3(3-0) Teacher certification.

Problems and issues involved in educating children in the least restrictive environment (mainstream). Emphasis on legal, attitudinal, and practical factors which influence teachers and students.

**865A. Issues in Education of Deaf**

Spring. 3(2-3) Graduate students.

Designed for graduate non-majors seeking to expand information and understanding of severe and profound hearing loss; educational implications, programs.

**Counseling, Educational Psychology and Special Education — Description  
of  
Courses**

**865K. Field Experience: Education of Deaf**

Spring, 2 to 8 credits. May reenroll for a maximum of 10 credits. Graduate students, prior teaching or clinical experience.

Supervised graduate field experience in educational programs for the deaf and hearing impaired.

**865M. Independent Study: Education of Deaf**

Spring, 2 to 5 credits. May reenroll for a maximum of 10 credits. Graduate students.

Supervised study in deaf education conducted according to a written agreement stating the problem or topical area of study, the methodology and the product of the study.

**866A. Issues in Education of Emotionally Impaired**

Summer, 3(3-0) Special Education majors only, approval of instructor.

This seminar focuses on crucial issues related to programming for emotionally impaired students.

**866J. Advanced Methods and Materials in Special Education: Emotionally Impaired**

Fall, 3(3-0) CEP 466A, CEP 466B, CEP 466C.

Review and analysis of recent research findings, intervention strategies, and curriculum developments applicable to emotionally impaired children and youth.

**866K. Field Experience: Emotionally Impaired**

Fall, Winter, Spring, Summer of odd-numbered years, 3 to 12 credits. May reenroll for a maximum of 18 credits. Master's students with an emphasis in emotionally impaired, approval of department.

Supervised graduate field experience in educational programs for the emotionally impaired.

**866M. Independent Study: Emotional Impairment**

Spring, 2 to 6 credits. May reenroll for a maximum of 12 credits. Graduate students.

Supervised study in emotional impairment conducted according to a written agreement stating the problem or topical area of study, the methodology and the product of the study.

**867J. Advanced Methods and Materials in Special Education: Mentally Handicapped Children and Youth**

Winter, 3(3-0) CEP 428B, CEP 428C, CEP 460C.

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.

**867K. Field Experience: Mental Retardation**

Fall, Winter, Spring, 1 to 12 credits. May reenroll for a maximum of 12 credits. Approval of instructor.

Supervised graduate field experience in educational programs for the mentally retarded.

**867M. Independent Study: Mental Retardation**

Spring, 1 to 12 credits. May reenroll for a maximum of 12 credits. Approval of instructor.

Supervised study in mental retardation conducted according to a written agreement stating the problem or topical area of study, the methodology and the product of the study.

**868A. Advanced Methods and Materials in Special Education: Pre-vocational/Vocational Curriculum for SEI/Autistic Students**

Fall, 3(3-0) Approval of instructor.

Overview of autism and rehabilitation services. Assessment procedures, placement criteria and prevocational/vocational curriculum. Skill development for severely emotionally impaired/autistic students.

**868B. Advanced Methods and Materials in Special Education: The Severely Impaired/Autistic Student in the Home and School**

Spring, 3(3-0) Approval of instructor.

A comprehensive exploration of autism in terms of diagnosis, treatment and prognosis. The effect of autism on the family unit, the community and the school system.

**868C. Advanced Methods and Materials in Special Education: Communication Strategies for Teachers of Autistic Students**

Spring, 3(3-0) Approval of instructor.

Design and implementation of a language and communication curriculum for autistic students. Traditional language development and alternative modes of communication stimulation.

**868D. Seminar: Severely Emotionally Impaired/Autistic**

Fall, Winter, Spring, 2(2-0) May reenroll for a maximum of 6 credits. Approval of instructor.

Coordination of course work and field experience for the SEI/Autistic emphasis. Information regarding autism, task analysis, curriculum, research.

