COMPUTER SCIENCE

CS 0004 INTRO TO COMPUTER PROGRAMMING-BASIC 3 cr.
This is a first course in computer science. It is designed to be of special interest to students majoring in one of the social sciences or humanities. Objectives of this course include use of the computer in an interactive environment; problem analysis and the development of algorithms; learning the basic language; designing; coding; and documenting programs using techniques of good programming style BASIC.

Prerequisite: None.

CS 0085 PC SOFTWARE FOR BUSINESS 3 cr.
Introductory-level course in PC software commonly used in business environments. Designed for students in the Humanities and Social Sciences with applications of particular interest to Management and Accounting majors. The principal applications will be word processing, electronic spreadsheets, and database management.

Prerequisite: None.

CS 0098 DECISION MAKING WITH EXCEL 3 cr.
Starts with an introduction to the use of spreadsheets and builds on that foundation to develop proficiency in the use of spreadsheets for statistical and other analytic techniques in support of decision making.

Prerequisite: None.

CS 0134 WEB SITE DESIGN & DEVELOPMENT 3 cr.
Provides a basic understanding of the methods and techniques of developing a simple to moderately complex web site. Using the current standard web page language, students will be instructed on creating and maintaining a simple web site. After the foundation language has been established, the aid of an internet editor will be introduced. A second web-based language will be included to further enhance the web sites.

Prerequisite: None.

CS 0145 INTRODUCTION TO DIGITAL IMAGING 3 cr.
Introduces students to the tools of digital imaging. It is broken into four major parts that will offer students a foundation for incorporating digital tools into their artistic photo process as well as emphasize the unique opportunities of medium. Projects will support a critical examination of digital tools and provide a historical context. Foundations will have students experiment with a digital camera and a limited set of editing tools in Photoshop. Scanning and printing will also be explored. Process in digital imaging shows that digital media can be thought of not only as the software, hardware, and networks we utilize but also as the computational
logic that underlies and structures these tools. New platforms for photography will be discussed as well as the concepts of compression and extraction.

**Prerequisite: None.**

**CS 0146 INTRODUCTION TO DIGITAL VIDEO 3 cr.**

This hands-on introductory course will introduce students to the tools associated with the creation of digital videos. This course will address the concepts, issues, and practices associated with creating effective, custom videos. Included in the course topics are: storyboard development, camera & lighting techniques, digital video editing, audio recording & editing, graphics creation, and production management. Students will learn how shots work together, how to write compelling scripts, and how to use audio for best effect. The class will also have hands-on instruction in editing techniques using adobe premium 10. There will be individual and small group projects.

**Prerequisite: None.**

**CS 0401 INTERMEDIATE PROGRAMMING USING JAVA 4 cr.**

Rigorous introduction to the fundamental concepts and techniques of computer programming using the Java programming language. First course in the Computer Science major.

**Prerequisite: None.**

**CS 0402 PROGRAMMING USING C++ 3 cr.**

Introductory course in computer programming designed for students in computer-related majors. Emphasis is on structured techniques for problem analysis and algorithm development in an object-oriented paradigm.

**Prerequisite: MATH 0020 or MATH 0031.**

**CS 0403 ADVANCED PROGRAMMING USING C++ 3 cr.**

A second course in computer programming designed for students in computer-related majors. Emphasis is on advanced programming techniques in an object-oriented paradigm.

**Prerequisite: CS 0402.**

**CS 0405 PROGRAMMING USING PYTHON 3 cr.**

Designed as a first class in computer programming for students from any major who wish to learn the fundamentals of coding. The focus of the course is on problem analysis, algorithm development and the use of tools for creating and testing Python programs.

**Prerequisite: MATH 0031.**
CS 0421  PROGRAMMING USING JAVA  3 cr.

Introductory course in computer programming designed for students in computer-related majors. Emphasis in on structured techniques for problem analysis and algorithm development in an object-oriented paradigm.

Prerequisite: MATH 0020 or MATH 0031.

CS 0422  ADVANCED PROGRAMMING USING JAVA  3 cr.

A second course in computer programming designed for students in computer-related majors. Emphasis is on advanced programming techniques in an object-oriented paradigm.

Prerequisite: CS 0421.

CS 0441  DISCRETE STRUCTURES FOR COMPUTER SCIENCE  3 cr.

The purpose of this course is to understand and use (abstract) discrete structures that are backbones of computer science. In particular, this class is meant to introduce logic, proofs, sets, relations, functions, counting, and probability, with an emphasis on applications in Computer Science.

Prerequisite: MATH 0200 or MATH 0220 or MATH 0230.

CS 0445  DATA STRUCTURES  3 cr.

Emphasizes the study of the basic data structures of computer science (stacks, queues, trees, lists) and their implementations using the java language included in this study are programming techniques which use recursion, reference variables, and dynamic memory allocation. Students in this course are also introduced to various searching and sorting methods and also expected to develop an intuitive understanding of the complexity of these algorithms.

Prerequisite: CS 0401 or CS 0422.

CS 0447  COMPUTER ORGANIZATION AND ASSEMBLY LANGUAGE  3 cr.

Studies the components of computing systems common to most computer architectures. In particular, this class is meant to introduce data representation, types of processors, memory types and hierarchy, and device drivers. The students will learn mips assembly language, the design of arithmetic and logic units, and basic designs for risc processors.

Prerequisite: CS 0401 or CS 0422.
CS 0449  INTRODUCTION TO SYSTEMS SOFTWARE  3 cr.

Covers topics related to the interface of hardware and software. It covers device interfaces and hardware synchronization at the lowest level of the operating system, the linkage of operating system services to application software, and the fundamental mechanisms for computer communications.

Prerequisite: None.

CS 1501  ALGORITHM IMPLEMENTATION  3 cr.

Covers a broad range of the most commonly used algorithms: some examples include algorithms for sorting, searching, encryption, compression, and local search. The students will implement and test several algorithms. The course is programming intensive.

Prerequisites: CS 0441, CS 0445, CS 0447; MATH 0220.

CS 1902  DIRECTED STUDY  1-3 cr.

Designed to give students the opportunity to design a plan of study to be agreed upon by the student and a supervising faculty member. Does not satisfy the Computer Science capstone requirement.

Note: Department Consent Required.

CS 1950  DIRECTED RESEARCH  1-3 cr.

Designed to give students the opportunity to design a plan of study to be agreed upon by the student and a supervising faculty member.

Note: Department Consent Required.