**922.        Interpersonal Communication**
*Fall. 3(3-0)*
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**

**192.        Environmental Issues Seminar**
*Fall, Spring. 1(1-0) A student may earn a maximum of 4 credits in all enrollments for this course. Interdepartmental with Natural Science; Agriculture and Natural Resources; Engineering; and Social Science. Administered by Natural Science. R: Open only to students in the College of Agriculture and Natural Resources or College of Engineering or College of Natural Science or College of Communication Arts and Sciences or College of Social Science. Approval of college.*
Environmental issues and problems explored from a variety of perspectives, including legal, scientific, historical, political, socio-economic, and technical points of view.

**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 college.*
Varied topics pertaining to the study of communication processes.

**825.        Mass Communication and Public Health**
*Fall. 3(3-0) RB: Academic or professional background in mass communication and/or health.*
Health communication campaigns in domestic and international contexts. Focus on principles of effective communication.

**826.        Health Communication for Diverse Populations**
*Spring. 3(3-0) RB: Academic or professional background in mass communication and/or health.*
Theory, research, and practice of communicating with specialized populations in clinical and public health contexts. Emphasis on interpersonal and small-group strategies.

**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 AND ENGINEERING            CSE

**Department of Computer Science and Engineering**
**College of Engineering**

**101.        Computing Concepts and Competencies**
*Fall, Spring, Summer. 3(2-2)*
Core concepts in computing including information storage, retrieval, management, and representation. Applications from specific disciplines. Applying core concepts to design and implement solutions to various focal problems, using hardware, multimedia software, communication and networks.
*SA: CSE 100,CSE 130*

**131.        Introduction to Technical Computing**
*Fall, Spring. 3(2-2)*
Use of computing systems for technical communications and problem solving in engineering, mathematics, and science. Development and use of mathematical models suitable for computer representation, solution, graphical display, and animation.
*SA: CPS 131*

**231.        Introduction to Programming I**
*Fall, Spring. 4(3-2) P: (LBS 118 or MTH 124 or MTH 132 or MTH 152H) RB: (CSE 131)*
Introduction to object-centered programming using C++. Design, implementation and testing of programs to solve problems in engineering, mathematics and science. Programming fundamentals, functions, classes, arrays, and pointers.
*SA: CSE 230*

**232.        Introduction to Programming II**
*Fall, Spring. 4(3-2) P: (CSE 231)*
Continuation of object-centered programming using C++; development of classes and reliable software. Data structures and their encapsulation; stacks, queues, lists, trees, and hash tables. Algorithms operating on data structures. Object-oriented design and programming.
*SA: CSE 330*

**260.        Discrete Structures in Computer Science**
*Fall, Spring. 4(4-0) P: (MTH 133 or MTH 126 or MTH 153H or LBS 119)*
Propositional and first order logic. Equivalence, inference and method of proof. Mathematical induction, diagonalization principle. Basic counting. Set operations, relations, functions. Grammars and finite state automata. Boolean algebra. Truth tables and minimization of Boolean expressions. Applications to computer science and engineering.
*SA: CPS 260*

**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.
*SA: CPS 290*

**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.
*SA: CPS 291*

**320.        Computer Organization and Assembly Language Programming**
*Fall, Spring. 4(3-2) P: (CSE 232 and CSE 260) 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.
*SA: CPS 320*

**331.        Algorithms and Data Structures**
*Fall, Spring. 4(3-2) P: (CSE 232 and CSE 260) R: Open only to students in the Department of Computer Science and Engineering or Computer Engineering majors or the LBS Computer Science coordinate major or the Computer Science disciplinary minor.*
Linear data structures, trees, and graphs and algorithms which operate on them. Fundamental algorithms for searching, sorting, string matching, graph problems, and their analysis.

**410.        Operating Systems**
*Fall, Spring. 4(3-2) P: (CSE 232 and CSE 260) and (CSE 320 or ECE 331) R: Open only to students in the Department of Computer Science and Engineering or the Computer Engineering major or the LBS Computer Science field of concentration or the LBS Computer Science coordinate major or the Computer Science disciplinary minor.*
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.
*SA: CPS 410*

**420.        Computer Architecture**
*Fall, Spring. 4(3-2) P: (CSE 232  and CSE 260) and (CSE 320 or ECE 331) R: Open only to students in the Department of Computer Science and Engineering or the Computer Engineering major or the LBS Computer Science field of concentration or the LBS Computer Science coordinate major or the Computer Science disciplinary minor.*
Digital logic and sequential machine design. Computer organization, control unit and arithmetic logic unit implementation. Input-output, memory organization, parallel operations. Digital system simulation.
*SA: CPS 420*