**868K. Severely Emotionally Impaired/Autistic**

Fall, Winter, Spring, 3 to 6 credits. May reenroll for a maximum of 18 credits. Approval of instructor.

Students spend 3 days a week in a public school setting for severely emotionally impaired/autistic students applying skills learned in related courses.

**869A. Education of Mildly Impaired Learners**

Fall, 3(3-0) CEP 460.

Comprehensive introduction to the field of learning disabilities including theory, issues, programs, characteristics, terminology, and major components of the law.

**869B. Principles of Formal and Informal Assessment of Mildly Impaired Students**

Fall, Winter, 3(3-0) CEP 460, CEP 869A or approval of instructor.

Methods, techniques and instruments for identifying and diagnosing academic problems of analysis of formal and informal assessment strategies. Interpretation of diagnostic profiles.

**869D. Teacher Consultant Skills for Mainstreamed Students**

Spring, 3(3-0) CEP 869B, two years special education teaching experience or approval of instructor.

Consultant skills including role identification, problem-solving techniques, individual and group communication processes, inservice activities, school survival and study skills curriculum.

**869E. Personal Adjustment and Career Preparation for the Mildly Impaired Secondary Student**

Winter, 3(3-0) CEP 869A, CEP 869B or concurrently.

Assessment procedures and instructional methodology appropriate for learning disabled students. Various programming options and outcomes will be contrasted. Emphasis on instruction in learning strategies.

**869F. Evaluation and Remediation Strategies for Mildly Impaired**

Spring, 3(3-0) CEP 869A, CEP 869B.

Strategies for the evaluation and remediation of reading and written language disorders of mildly impaired students. Procedures for the selection, development, evaluation, and modification of reading and writing programs.

**869G. Diagnosis and Remediation of Mathematics for Mildly Impaired Students**

Winter, 3(3-0) CEP 869A, CEP 869B.

Cognitive characteristics of mildly impaired students and effects on mathematics and problem solving. Formal and informal assessment techniques. Methods and strategies for remediation.

**869I. Classroom Management-Mildly Impaired**

Fall, 3(3-0)

Characteristics of effective classroom management, the nature of sound instructional practices for promoting learning by mildly impaired students and the application of these principles to various special education settings.

**869J. Behavior Management: Diagnostic and Remedial Practices for Mildly Impaired Students**

Spring, 3(3-0) Graduate special education majors only.

Applied behavior analysis in the behavior management of mildly impaired students. Applications in classroom and consultation skills.

**869K. Learning Disabilities Practicum**

Fall, Winter, Spring, Summer, 1 to 12 credits. May reenroll for a maximum of 12 credits. Approval of instructor.

Supervised practice working with learning disabled students in educational programs for the learning disabled and in a clinic setting on campus; applying skills learned in related courses.

**869M. Independent Study: Learning Disabilities**

Fall, 3 to 12 credits. May reenroll for a maximum of 12 credits. CEP 460J, CEP 869B, CEP 869F, CEP 869G.

Supervised study in learning disabilities conducted according to a written agreement stating the problem or topical area of study, the methodology and the product of the study.

**870K. Field Experience: Teaching Visually Handicapped Learners**

Winter, Spring, 3 to 12 credits. May reenroll for a maximum of 18 credits. Approval of department.

Supervised graduate field experience in educational programs for the visually handicapped.

**871. Field Experience: Teaching Blind/Deaf Learners**

Winter, Spring, 3 to 12 credits. May reenroll for a maximum of 18 credits. Approval of department.

Supervised graduate field experience in educational programs for the blind/deaf.

