460. Critical Perspectives in Communication
Spring. 4(4-0)
P: One 200 level course in Communication. R: Not open to freshmen and sophomores.
Evaluation of efficacy of messages. Interdependence of communication and other societal factors, emphasizing criteria for ethical and social appropriateness.

475. Communication Campaign Design and Analysis (W)
Fall. 4(4-0)
R: Open only to junior, senior or graduate student Communication majors. Completion of Tier 1 writing requirement.
Design and analysis of campaigns presented through mediated channels including electronic and print media.

490. Independent Study
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 3 credits in all enrollments for this course.
P: One 200 level COM course. R: Not open to freshmen and sophomores. Approval of department; application required.
Directed study under faculty supervision.

493. Internship
Fall, Spring, Summer. 1 to 7 credits. A student may earn a maximum of 7 credits in all enrollments for this course.
R: Open only to Communication majors. Approval of department; application required.
Supervised practical experience in a professional environment.

494. Practicum in Communication Research and Instruction
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
R: Open only to Communication majors. Approval of department; application required.
Structured participation in departmental research teams and applied practice in the community.

800. Communication Programs and Evaluation
Fall. 3(3-0)
Communication audits, training and development, and focus groups as they apply to the evaluation of communication programs and institutions. Related topics include interviewing, questionnaire design and formative evaluation.

801. Communication Research I
Fall. 4(4-0)
Communication research strategy and methodology. Scientific process. Derivation and test of hypotheses. Methods of research design.

802. Communication Research II
Spring. 4(4-0)
P: COM 801.
Further consideration of communication research strategy and methodology. Topics include systems theory, cybernetics, and transactional approach.

815. Organizational Communication I
Fall. 3(3-0)
Emphasis on dyadic and group processes and organizational intervention strategies. Topics include managing diversity, organizational structure, and communication productivity.

820. Communication Theory and Process
Fall. 3(3-0)
Theoretical models of communication with emphasis on the applications of communication theory to various professional communication areas.

828. Cross-Cultural Communication
Spring. 3(3-0)
Problems in communicating across cultural boundaries. Role of communication in the economic, social, and political development of less developed countries.

855. Codes and Code Systems
Spring. 4(4-0)
Structure and function of verbal and nonverbal communication. Relationship between discourse and context. Generation of meaning through interaction.

860. Persuasion
Fall. 3(3-0)
Use of messages to gain compliance and effect social change. Persuasion and attitude change from classical theories to contemporary situations.

890. Independent Study
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 9 credits in all enrollments for this course.
R: Approval of department.
Individualized study under faculty direction.

893. Internship
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
R: Open only to graduate students in Communication.
Supervised experience in an applied-communication setting.

899. Master's Thesis Research
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 14 credits in all enrollments for this course.
R: Open only to graduate students in Communication.

901. Communication Research Design I
Fall. 4(4-0)
P: One introductory research design or statistics course.
Methods of data collection and analysis. Writing and critiquing research reports.

902. Communication Research Design II
Spring. 4(4-0)
P: COM 901. R: Open only to graduate students.
Further study of methods of data collection and analysis. Writing and critiquing research reports.

915. Organizational Communication II
Spring of odd-numbered years. 3(3-0)
P: COM 815; COM 800 or COM 902.
Organizational communication structure and information processing. The organization's embeddedness in a larger social environment.

921. Micro and Macro Media
Fall of odd-numbered years. 3(3-0)
P: COM 800 or COM 902.
Perspectives on media processes pertaining to individuals, groups, and large-scale systems. Topics include cognitive processing of media, public opinion and affective responses to media.

922. Interpersonal Communication
Fall. 3(3-0)
P: COM 800 or COM 902.
Theory and research in interpersonal communication. Role of communication in processes such as interpersonal influence and relationship development.

990. Independent Study
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
R: Open only to graduate students in Communication. Approval of department.
Individualized study under faculty direction.

999. Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 99 credits in all enrollments for this course.
R: Open only to Ph.D. students in Communication.

COMMUNICATION ARTS AND SCIENCES CAS

College of Communication Arts and Sciences

492. Special Topics
Fall, Spring, Summer. 1 to 8 credits. A student may earn a maximum of 16 credits in all enrollments for this course.
R: Approval of department.
Varied topics pertaining to the study of communication processes.

892. Special Topics
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 16 credits in all enrollments for this course.
R: Open only to graduate students in the College of Communication Arts and Sciences or approval of college.
Varied topics pertaining to advanced study of communication processes.

992. Doctoral Seminar
Fall, Spring, Summer. 3(3-0) A student may earn a maximum of 15 credits in all enrollments for this course.
R: Open only to Ph.D. students in Mass Media and Communication or approval of college.
Topics on theoretical and research issues in communication and mass media.

993. Research Internship
Fall, Spring, Summer. 1 credit. A student may earn a maximum of 6 credits in all enrollments for this course.
R: Open only to Ph.D. students in Mass Media.
Participation in faculty research projects.

999. Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 99 credits in all enrollments for this course.
R: Open only to Ph.D. students in Mass Media.

COMPUTER SCIENCE CPS

Department of Computer Science College of Engineering

100. Using Computers
Fall, Spring, Summer. 3(2-2)
R: Freshmen and sophomores only. Not open to students in the College of Engineering and the College of Natural Science.
Applications of computation. Computer hardware, software, communication and networks. Impact of computation and computers on the individual and society. Hands-on application exercises. Databases, files, systems, graphics, spreadsheets, wordprocessing.

130. Introduction to Computing
Fall, Spring, Summer. 3(2-2)
Computer Aided Software Engineering for design. Structured, modular BASIC for programming. Selection, loops, arrays, sequential and direct files, character and pixel graphics, and spreadsheets. Applications from business, science and humanities.

131. Introduction to Technical Computing
Fall, Spring. 3(2-2)
P: MTH 103 or MTH 110 or MTH 116; or MTH 120 or MTH 124 or MTH 132 or concurrently.
Computing systems and applications. Design and implementation of programs using FORTRAN. Examples from engineering, mathematics and science.

230. Algorithms and Computing
Fall, Spring. 4(3-2)
P: LBS 118 or MTH 120 or MTH 124 or MTH 132.
Computer systems and problem solving. Software development. Structured design and implementation of algorithms. Procedural and object-oriented programming. Compilation and linking.

260. Discrete Structures in Computer Science
Fall, Spring. 3(3-0)
P: MTH 133.
Propositional and first order logic. Equivalence, inference. Mathematical induction, diagonalization principle. Set operations, relations, functions. Lattices, Boolean algebras. Truth tables and minimization of Boolean expressions. Applications to CPS.

290. Independent Study in Computer Science
Fall, Spring. 1 credit. A student may earn a maximum of 3 credits in all enrollments for this course.
R: Approval of department; application required.
Supervised individual study in an area of computer science.

291. Selected Topics in Computer Science
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
R: Approval of department.
Topics selected to supplement and enrich existing courses and lead to the development of new courses.

320. Computer Organization and Assembly Language Programming
Fall, Spring. 4(3-2)
P: CPS 230, CPS 260. R: Not open to students with credit in EE 331.
Machine representation of data and instructions. Machine organization, primary storage, registers, arithmetic logic unit, control unit, operations. Assembly language programming, interface to high level languages. Assemblers and loaders.

330. Data Structures and Programming Concepts
Fall, Spring. 4(3-2)
P: CPS 230, CPS 260.
Data types and structures. Algorithms including searching, sorting and hashing. Program correctness, program analysis. Abstract data types including stacks, queues, and trees. Object-oriented programming, introduction to various program libraries.

