

**COMM 485 PRODUCING AND DIRECTING FOR ELECTRONIC MEDIA (3)** *Prerequisites: COMM 104, 206.* Students in this course will develop and execute advanced productions ranging from live broadcasts to multimedia presentations. Emphasis will be on the organizational processes unique to producing and directing media projects. The course will also include seminar discussions of the media industry. Students will develop material for professional portfolios.

**COMM 499 DONOVAN MEDIA DEVELOPMENT CENTER PRACTICUM (3-6)** *Prerequisites: COMM 104, 206.* This practicum provides for the application of multimedia production knowledge and skills to produce work commissioned by the Donovan Media Development Center under the direct supervision of a faculty member. The Donovan Center solicits projects from non-profit clients and others to create video and audio productions, PowerPoint presentations, and graphic designs that promote the aims of those organizations. Students create portfolios of their work for these clients that may be used for evaluation purposes and in their search for employment upon graduation.

## COMPUTER SCIENCE COURSES (C S)

**C S 100 INTRODUCTION TO COMPUTER CONCEPTS (3)** Two hours lecture and one hour lab. This hands-on computer literacy course is designed to introduce students to computer concepts and applications in today's world. Topics include word processing, spreadsheet software, database management, computer communications, and networking. Important historical, moral, and social issues related to computing are covered.

**C S 105 INTRODUCTION TO COMPUTATION (3)** Three hours lecture. This course introduces students to the true nature of computer science, what computer scientists really do, how they think, and what they accomplish. The focus is on using computation and logical thought techniques to solve problems. Many of the most interesting and significant topics in computer science will be covered. Selected topics may include, but are not limited to, artificial intelligence, digital logic, fractals, Gödel's theorem, NP-complete problems, parallel computing, probability, random number sequences, Turing machines, and scientific visualization.

**C S 131 FUNDAMENTALS OF PROGRAMMING IN BASIC (3)** Three hours lecture. This course is an introduction to the high-level programming language BASIC. Students learn fundamentals of programming, including use of variables, arrays, various control structures, subroutines, and file I/O. (Strongly recommended before C S 141 for students with no previous programming experience who are considering a major in computer science.)

**C S 141-142 INTRODUCTION TO COMPUTER SCIENCE AND STRUCTURED PROGRAMMING (4, 4)** *Prerequisite: C S 141 (B- or better) for C S 142.* Three hours lecture and two hours lab. This introduction to computer science course sequence focuses on programming, problem solving, and algorithm development with implementation on a computer using a structured programming language. Topics include computer organization, debugging and testing techniques, structured programming, string processing, pointers, objects, templates, and an introduction to data structures. It is strongly recommended that students without any prior programming experience complete C S 131 before enrolling in C S 141.

**C S 201 SYSTEM AND NETWORK ADMINISTRATION (3)** *Prerequisite: C S 131 or 141.* Three hours lecture. Students experience a hands-on approach to system and network administration. General network and system administration is explored using two or more operating systems. Topics include system configuration, network planning, routine system maintenance, firewalls and security, Internet connectivity, system optimization, troubleshooting, and scripting languages.

**C S 220 BUSINESS COMPUTER PROGRAMMING AND FILE SYSTEMS (4)** *Prerequisite: C S 131 or 141.* Three hours lecture and two hours lab. The student studies a programming language appropriate for a business environment and uses this language to write programs that have applications to business and information systems. The student studies the creation and use of sequential, direct access, indexed, and indexed-sequential files.

**C S 231 SOPHOMORE PROJECT (3)** *Prerequisite: C S 142.* Three hours lecture. In this course students produce a number of intermediate-level programs using skills learned in C S 141-142. Sophomore Project is designed to provide the student with substantial experience writing software. Empha-

sis will be placed on software development skills needed to produce larger programs. Effective techniques for designing, implementing, and debugging intermediate-sized programs will be mastered.

**C S 235**            **COMPUTER NETWORKS (3)** Three hours lecture. This course is a study of the design, use and analysis of computer networks. Topics include the major theoretical aspects of computer, network protocols, routing algorithms, and computer security.

**C S 241-242**        **DATA STRUCTURES AND ABSTRACTION I, II (4,4)** *Prerequisites: C S 142 (B- or better) or C S 231 (B- or better) for C S 241; C S 241 for C S 242.* Three hours lecture and two hours lab. These courses combine a study of data structures and data in computer systems. Topics may include, queues, stacks, trees, hashing, sorting, graphs, algorithm analysis, and algorithmic problem solving.

**C S 271**            **COMPUTER ARCHITECTURE AND ASSEMBLY LANGUAGE PROGRAMMING (4)** *Prerequisite: C S 131, 141 or 220.* Three hours lecture and two hours lab. This course introduces the concepts of machine and assembly language programming and computer architecture. The student studies the syntax of assembly language and becomes proficient in writing programs in assembly language.

**C S 298**            **SPECIAL TOPICS IN COMPUTER SCIENCE (3)** Appropriate for freshman and sophomores, this course can focus on a wide variety of topics that provide detailed explorations of technologies of particular interest to computer science majors and minors. Topics will frequently incorporate preparation for professional certification.

**C S 322**            **PROGRAMMING LANGUAGES (3)** *Prerequisite: C S 142.* Three hours lecture. This course is a comparative study of modern high-level programming languages, their syntax, and acceptors. The student is expected to write programs in any of the languages studied which may include procedural, functional, logic, object-oriented, and scripting languages.

