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.

874 Communication in Logistics
Fall. 1(1-1) R: Open only to students in the Master of Science in Logistics.
Development of effective interpersonal communication skills. Oral communication in business settings. Use of appropriate technology for management presentations.

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.
Master's thesis research.

901 Communication Research Design I
Fall. 4(4-0) RB: One introductory research design or statistics course. R: Open only to doctoral students.
Methods of data collection and analysis. Writing and critiquing research reports.

902 Communication Research Design II
Spring. 4(4-0) RB: (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 years. 3(3-0) RB: (COM 815)
Organizational communication structure and information processing. The organization's embeddedness in a larger social environment.

921 Micro and Macro Media
Fall of odd years. 3(3-0)
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)
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.
Doctoral dissertation research.

COMMUNICATION CAS ARTS AND SCIENCES

College of Communication Arts and Sciences

192 Environmental Issues Seminar
Fall, Spring. 1 credit. A student may earn a maximum of 4 credits in all enrollments for this course. Interdepartmental with Natural Science; Agriculture and Natural Resources; Engineering; Social Science. Administered by College of 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.

292 Applications in Environmental Studies
Fall. 2(1-2) Interdepartmental with Natural Science; Agriculture and Natural Resources; Engineering; Social Science. Administered by College of Natural Science. P: (NSC 192) R: Open only to students in the Specialization in Environmental Studies.
Community engagement project. Projects vary depending on student's major and area of environmental interest.

299 Media Writing
Fall, Spring, Summer. 3(1-4)
Writing for mass media.

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.
Doctoral dissertation research.

COMMUNITY, AGRICULTURE, RECREATION AND RESOURCE STUDIES ACR

Department of Community, Agriculture, Recreation and Resource Studies
College of Agriculture and Natural Resources

800 Foundations of Community, Agriculture, Recreation and Resource Studies
Fall. 3(3-0) R: Open only to graduate students enrolled in the Department of Community, Agriculture, Recreation and Resource Studies.
Concepts, issues, and approaches central to integrated research, service and learning careers in community, agriculture, recreation and resource studies.

802 Survey of Research Methods
Spring. 3(3-0) R: Open only to graduate students in the Department of Community, Agriculture, Recreation and Resource Studies.
Methodological approaches and research techniques applied in multidisciplinary research in community, agriculture, recreation, and resources studies. Concepts and skills needed to interpret and evaluate published research.

895 Case Studies in Community, Agriculture, Recreation and Resource Studies
Spring. 3(3-0) P:M: (ACR 800 and ACR 802) R: Open only to graduate students in the Department of Community, Agriculture, Recreation and Resource Studies.
Case studies in community, agriculture, recreation and tourism, natural resources and environmental systems. Use of multi-disciplinary teams in addressing complex policy, planning, development, and management issues.

898 Master's Professional Project
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 9 credits in all enrollments for this course. R: Open only to master's students in the Department of Community, Agriculture, Recreation and Resource Studies.
Master's project, non-thesis research, practicum or other professional development capstone experiences.

899 Master's Thesis Research
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open only to master's students in the Department of Community, Agriculture, Recreation and Resource Studies.
Master's thesis research.

999 Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 12 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open only to doctoral students in the Department of Community, Agriculture, Recreation and Resource Studies.
Doctoral dissertation research.

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) SA: CPS 100, CPS 130
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.

103 Introduction to Databases in Information Technology
Fall, Spring, Summer. 3(2-2) P: (CSE101)
Core concepts in database organization and use. Information storage, retrieval, management, and representation. Application of database concepts to develop and implement solutions to various problems. Web-to-database issues inherent in e-commerce.

131 Technical Computing and Problem Solving
Fall, Spring. 3(1-3) P: (MTH 124 or concurrently or MTH 132 or concurrently or LBS 118 or concurrently) or (MTH 152H or concurrently) SA: CPS 131
Use of computing systems for technical problem solving in engineering and science.

231 Introduction to Programming I
Fall, Spring. 4(3-2) P: (LBS 118 or concurrently or MTH 124 or concurrently or MTH 132 or concurrently or MTH 152H or concurrently) RB: (CSE 131) SA: CSE 230
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.

232 Introduction to Programming II
Fall, Spring. 4(3-2) P: (CSE231) and (LBS118 or MTH124 or MTH132 or MTH152H) SA: CSE 330
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.

240 Informatics
Fall, Spring, Summer. 3(3-0) P: (CSE 103 or CSE 131 or CSE 231) and (MTH 103 or MTH 116 or MTH 124 or MTH 132 or LBS 117) or designated score on Mathematics placement test. R: Approval of department.
Digital representation of objects such as numbers, signals, and 3D shapes. Algorithms that operate on digital objects. Storage devices and network distribution of digital objects. How information systems support various applications.

260 Discrete Structures in Computer Science
Fall, Spring. 4(4-0) P: (MTH 133 or MTH 126 or MTH 153H or LBS 119) SA: CPS 260
Propositional and first order logic. Equivalence and methods of proof. Basics of counting. Set operations, relations, functions. Grammars and finite state automata. Discrete probability. Applications to computer science and engineering.

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. SA: CPS 290
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. SA: CPS 291
Topics selected to supplement and enrich existing courses and lead to the development of new courses.

320 Computer Organization and Architecture
Fall, Spring. 3(3-0) P: (CSE 232 and CSE 260) SA: CPS 320 Not open to students with credit in ECE 331.
Boolean algebra and digital logic. Combinational and sequential circuits. Representations of data and instructions. Architecture and major components of computer systems. Assembly language programming and interfacing to high level languages. Assembler and linker processing.

331 Algorithms and Data Structures
Fall, Spring. 3(3-0) 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, graphs and algorithms which operate on them. Fundamental algorithms for searching, sorting, string matching, graph problems. Design and analysis of algorithms.

335 Object-oriented Software Design
Fall, Spring. 3(3-0) P: (CSE 232 and CSE 260) R: Open only to students in Computer Science or Computer Engineering or the LBS Computer Science field of concentration or the LBS Computer Science coordinate major or the Computer Science disciplinary minor. SA: CSE 370
Development of large software products, libraries, and product families. Object-oriented programming using inheritance and polymorphism. Design methods. Specification and the use of contracts to design reliable software. Configuration management and life-cycle issues.

410 Operating Systems
Fall, Spring. 3(3-0) 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. SA: CPS 410
Principles and evolution of operating systems. Process and processor management. Concurrent processes and threads. Primary and secondary storage management. Case studies of modern operating systems.

420 Computer Architecture
Fall, Spring. 3(3-0) 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. SA: CPS 420
Organization and architecture of computer systems. Arithmetic Logic Unit and control unit implementations. Hardwired and microprogrammed control. Pipelined processors; data and branch hazards. Memory hierarchy and storage devices. Input-output and peripheral devices. Advanced architectures.