360. Automata and Formal Language Theory
Fall, Spring. 3(3-0)
P: CPS 230, CPS 260. R: Open only to Computer Science, Computer Engineering, Computational Mathematics, Electrical Engineering, and LBS Computer Science students.
Regular languages, regular grammars, finite-state automata, transducers and relationships among them. Context-free languages and grammars. Language recognition, parsers. Properties of formal languages. Turing computability and undecidability.

410. Operating Systems
Fall, Spring. 4(3-2)
P: CPS 330; CPS 320 or EE 331. R: Open only to Computer Science, Computer Engineering, Electrical Engineering, and LBS Computer Science majors.
History and evolution of operating systems. Process and processor management. Primary and auxiliary storage management. Performance evaluation, security, distributed systems. Case studies of modern operating systems.

420. Computer Architecture
Fall, Spring. 4(3-2)
P: CPS 330; EE 331 or CPS 320, CPS 360. R: Open only to Computer Science, Computer Engineering, Electrical Engineering, and LBS Computer Science majors.
Digital logic and sequential machine design. Computer organization, control unit and arithmetic logic unit implementation. Input-output, memory organization, parallel operations. Digital system simulation.

422. Computer Networks
Fall, Spring. 3(3-0)
P: STT 351; CPS 320 or EE 331; CPS 410 or concurrently. R: Open only to Computer Science, Computer Engineering, Electrical Engineering, and LBS Computer Science majors.
Computer network architectures and models. Medium access control. Physical, data link, network, transport, and session layers. Local-area and wide-area networks.

440. Artificial Intelligence and Symbolic Programming
Fall. 4(3-2)
P: CPS 330, CPS 360. R: Open only to Computer Science, Computer Engineering, and LBS Computer Science majors.
Machine intelligence. Heuristic programming. Representation and control in LISP and PROLOG. Applications to search, rule-based diagnosis, and parsing.

449. Design of Intelligent Systems (W)
Spring. 4(2-4)
P: CPS 440; CPS 320 or EE 331. R: Open only to College of Engineering Computer Science seniors and graduate students. Completion of Tier I writing requirement. Not open to students with credit in CPS 479.
Intelligent system applications such as natural language, machine vision, or a diagnostic expert system. Team development, software engineering, project management.

450. Translation of Programming Languages
Spring. 4(3-2)
P: CPS 330, CPS 360; CPS 320 or EE 331. R: Open only to Computer Science, Computer Engineering, and LBS Computer Science majors.
Theory and practice of programming language translation. Languages, grammars and parsing. Lexical, syntactic and semantic analysis. Compile-time error handling. Code optimization and code generation.

452. Organization of Programming Languages
Fall. 3(3-0)
P: CPS 330, CPS 360; CPS 320 or EE 331. R: Open only to Computer Science and LBS Computer Science majors.
Organization of programming languages including language processors, syntax, data types, sequence control, storage management. Comparison of language features from the functional, imperative, logical and object-oriented paradigms.

470. Software Engineering
Fall. 4(3-2)
P: CPS 330, CPS 360; CPS 320 or EE 331. R: Open only to College of Engineering Computer Science, Computer Engineering and Lyman Briggs School Computer Science majors.
Software life cycle including specification, design, coding, testing, and verification of a software product. Stepwise refinement and rapid prototyping. Software portability, reusability and maintenance.

472. Computer Graphics
Spring. 3(2-2)
P: CPS 330, MTH 314. R: Open only to Computer Science and LBS Computer Science majors.
Graphics hardware. Fundamental algorithms. Two- and three-dimensional imaging geometry and transformations. Curve and surface design, rendering, shading, color, and animation.

474. Vector and Parallel Programming
Fall. 3(2-2)
P: CPS 420, MTH 314. R: Open only to Computer Science, Electrical Engineering, Computer Engineering, and LBS Computer Science majors.
Programming of high-performance supercomputers. Hardware, algorithms, numerical accuracy, compilers. Vector, multiple-instruction multiple-data-stream, and single-instruction single-data-stream machines.