**422.        Computer Networks**
*Fall, Spring. 4(3-2) P: (STT 351) and (CSE 320 or ECE 331) and (CSE 410 or concurrently) R: Open only to students in the Department of Computer Science and Engineering or the Computer Engineering or LBS Computer Science major or the LBS Computer Science coordinate major or the Computer Science disciplinary minor.*
Computer network architectures and models. Medium access control.  Physical, data link, network, transport, and session layers. Local-area and wide-area networks.
*SA: CPS 422*

**440.        Artificial Intelligence and Symbolic Programming**
*Fall. 4(3-2) P: (CSE 331) R: Open only to students in the Department of Computer Science and Engineering or the Computer Engineering major or the LBS Computer Science field of concentration or the LBS Computer Science coordinate major or the Computer Science disciplinary minor.*
Machine intelligence. Heuristic programming. Representation and control in LISP and PROLOG. Applications to search, rule-based diagnosis, and parsing.
*SA: CPS 440*

**450.        Translation of Programming Languages**
*Spring. 4(3-2) P: (CSE 331) and (CSE 320 or ECE 331) R: Open only to students in the Department of Computer Science and Engineering or the Computer Engineering major or LBS Computer Science field of concentration or the LBS Computer Science coordinate major or the Computer Science disciplinary minor.*
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.
*SA: CPS 450*

**452.        Organization of Programming Languages**
*Fall. 4(3-2) P: (CSE 331) and (CSE 320 or ECE 331) R: Open only to students in the Department of Computer Science and Engineering or Computer Engineering major or the LBS Computer Science coordinate major or the LBS Computer Science field of concentration or the Computer Science disciplinary minor.*
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.
*SA: CPS 452*

**460.        Computability and Formal Language Theory**
*Fall, Spring. 3(3-0) P: (CSE 331) R: Open only to students in the Department of Computer Science and Engineering or Computer Engineering major or LBS Computer Science coordinate major or the LBS Computer Science field of concentration or the Computer Science disciplinary minor.*
Formal models of computation such as finite state automata, pushdown automata and Turing machines.  Formal definitions of languages, problems, and language classes including recursive, recursively enumerable, regular, and context free languages.  The relationships among various models of computation, language classes, and problems.  Church's thesis and the limits of computability.  Proofs of program properties including correctness.
*SA: CSE 360*

**470.        Software Engineering**
*Fall, Spring. 4(3-2) P: (CSE 331) and (CSE 320 or ECE 331) R: Open only to students in the Department of Computer Science and Engineering or the Computer Engineering major or the LBS Computer Science field of concentration or the LBS Computer Science coordinate major or the Computer Science disciplinary minor.*
Software life cycle including specification, design, coding, testing, and verification of a software product.  Stepwise refinement and rapid prototyping.  Software portability, reusability and maintenance.
*SA: CPS 470*

**471.        Media Processing and Multimedia Computing**
*Fall. 4(3-2) P: (CSE 320 and CSE 331) R: Open only to students in the Department of Computer Science and Engineering or Computer Engineering major or the LBS Computer Science field of concentration or the LBS Computer Science coordinate major or the Computer Science disciplinary minor.*
Basic operations for processing images, video, and audio; devices for input and output; data formats and compression; tools for processing images and sound; multimedia authoring tools; applications

**472.        Computer Graphics**
*Spring. 4(3-2) P: (MTH 314 and CSE 331) R: Open only to juniors or seniors or graduate students in the Department of Computer Science and Engineering or to juniors or seniors in the Computer Engineering major or the LBS Computer Science field of concentration or the LBS Computer Science coordinate major.*
Graphics hardware.  Fundamental algorithms. Two- and three-dimensional imaging geometry and transformations.  Curve and surface design, rendering, shading, color, and animation.
*SA: CPS 472*

**480.        Database Systems**
*Spring. 4(3-2) P: (CSE 331) and (CSE 320 or ECE 331) R: Open only to students in the Department of Computer Science and Engineering or the Computer Engineering major or the LBS Computer Science field of concentration or the LBS Computer Science coordinate major or the Computer Science disciplinary minor.*
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.
*SA: CPS 480*

**490.        Independent Study in Computer Science**
*Fall, Spring. 1 to 3 credits.  A student may earn a maximum of 3 credits in all enrollments for this course. R: Open only to students in the Department of Computer Science and Engineering or the Computer Engineering major. Approval of department; application required.*
Supervised individual study in an area of computer science.
*SA: CPS 490*