**Description — Counseling, Educational Psychology and Special Education of Courses**

- 872. Analysis of Special Education Research**  
*Winter of odd-numbered years. 3(3-0) Approval of department.*  
 Analysis of research studies in each special education disability area. Study of research design and procedures; discussion of theoretical and applied issues relating to the contents of the studies.
- 874. Community Agency Programs for the Handicapped**  
*Summer of odd-numbered years. 3(3-0) Approval of department.*  
 Various official and voluntary agencies and organizations which offer programs and services for the handicapped and the relationship of these programs to special education.
- 875B. Special Education Finance**  
*Winter. 3(3-0) Graduate students.*  
 Analysis of major special education funding systems, the Michigan system, intermediate school district special education tax, constituent district reimbursement policies and approaches to special education budgeting.
- 875C. Special Education Law**  
*Spring of odd-numbered years. 3(3-0) Approval of instructor.*  
 Analysis of State and Federal legislation, regulations, and litigation as related to special education and impact on administration of those programs. Includes study of current and precedent setting court decisions.
- 875D. Administration of Educational Programs: Administration of Special Education Programs**  
*Winter, Summer. 3(3-0) 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. Organization and administrative aspects of special education programming. Federal, state, intermediate and local district level programs in special education are reviewed.
- 879. Independent Study: Special Education**  
*Fall. 3 to 6 credits. May reenroll for a maximum of 12 credits. Approval of instructor.*  
 Supervised study in special education conducted according to a written agreement stating the problem or topical area of study, the methodology and the product of the study.
- 881. Workshops in Counseling, Educational Psychology and Special Education**  
*Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 6 credits. Approval of department.*  
 Laboratory approach which provides opportunities for experienced educational personnel to concentrate their study on common problems in counseling, educational psychology, or special education.
- 882. Seminars in Counseling, Educational Psychology and Special Education (MTC)**  
*Fall, Winter, Spring, Summer. 1 to 9 credits. May reenroll for a maximum of 15 credits if different topics are taken. Approval of department.*  
 Seminars in the various fields of emphasis in counseling, educational psychology and special education.
- 883. Readings and Independent Study in Counseling and Educational Psychology**  
*Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 15 credits. Approval of department.*  
 Study on an individual or group basis in the various fields of emphasis.
- 884. Laboratory and Field Experience in Counseling and Educational Psychology**  
*Fall, Winter, Spring, Summer. 1 to 9 credits. May reenroll for a maximum of 15 credits. Approval of department.*  
 Supervised graduate practicums, observations, internships, and externships in the various areas of emphasis.
- 899. Master's Thesis Research**  
*Fall, Winter, Spring, Summer. 2 to 12 credits. May reenroll for a maximum of 12 credits. Approval of department.*
- 900A. Psychometric Theory**  
*Spring of odd-numbered years. 3(3-0) CEP 800, CEP 905.*  
 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.
- 900B. Problems of Educational Measurement**  
*Spring of odd-numbered years. 3(3-0) CEP 800, 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.
- 900D. Advanced Topics in Classical Test Theory**  
*Winter of even-numbered years. 3(3-0) CEP 905, CEP 800.*  
 Refinements and extensions of classical test theory approaches to the design and interpretation of educational measures. Primary attention given to generalizability theory and its applications.
- 900E. Using Standardized Tests for Decision Making**  
*Fall, Spring. 3(3-0) CEP 401 or approval of department.*  
 School administrative decision making based on information yielded by standardized tests. Participants will also engage in private consultations with the instructor concerning system or building data.
- 904. Quantitative Methods in Educational Research**  
*Fall, Winter, Spring, Summer. 4(4-0) Pretest and approval of instructor.*  
 Application of descriptive statistical techniques to educational data. Introduction to estimation and tests of hypotheses. Interpretation of statistical reports.
- 905. Quantitative Methods in Educational Research: Advanced Quantitative Methods in Educational Research**  
*Fall, Winter, Summer. 4(4-0) CEP 904 or pretest, 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.
- 906. Quantitative Methods in Educational Research: Experimental Design in Education**  
*Winter, Spring, Summer. 4(4-0) CEP 905.*  
 Theory and practice in the design, analysis and interpretation of experimental and quasi-experimental research.
- 907A. Advanced Research Methods in Education**  
*Fall. 4(4-0) CEP 803, CEP 904 or CEP 905.*  
 Principles and techniques in survey research with limited consideration of content analysis and observational studies. Sampling, instrumentation, data collection, and data analysis.
- 908. Issues in Program Evaluation**  
*Spring. 3(3-0) Three courses in measurement, evaluation, statistics, or research design.*  
 Issues in program evaluation will include such topics as evaluation and political decision making, external vs internal evaluation, qualitative vs quantitative evaluation, evaluation vs research, and meta evaluation.
- 911. Educational Psychology Seminar**  
*Fall, Winter, Spring. 3(3-0) May reenroll for a maximum of 15 credits. Doctoral candidates or approval of instructor. Educational psychology doctoral candidates must enroll in the fall.*  
 History of educational psychology, learning and cognition, personality and self-concept development, social psychology of classroom behavior, social learning theory, school psychology, research on teaching.
- 912. Cognitive Processes and Educational Applications: The Applied Psychology of Judgment, Decision Making, and Problem Solving**  
*Winter of odd-numbered years. 3(3-0) CEP 911 or PSY 810; CEP 904, CEP 905.*  
 Review existing research and methods for study of individual decision making, judgment and problem solving in a variety of fields — education, medicine, clinical psychology, business, etc., and their implications for education and training.
- 913. Seminar in Research on Teaching (ED 913., T E 924.)**  
*Winter. 3(3-0) Approval of instructor. Interdepartmental with the Department of Teacher Education.*  
 Critical survey of five approaches to research on teaching. Students develop a framework for organizing the literature, methods, and issues in the field.
- 915. Language, Literacy, and Learning**  
*Spring. 3(3-0) CEP 811, CEP 904, PSY 414, LIN 401 or approval of instructor.*  
 An overview of the psychological foundation of language processes (reading, writing, speaking, listening) with emphasis on the unique and the overlapping features across the four language areas.
- 917. Cognitive Theories of Knowledge Acquisition**  
*Winter of even-numbered years. 3(3-0) CEP 411 or CEP 811 or approval of instructor. Interdepartmental with the Department of Teacher Education.*  
 Cognitive research and theories about the growth of knowledge in academic disciplines and the acquisition of disciplinary knowledge by elementary and secondary school students.