479. Software Tools for Concurrent Systems (W)
Fall, Spring. 4(2-4)
P: CPS 330, CPS 360; CPS 422 or CPS 474. R: Open only to College of Engineering Computer Science seniors and graduate students. Completion of Tier I writing requirement. Not open to students with credit in CPS 449.
Design, development and application of software tools for parallel and distributed systems. Program development, debugging, performance monitoring, simulation, data and control flow analysis, and visualization.

480. Database Systems
Spring. 4(3-2)
P: CPS 330, CPS 360; CPS 320 or EE 331. R: Open only to Computer Science, Computer Engineering, and LBS Computer Science majors.
Storage of and access to physical databases including indexing, hashing, and range accesses. Data models, query languages, transaction processing, recovery techniques. Object-oriented and distributed database systems. Database design.

490. Independent Study in Computer Science
Fall, Spring. 1 credit. A student may earn a maximum of 3 credits in all enrollments for this course.
R: Open only to Computer Science majors. Approval of department; application required.
Supervised individual study in an area of computer science.

491. Selected Topics in Computer Science
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
R: Open only to College of Engineering Computer Science majors. Approval of department.
Topics selected to supplement and enrich existing courses and lead to the development of new courses.

802. Pattern Recognition and Analysis
Spring. 4(4-0)
P: CPS 330, MTH 314, STT 441. R: Open only to Computer Science or Electrical Engineering majors.
Algorithms for classifying and understanding data. Statistical and syntactic methods, supervised and unsupervised machine learning. Cluster analysis and ordination. Exploratory data analysis. Methodology for design of classifiers.

803. Computer Vision
Fall. 3(3-0)
P: CPS 330, MTH 314, STT 351. R: Open only to Computer Science or Electrical Engineering majors.
Visual information processing problems. Human and machine vision systems. Image formation and transforms. Encoding, enhancement, edge detection, segmentation. 2D and 3D object description and recognition. Scene analysis. Applications.

807. Computer System Performance and Measurement
Spring of odd-numbered years. 3(3-0) Interdepartmental with Electrical Engineering.
P: CPS 410, STT 441. R: Open only to Computer Science or Electrical Engineering majors.
Queueing network modelling, general analytic techniques, workload characterization, representing specific subsystems, parameterization. Software and hardware monitors, performance measures. Case studies, software packages.

808. Modelling and Discrete Simulation
Fall of even-numbered years. 3(3-0) Interdepartmental with Electrical Engineering.
P: CPS 330, STT 441. R: Open only to Computer Science or Electrical Engineering majors.
Simulation examples, and languages. Mathematical models, petri nets, model validation, random variate generation. Analysis of simulation data. Case studies.

809. Algorithms and Their Hardware Implementation
Spring. 3(3-0) Interdepartmental with Electrical Engineering. Administered by Electrical Engineering.
Arithmetic, signal processing, and image processing algorithms. Array structures: systolic architecture, data flow structure, neural network architecture. Performance analysis.

812. Advanced Operating Systems
Spring. 3(3-0)
P: CPS 410, CPS 420. R: Open only to Computer Science or Electrical Engineering majors.
Parallel and distributed operating systems. Load sharing, scheduling, reliability, recovery, memory management. Distributed file systems, distributed agreement, and object-oriented operating systems.

813. Logic Design Principles
Fall. 3(3-0) Interdepartmental with Electrical Engineering. Administered by Electrical Engineering.
Behavioral modeling. Combinational circuit analysis and design. Sequential-circuit analysis and synthesis. Design for testability. Semicustom and MSI design.

814. Formal Methods in Software Development
Fall of odd-numbered years. 3(3-0)
P: MTH 472. R: Open only to Computer Science or Electrical Engineering majors.
Formal specification languages, integrating verification with development. Design and the implementation of term project.