**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 students in the Department of Computer Science and Engineering or the Computer Engineering major.  Approval of department.*
Topics selected to supplement and enrich existing courses and lead to the development of new courses.
*SA: CPS 491*

**498.        Collaborative Design (W)**
*Fall, Spring. 4(2-4) P: (CSE 470) and two additional CSE 400-level courses.*
Development of a comprehensive software and/or hardware solution to a problem in a team setting with emphasis on working with a client.  Participation in a design cycle including specification, design, implementation, testing, maintenance, and documentation.  Issues of professionalism, ethics, and communication.
*SA: CSE 449, CSE 478, CSE 479*

**802.        Pattern Recognition and Analysis**
*Spring. 4(4-0) P: CSE 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.
*SA: CPS 802*

**803.        Computer Vision**
*Fall. 3(3-0) P: (CSE 330 and MTH 314 and 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.
*SA: CPS 803*

**807.        Computer System Performance and Measurement**
*Spring of odd years. 3(3-0) Interdepartmental with  Electrical and Computer Engineering. P: CSE 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.
*SA: CPS 807*

**808.    Modelling and Discrete Simulation**
*Fall of even years. 3(3-0) Interdepartmental with Electrical and Computer Engineering. P: CSE 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.
*SA: CPS 808*

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

**812.    Advanced Operating Systems**
*Spring. 3(3-0) P: (CSE 410 and CSE 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.
*SA: CPS 812*

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

**814.    Formal Methods in Software Development**
*Fall of odd 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.
*SA: CPS 814*

**820.    Advanced Computer Architecture**
*Fall, Spring. 3(3-0) Interdepartmental with Electrical and Computer Engineering. P: CSE 410,CSE 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.
*SA: CPS 820*

**822.    Parallel Processing Computer Systems**
*Spring. 3(3-0) Interdepartmental with Electrical and Computer Engineering. P: CSE 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.
*SA: CPS 822*

**824.    Advanced Computer Networks and Communications**
*Fall. 3(3-0) P: CSE 422 R: Open only to graduate students in the Department of Computer Science and Engineering.*
Advanced topics in emerging computer networking technologies, including high-speed wide area networks and local area networks, wireless and mobile computing networks, optical networks, and multimedia networking.
*SA: CPS 824*

**830.    Design and Theory of Algorithms**
*Fall, Spring. 3(3-0) P: CSE 330,CSE 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.
*SA: CPS 830*

**835.    Algorithmic Graph Theory**
*Fall. 3(3-0) P: CSE 330,CSE 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.
*SA: CPS 835*

**838.    Design of Parallel Algorithms**
*Spring. 3(3-0) P: CSE 420, CSE 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.
*SA: CPS 838*

**841.    Artificial Intelligence**
*Fall. 3(3-0) P: CSE 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.
*SA: CPS 841*

**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: CSE 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.
*SA: CPS 845*

**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: CSE 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.
*SA: CPS 846*

**860.    Foundations of Computing**
*Fall. 3(3-0) P: CSE 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.
*SA: CPS 860*

**880.    Advanced Database Systems**
*Fall. 3(3-0) P: CSE 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.
*SA: CPS 880*

**885.    Artificial Neural Networks**
*Fall. 3(3-0) Interdepartmental with Electrical and Computer Engineering. Administered by Electrical and Computer 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.
*SA: CPS 885*

**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.
*SA: CPS 890*

**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.
*SA: CPS 891*

**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.
*SA: CPS 898*

**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.*
*SA: CPS 899*

**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: CSE 802, CSE 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.
*SA: CPS 902*

**910.  Selected Topics in Computer Networks and Distributed Systems**
*Spring of even years. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. P: CSE 422, CSE 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.
*SA: CPS 910*

**914.  Selected Topics in Formal Methods in Software Development**
*Fall of even years. 3(3-0) A student may earn a maximum of 9 credits in all enrollments for this course. P: CSE 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.
*SA: CPS 914*

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

**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 and Computer Engineering. Administered by Electrical and Computer Engineering.*
Topics vary each semester. Topics such as testable and fault-tolerant digital systems, embedded architectures.
*SA: CPS 921*

**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: CSE 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.
*SA: CPS 941*

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

**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: CSE 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.
*SA: CPS 980*

**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.*
*SA: CPS 999*

# 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. 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)**
*Spring. 3(2-2) P: Completion of Tier I writing requirement. R: Open only to students admitted to the teacher certification program in emotional impairment or learning disabilities.*
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 or 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(2-2) P: Completion of Tier I writing requirement. (CEP 442B) R: Open only to students admitted to the teacher certification program in deaf education or to master's students in the special education major.*
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.