**919. Psychology and Pedagogy of Reading**  
Spring. 3(3-0) CEP 811, T E 820A, CEP 915 or approval of instructor. Interdepartmental with the Department of Teacher Education.

Psychological foundations of reading process, and instruction in reading. Cognitive processes and implications for models of reading are emphasized.

**928. Conceptual Foundations of Educational Research**

Fall. 3(3-0) Approval of instructor. Interdepartmental with and administered by the Department of Teacher Education.

Epistemology and ideology in educational research. Analysis of concepts of method, causation, objectivity and subjectivity in historical perspective.

**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.

**934A. Seminar in LOGO Educational Research**

Fall. 3(3-0) CEP 434 or CEP 834.

Survey of current research and educational applications of LOGO; analysis of LOGO list-processing characteristics.

**935. Seminar in Principles and Practice of Instructional Consultation**

Spring. 3(3-0) CEP 931A, CEP 931B, CEP 410, approval of instructor.

Theoretic framework for consultation with instructional development clients. Case studies, role play simulations, debriefings. Application of the principles and development of consultation strategies and styles.

**939. Policy and Legal Issues in Testing**

Spring of even-numbered years. 3(3-0) CEP 401. Interdepartmental with and administered by the Department of Teacher Education.

Public policy and legal issues concerning the use of standardized testing to make critical decisions about individuals in American public education.

**940. Educational Applications of Item Response Theory**

Spring of odd-numbered years. 3(3-0) CEP 800; CEP 905.

Assumptions, model selection, model fit, estimation of item/ability parameters, equating, scaling, item banking and test construction with the Rasch, two-and three-parameter logistic models. Computer experience using BICAL and LOGIST.