820. Advanced Computer Architecture
Fall, Spring. 3(3-0) Interdepartmental with Electrical Engineering.
P: CPS 410, CPS 420. R: Open only to Computer Science or Electrical Engineering majors.
Instruction set architecture. Pipelining, vector processors, cache memory, high bandwidth memory design, virtual memory, input and output. Benchmarking techniques. New developments related to single CPU systems.

822. Parallel Processing Computer Systems
Spring. 3(3-0) Interdepartmental with Electrical Engineering.
P: CPS 820. R: Open only to Computer Science or Electrical Engineering majors.
Massively parallel SIMD processors, multiprocessor architectures, interconnection networks, synchronization and communication. Memory and address space management, process management and scheduling. Parallel compilers, languages, performance evaluation.

830. Design and Theory of Algorithms
Fall, Spring. 3(3-0)
P: CPS 330, CPS 360. R: Open only to Computer Science or Electrical Engineering majors.
Analysis of algorithms. Algorithm design techniques. Efficient algorithms for classical problems. Intractable problems and techniques to handle them.

835. Algorithmic Graph Theory
Fall. 3(3-0)
P: CPS 330, CPS 360, MTH 314. R: Open only to Computer Science or Electrical Engineering majors.
Classical concepts in Graph Theory. Algorithmic aspects of graphs such as finding paths, network flow, spanning trees and matching.

838. Design of Parallel Algorithms
Spring. 3(3-0)
P: CPS 420, CPS 830. R: Open only to Computer Science or Electrical Engineering majors.
Current research topics and issues. Models of parallel computation. Implementation of algorithms on SIMD and MIMD machines. Relationship to VLSI.

841. Artificial Intelligence
Fall. 3(3-0)
P: CPS 440. R: Open only to Computer Science or Electrical Engineering majors.
Types of intelligence, knowledge representation, cognitive models. Goal-based systems, heuristic search and games, expert systems. Language understanding, robotics and computer vision, theorem proving and deductive systems, and learning.

845. Knowledge-Based Systems (MTC)
Spring. 2 to 3 credits. A student may earn a maximum of 9 credits in all enrollments for this course.
P: CPS 841. R: Open only to Computer Science or Electrical Engineering majors.
Research literature examining model-based reasoning, design, or diagnosis. Effectiveness and potential for future developments.

846. Laboratory in Knowledge-Based Systems (MTC)
Summer. 2(1-1) A student may earn a maximum of 6 credits in all enrollments for this course.
P: CPS 845. R: Open only to Computer Science or Electrical Engineering majors.
Development of a working model-based reasoning, design, diagnostic system. Design, implementation, and testing.

860. Foundations of Computing
Fall. 3(3-0)
P: CPS 360. R: Open only to Computer Science or Electrical Engineering majors.
Models of computation: partial recursive functions, Turing machines, alternative models of computing. Basic theory and limitations of computability. Undecidability. Resource-bounded computational complexity, non-determinism, NP-completeness.

862. Computational Complexity
Spring of even-numbered years. 3(3-0)
P: CPS 860. R: Open only to Computer Science or Electrical Engineering majors.
Theory of computational complexity. Uniform, nonuniform and probabilistic complexity classes. The polynomial time hierarchy. Structure of complexity classes.

866. Digital Signal Processing
Spring. 3(3-0) Interdepartmental with Electrical Engineering. Administered by Electrical Engineering.
P: EE 466, EE 863.
Review of elementary DSP concepts. Transform algorithms. Filter design and implementation. Adaptive filters. Spectrum estimation. Applications.

880. Advanced Database Systems
Fall. 3(3-0)
P: CPS 480. R: Open only to Computer Science or Electrical Engineering majors.
Distributed and object-oriented databases and knowledgebase systems. Design theory, query optimization, and transaction processing.