**C S 335**            **COMPUTER NETWORKS (3)** *Prerequisite: C S 142.* Three hours lecture. This course is a study of the design, use, and analysis of computer networks. Topics include the major theoretical aspects of computer networks and the algorithms used in their implementation and the major networks currently in use. Students can experiment in a laboratory setting.

**C S 345**            **WINDOWS PROGRAMMING (3)** *Prerequisites: C S 141, 142.* Three hours lecture. This course will provide the student with the tools needed to create modern graphical user interfaces using a number of different tools and paradigms. Core topics include the event-driven programming model, graphical coordinate systems, libraries for creating, managing and rendering windows, and simple animation and graphics. Students will create graphical user interfaces for a number of programs.

**C S 350**            **SOFTWARE SYSTEMS ANALYSIS AND DESIGN (3)** *Prerequisite: C S 142 or 220.* Three hours lecture. This course involves the study and implementation of the strategies and techniques of structured software systems development. Topics include system specification and documentation. Data management systems, structures, and applications are also covered.

**C S 355**            **COMPUTER FORENSICS (3)** *Prerequisite: C S 142 or 235.* Three hours lecture. Securing relevant evidence from computer systems and other electronic devices requires a range of skills and a deep understanding of how data is stored and organized electronically. This course serves as an introduction to the technologies relevant to computer forensics and provides the student with hands-on experience collecting and analyzing electronic data.

**C S 360**            **OPERATING SYSTEMS AND COMPUTER ORGANIZATION (3)** *Prerequisite: C S 142.* Three hours lecture. This course is a study of the hardware and software systems and subsystems that make the basic components of a computer system accessible to the managers and users of that system. Topics include processes, scheduling, resource allocation, protection, virtual memory, parallel processing, input/output processing, data encoding, accessing techniques, communications, compilers, and utilities.

**C S 365**            **GAME PROGRAMMING (3)** *Prerequisite: C S 142.* Three hours lecture. This course introduces the concepts of 3-D graphics and modeling and realtime interaction in an event-driven environment. Topics include geometric transformations, light models, texture mapping, special effects, 3-D sound, physics modeling, and graphics engines.

**C S 370 DATABASE MANAGEMENT SYSTEMS (3)** *Prerequisite: C S 141.* Three hours lecture. This course studies the fundamental principles and roles of database management systems. The primary focus of this class is designing and using relational databases. Other topics may include physical storage management, database theory, and alternative persistent data management systems.

**C S 375 PRINCIPLES OF DIGITAL SYSTEMS (4)** Three hours lecture and two hours lab. The principal concepts of digital systems and their applications to computer science are studied. Topics include number representations, codes, switching theory, sequential circuits, comparators, arithmetic circuits, counters, memory implementation, and integrated circuit logic families.

**C S 380 ARTIFICIAL INTELLIGENCE (3)** *Prerequisite: C S 241.* Three hours lecture. This course is a study of the theoretical issues and programming techniques involved in artificial intelligence. Core topics include search, knowledge representation, and reasoning. Additional topics may include game theory, planning, understanding, natural language processing, machine learning, neural networks, genetic algorithms, expert systems, and real-time systems. Students develop competence in a language widely used for A.I. programming, typically LISP or PROLOG.

**C S 385 INTERNET PROGRAMMING (3)** *Prerequisite: C S 141.* Three hours lecture. In this course students learn to create interactive web sites using graphics, tables, forms, styles, and database access. Technologies used may include HTML, CSS, PHP, MySQL, and/or Javascript.

**C S 397 INDEPENDENT STUDY IN COMPUTER SCIENCE (1-3)** *Prerequisites: Approval of faculty sponsor and school dean; junior or senior standing.* This course provides students the opportunity to pursue individual study of topics not covered in other available courses. The area for investigation is developed in consultation with a faculty sponsor and credit is dependent on the nature of the work. May be repeated for no more than six credits.

**C S 398 SPECIAL TOPICS IN COMPUTER SCIENCE (1-3) [credit depends on topic]** *Prerequisite: A background of work in the discipline.* This course will focus on an aspect of the discipline not otherwise covered by the regularly offered courses. The topic will vary according to professor and term; consequently, more than one may be taken by a student during his/her enrollment.

**C S 399 INTERNSHIP IN COMPUTER SCIENCE (1-12)** *Prerequisites: Juniors or seniors with a 2.25 minimum QPA; approval of written proposal by internship coordinator, and supervising faculty prior to registration.* Internships occur in businesses or other institutions involved in computer science-related work. (See "Internships.")

**C S 451-452 SENIOR PROJECT (3,3)** *Prerequisites: C S 242 and senior standing.* This is a capstone course in which the student proposes and completes an independent research or development project. Research projects involve review of significant literature and the writing of a major technical paper, which may require design, implementation, and evaluation of experimental systems. Development projects require full system specifications, system design and analysis, user documentation, and complete, well documented source code.

## CRIMINOLOGY COURSES (CRIM)

**CRIM 241 CRIMINOLOGY (3)** This course is a sociological analysis of the nature and extent of criminal behavior in the United States and around the world. It reviews the past and current theories that attempt to explain the causes of criminal behavior. In addition, society's response to crime, the criminal justice system, and its various components are examined.

**CRIM 243 JUVENILE DELINQUENCY (3)** The course examines the nature and extent of juvenile delinquency in the United States and other modern societies. It explores how juvenile delinquency differs from adult criminal behavior in its legal status, causes, and the ways society reacts to it. The juvenile justice system and its various components are examined.

**CRIM 244 CRIMINAL JUSTICE PROCESS (3)** This course presents a sociological analysis of the various practices and institutions that modern societies have created to deal with criminal behavior. The practices examined include probation, other community-based techniques, jail, prison, parole, and capital