**942. Multivariate/Data Analysis in Education**

Spring of even-numbered years. 4(4-0) CEP 904, CEP 905, CEP 906.

Multivariate analysis techniques used in education and educational psychology; emphasis on techniques for analysis of designed experiments and methods for analysis of repeated measures data including application and interpretation.

**948A. Counseling Theories**

Fall. 3(3-0) Approval of instructor. Interdepartmental with and administered by the School of Health Education, Counseling Psychology and Human Performance.

Survey of counseling theories and research with emphasis on current issues which have implications for counseling practice or for counselor education.

**948B. Psychology of Vocational Development**

Winter. 3(3-0) Approval of instructor. Interdepartmental with and administered by the School of Health Education, Counseling Psychology and Human Performance.

Relationship between psychological concepts and vocational development.

**949B. Learning Foundations of Counseling Psychology**

Fall. 3(3-0) HCP 949A or approval of instructor. Interdepartmental with and administered by the School of Health Education, Counseling Psychology and Human Performance.

Principles of learning and their application to the counseling process.

**953. Ethics in School and Counseling Psychology**

Spring. 3(3-0) Doctoral students in counseling psychology or school psychology. Interdepartmental with and administered by the School of Health Education, Counseling Psychology and Human Performance.

Professional ethics, standards, principles, guidelines and issues concerning the training and professional activities of counseling psychology and school psychology. Relevant legal issues and precedents.

**975A. Field Experience: Special Education Administration Simulation**

Spring. 3(0-9) Approval of instructor.

Supervised graduate practicum in administration of the Special Education program of a simulated school district.

**975B. Field Experience: Special Education Administration**

Fall, Spring. 3 to 12 credits. May reenroll for a maximum of 18 credits. Approval of department.

Supervised graduate practicum or internship in special education administration.

**976. Policy Issues in Special Education**

Fall. 4(4-0) Graduate students and approval of instructor.

Policy concerns in special education including economic, social, legal, and organizational issues. Policy implications within the theoretical framework of organizational change.

**982. Seminars in Counseling, Educational Psychology and Special Education (MTC)**

Fall, Winter, Spring, Summer. 1 to 9 credits. May reenroll for a maximum of 15 credits if different topics are taken. Approval of department.

Seminars in the various fields of emphasis in counseling, educational psychology and special education.

**983. Readings and Independent Study in Counseling and Educational Psychology**

Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 15 credits. Approval of department.

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

**984. Laboratory and Field Experience in Counseling and Educational Psychology**

Fall, Winter, Spring, Summer. 1 to 9 credits. May reenroll for a maximum of 15 credits. Approval of department.

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

**999. Doctoral Dissertation Research**

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

## CRIMINAL JUSTICE C J

### College of Social Science

**110. Introduction to Criminal Justice**

Fall, Winter, Spring, Summer. 3(3-0)

Agencies and processes of criminal justice, emphasizing historical, constitutional (legal), and political considerations. Criminal justice is also analyzed as a system, with the problems and prospects for change.

**210. Introduction to Forensic Science**

Spring. 3(3-0) Not open to majors in Criminalistics.

Nontechnical survey of forensic science and its relationship to the criminal justice system. Evidence and crime scene investigations. Criminalistics, including evidence, serology, pathology, toxicology, questioned documents and expert testimony.

**312. Criminalistics I**

Fall. 3(0-6) Criminalistics majors.

Criminalistics laboratory techniques. Photography, crime scene recording, reproduction of evidence, latent fingerprints.

**313. Criminalistics II**

Winter. 3(0-6) C J 312, approval of school.

Criminalistics laboratory techniques. Firearms. Hair and fiber identification. Comparative microscopy.

**314. Criminalistics III**

Spring. 3(0-6) C J 313, approval of school.

Criminalistics techniques. Serology. Comparative microscopy. Document examination. Forensic chemistry.