885. Artificial Neural Networks
Fall. 3(3-0) Interdepartmental with Electrical Engineering. Administered by Electrical Engineering.
Overview of neuro-engineering technology. Basic neural network architectures. Feedforward and feedback networks. Temporal modeling. Supervised and unsupervised learning. Implementation. Basic applications to pattern recognition.

890. Independent Study
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
R: Open only to Computer Science or Electrical Engineering majors. Approval of department.
Independent study of some topic, system, or language not covered in a regular course.

891. Selected Topics
Fall, Spring. 1 to 3 credits. A student may earn a maximum of 9 credits in all enrollments for this course.
R: Open only to Computer Science or Electrical Engineering majors.
Selected topics in computer science of current interest and importance but not covered in a regular course.

898. Master's Project
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
R: Open only to Computer Science majors. Approval of department.
Master's degree Plan B individual student project: original research, research replication, or survey and reporting on a topic such as system design and development, or system conversion or installation.

899. Master's Thesis Research
Fall, Spring, Summer. 1 to 8 credits. A student may earn a maximum of 24 credits in all enrollments for this course.
R: Open only to Computer Science majors. Approval of department.

902. Selected Topics in Recognition by Machine
Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.
P: CPS 802, CPS 803. R: Open only to Computer Science or Electrical Engineering majors.
Advanced topics in pattern recognition and computer vision such as Markov random fields, modeling and recognition of three dimensional objects, and integration of visual modules.

910. Selected Topics in Computer Networks and Distributed Systems
Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.
P: CPS 421, CPS 812. R: Open only to Computer Science or Electrical Engineering majors.
Advanced topics and developments in high-bandwidth computer networks, protocol engineering, and distributed computer systems.

914. Selected Topics in Formal Methods in Software Development
Fall of even-numbered years. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.
P: CPS 814. R: Open only to Computer Science majors.
Approaches for the incorporation of formal methods in software development. Current projects using formal methods in software engineering. Object-oriented analysis and development techniques.

920. Selected Topics in High Performance Computer Systems
Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. Interdepartmental with Electrical Engineering.
P: CPS 822. R: Open only to Computer Science or Electrical Engineering majors.
Design of high performance computer systems. Seminar format.

921. Advanced Topics in Digital Circuits and Systems (MTC)
Fall, Spring. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Electrical Engineering. Administered by Electrical Engineering.
Topics vary each semester. Topics such as testable and fault-tolerant digital systems, embedded architectures.

941. Selected Topics in Artificial Intelligence
Fall. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.
P: CPS 841. R: Open only to Computer Science or Electrical Engineering majors.
Topic such as second generation expert systems, human factors, natural language processing, speech understanding, neural networks, genetic algorithms and opportunistic planning.

960. Selected Topics in Algorithms and Complexity
Spring of odd-numbered years. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.
P: CPS 860, CPS 830. R: Open only to Computer Science majors. Approval of department.
Current research in the general theory of algorithms and computational complexity.

980. Selected Topics in Database Systems
Spring. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course.
P: CPS 880. R: Open only to Computer Science or Electrical Engineering majors.
Recent developments in areas such as distributed and parallel database systems, object oriented database systems, knowledgebase and expert database systems.

999. Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 72 credits in all enrollments for this course.
R: Open only to Computer Science majors. Approval of department.

COUNSELING, EDUCATIONAL PSYCHOLOGY AND SPECIAL EDUCATION CEP

Department of Counseling, Educational Psychology, and Special Education
College of Education

150. Reflections on Learning
Fall, Spring, Summer. 3(3-0) Interdepartmental with Teacher Education. Administered by Teacher Education.
Students' experiences as learners in comparison to psychological, sociological, and anthropological theories and assumptions about learning and teaching in and out of school.

240. Diverse Learners in Multicultural Perspective
Fall, Spring, Summer. 3(2-2) Interdepartmental with Teacher Education.
R: Not open to students with credit in TE 250.
Communicative, linguistic, physical, sensory, behavioral, affective, and cognitive differences in learning in multicultural classrooms. Factors that mediate access to knowledge.

