

## COMPUTER SCIENCE

**CS 0004**                      **INTRO TO COMPUTER PROGRAMMING WITH VISUAL BASIC**                      **3 cr.**

Intended as an introduction to programming for novices or noncomputer majors. Objectives include the use of a computer in an interactive environment; problem analysis and algorithm development; and design, coding, and documentation of programs. The programming language employed is VISUAL 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 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.**

This course will introduce 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 0421**

**PROGRAMMING USING JAVA**

**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 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.**

Presents a study and analysis of the discrete structures that are backbones of problem solving in computer science. Topics will include proof techniques, sets, relations, functions, Boolean algebra, graph theory, and binary, octal, and hexadecimal representation of integers.

*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, graphs—and their implementation. In addition, various mathematical structures introduced in CS 0441 will be applied to computer science problems.

*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 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.

*Note: Department Consent Required.*