Computer Science and Engineering—CSE

422 Computer Networks
Fall, Spring. 4(3-2) P:M: (STT 351) and (CSE 320 or ECE 331) and (CSE 410 or concurrently) R: Open only to students in the Department of Computer Science or the Computer Engineering or LBS Computer Science major or the LBS Computer Science coordinate major or the Computer Science disciplinary minor. SA: CPS 422

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:M: (CSE 331 or CSE 370) 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. SA: CPS 440

Machine intelligence. Heuristic programming. Representation and control in LISP and PROLOG. Applications to search, rule-based diagnosis, and parsing.

444 Information Technology Project Management
Spring. 3(3-0) Interdepartmental with Information Technology Management; Telecommunication. Administered by The Eli Broad College of Business. P:M: (ITM 311) R: Open only to seniors in the Specialization in Information Technology.

Practical training and experiences in design, testing, and launch of new information technologies and systems.

450 Translation of Programming Languages
Spring. 4(3-2) P:M: (CSE 331 or CSE 370) 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. SA: CPS 450

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. 4(3-2) P:M: (CSE 331 or CSE 370) 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. SA: CPS 452

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.

460 Computability and Formal Language Theory
Fall, Spring. 3(3-0) P:M: (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. SA: CSE 360

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.

471 Media Processing and Multimedia Computing
Fall. 4(3-2) P:M: (CSE 320) and (CSE 331 or CSE 370) 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:M: (MTH 314) and (CSE 331 or CSE 370) 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. SA: CPS 472

Graphics hardware. Fundamental algorithms. Two- and three-dimensional imaging geometry and transformations. Curve and surface design, rendering, shading, color, and animation.

480 Database Systems
Spring. 4(3-2) P:M: (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. SA: CPS 480

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 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 or the Computer Engineering major. Approval of department; application required. SA: CPS 490

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 students in the Department of Computer Science or the Computer Engineering major. Approval of department. SA: CPS 491

Topics selected to supplement and enrich existing courses and lead to the development of new courses.

498 Collaborative Design (W)
Fall, Spring. 4(2-4) P:M: (CSE 370 and CSE 410) and (CSE 420 or CSE 422 or CSE 440 or CSE 450 or CSE 452 or CSE 460 or CSE 471 or CSE 472 or CSE 480) R: Open only to majors in the Department of Computer Science and Engineering. SA: CSE 449, CSE 478, CSE 479

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.

COUNSELING, CEP EDUCATIONAL PSYCHOLOGY AND SPECIAL EDUCATION

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 Department of 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
Fall, Spring. 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:M: 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:M: Completion of Tier I writing requirement. RB: (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. SA: CEP 840
Political, social, methodological, historical, philosophical, and legal issues in educating deaf children and youth.

441A American Sign Language I
Fall, Spring, Summer. 3(3-0) P:M: (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:M: (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. 3(3-0) P:M: (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
Spring. 3(3-0) P:M: (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: Open only to undergraduate students in the Special Education major whose area of emphasis is visual impairment or to master's students in the Special Education major.
Reading and writing standard English Braille Grade II. Familiarity with textbook formats. History and development of Braille. Perkins Braillewriter and slate and stylus.

443B Braille Literacy II
Spring. 4(1-6) P:M: (CEP 443A) R: Open only to undergraduate students in the Special Education major whose area of emphasis is visual impairment or to master's students in the Special Education major.
Accuracy in reading and writing Nemeth Braille Code for mathematics and science, use of abacus for basic math operations.

444 Education of Students with Severe and Multiple Disabilities (W)
Spring. 3(3-0) P:M: Completion of Tier I writing requirement. R: Not open to freshmen or sophomores.
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) RB: (CEP 443A or concurrently) R: Open only to seniors in the Special Education major whose area of emphasis is visual impairment or to master's students in Special Education major. SA: CEP 845
Technological adaptations for communication, including low technology and high technology, and innovative uses for common devices.

449 Behavior Management in Special Education
Spring. 3(3-0) SA: CEP 849
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.

451 Models of Special Education Administration and Services
Spring. 3(2-2) Interdepartmental with Educational Administration. R: Open only to students admitted to the teacher certification program in emotional impairment or learning disabilities or to master's students in the Special Education major.
Application of theory and research to special education program design and implementation.

452 Students With Disabilities in the Regular Classroom
Fall, Summer. 3(3-0) SA: CEP 852
Problems and issues in educating children with disabilities in the least restrictive environment. Legal, attitudinal, and practical factors which influence teachers and students.

456A Deaf-Blind Children and Youth in Elementary and Secondary Education
Fall. 4(3-2) RB: (CEP 441A or concurrently and CEP 443A or concurrently) R: Open only to students admitted to the teacher certification program in deaf education or visual impairment or to master's students in the Special Education major. SA: CEP 856A
Assessing and teaching deaf-blind students. Sensory skills, behavior management and modification, language, communication and independent living.

457 Principles of Orientation and Mobility
Fall. 3(2-3) R: Open only to students admitted to the teacher certification program in visual impairment or to master's students in the Special Education major. SA: CEP 857A
Philosophical, social, and psychological aspects of independent mobility for persons who are blind and disabled. Environmental awareness and concept development in using adaptive travel techniques for navigation.

460 Communication Skill Training for the Helping Professional
Fall, Spring. 3(3-0) R: Not open to freshmen or sophomores.
Interpersonal communication focusing on dynamics of listening process, interpersonal style, and barriers to communication. Emphasis on the mastery of microskills.

470 Disability in a Diverse Society
Spring. 3(3-0) R: Open only to juniors or seniors or graduate students.
Needs and life experiences of persons with various physical and mental disabilities, types of services designed to meet these needs, multicultural issues relevant to disabilities, and career opportunities available in the field.

480 Practicum Experience with Deaf Students
Spring. 1(0-5) P:M: (CEP 440)
Field placement experience in a self-contained classroom of deaf and hard-of-hearing students.

CRIMINAL JUSTICE   CJ

School of Criminal Justice
College of Social Science

110 Introduction to Criminal Justice
Fall, Spring. 4(4-0)
Description and analysis of agencies and processes involved in administration of justice in the United States.

210 Introduction to Forensic Science
Fall. 4(4-0)
Techniques of crime scene search. Collection and preservation of physical evidence. Class and individual scientific tests. Rules of evidence governing admissibility of physical evidence. Expert testimony.

220 Criminology
Fall, Spring. 4(4-0) Interdepartmental with Sociology. RB: (CJ 110 or SOC 100) R: Open only to students in the Criminal Justice or Sociology major or approval of school.
Introduction to the socio-legal foundation of crime. Crime typology and measurement procedures. Theory and public policy. Societal responses to crime and criminals.

292 Methods of Criminal Justice Research
Fall, Spring. 4(4-0) RB: (CJ 220) R: Not open to freshmen. Open only to students in the School of Criminal Justice.
Logic, design, analysis and ethical principles in criminal justice research. Indicators of crime and its control.