260. Dynamics of Personal Adjustment
Fall, Spring, Summer. 3(3-0)
Psychological theories of human adjustment. Implications for effective learning, self-development, and adaptation.

261. Substance Abuse
Summer. 3(3-0)
Effects of mood-altering chemicals. Treatment approaches and resources. Special emphasis on adolescent users.

301. Introduction to Students With Mild Impairments (W)
Fall, Spring. 3(3-0)
R: Completion of Tier I writing requirement. Approval of department.
Learning and emotional impairments. Characteristics, causes, educational approaches, theories, and issues pertaining to students with mild impairments.

341. American Sign Language and the Deaf Community
Fall, Spring, Summer. 2(2-0)
Orientation to deaf culture. Essential signing for those expecting to have intermittent contact with deaf adults.

416. Teaching and Learning With Technology
Fall, Spring, Summer. 3(3-0)
R: Open only to juniors, seniors, or graduate students in the College of Education.
Uses of technology in teaching and learning. Major emphasis on developing plans for implementing and evaluating uses of technology in the classroom setting.

440. Introduction to Educating Deaf Children (W)
Fall. 3(2- 3)
P: CEP 442B. R: Open only to students seeking endorsements in deaf education or visual impairment. Completion of Tier I writing requirement. Approval of department.
Political, social, methodological, historical, philosophical, and legal issues in educating deaf children and youth.
SA: CEP 840

441A. American Sign Language I
Fall, Spring, Summer. 3(3-0)
P: CEP 341. R: Not open to freshmen.
Production, conversation, and grammatical analysis of American Sign Language.

441B. American Sign Language II
Fall, Spring, Summer. 3(3-0)
P: CEP 441A.
More advanced lexical and syntactic structures of American Sign Language. Sentence types, verb inflections, aspect marking, and story telling. Translations between American Sign Language and English.

442A. American Sign Language III
Fall, Spring, Summer. 3(3-0)
P: CEP 441B.
Use of space for multiple-person discourse. Formal register. Colloquial and idiomatic language. Applications to teaching in American Sign Language.

442B. American Sign Language IV
Fall, Spring, Summer. 3(3-0)
P: CEP 442A.
Use of space for creative interpretation of literature, science, mathematics, socio-historical concepts. Formal register. Colloquial and idiomatic language.

443A. Braille Literacy I
Fall. 3(1-4)
R: Not open to freshmen and sophomores.
Reading and writing standard English Braille notations. Familiarity with textbook formats. History and development of Braille. Perkins Braillewriter and slate and stylus.

443B. Braille Literacy II
Spring. 4(1- 6)
P: CEP 443A.
Reading and writing Grade III Braille. Braille shorthand and slate writing. Music, foreign language, mathematics and scientific notations in combination with abacus usage. Textbook formats.

444. Education of Students with Severe and Multiple Disabilities (W)
Spring. 3(3-0)
P: CEP 260 or TE 150. R: Not open to freshmen and sophomores. Completion of Tier I writing requirement.
Definition of severe and multiple disability. Special education services for students with severe and multiple disabilities.

445. Educational Technology in Special Education
Spring. 3(1-4)
P: CEP 443A or concurrently. R: Approval of department.
Technological adaptations for communication, including low technology and high technology, and innovative uses for common devices.
SA: CEP 845

449. Behavior Management in Special Education
Spring. 3(3-0)
R: Approval of department.
Management practices for behavior problems and disorders. Applied behavior analysis, social skills acquisition through cooperative learning and cooperative discipline. Focus on problem-solving and peer collaboration.
SA: CEP 849

451. Models of Special Education Administration and Services
Spring. 3(3 -0) Interdepartmental with Educational Administration.
R: Open only to students seeking endorsement in special education. Approval of department.
Application of theory and research to special education program design and implementation.
SA: CEP 851