

# COMPUTER SCIENCE (CS)

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## **CS 160 Computer Science Orientation (4 Credits)**

**Prerequisites with concurrency:** MTH 111Z or higher.

**Recommended preparation:** CIS 120 or CIS 124.

Provides a broad overview of the discipline of computer science.

Learn the foundations of computer science such as problem solving and algorithms, programming concepts, and computer hardware.

Research careers available in computer science, pathways to computer careers, and reflect on some of the influences computers have had and continue to have on society. Write programs in a variety of programming languages.

## **CS 161 Computer Science I (4 Credits)**

**Prerequisites with concurrency:** MTH 112Z or MTH 251.

**Recommended preparation:** CS 160.

Examines the nature of computer programming; includes discussion of a computer model, methods of problem solving and programming structures; information representation; algorithm construction; object-oriented design.

## **CS 162 Computer Science II (4 Credits)**

**Prerequisites:** CS 161.

Emphasizes the development of data structures, algorithm analysis, recursion, and sorting. Also explores several basic programming constructs, inheritance, interfaces, exceptions, and files/streams. Covers software engineering methods, proper program development, and attention to program planning and documentation.

## **CS 199 Selected Topics: Computer Science (1-4 Credits)**

Provides a learning experience in computer science not currently available; this course is in development to be proposed as a permanent course.

## **CS 205 System Programming and Architecture (4 Credits)**

**Prerequisites:** CS 162.

Answers the question "What really happens when software runs?"

Provides an overview of C and assembly language programming and reading skills. Presents the fundamentals of computer architecture and how instructions and data are represented at the machine level. Students learn how fundamental parts of C programs map to assembly code and binary representations, and how this assembly is determined by the Instruction Set Architecture of a machine.

## **CS 260 Data Structures (4 Credits)**

**Prerequisites:** CS 162.

**Recommended preparation:** MTH 231.

Covers general-purpose data structures and algorithms, software engineering of these structures, and the application of these engineering concepts to real world problems. Topics covered include managing complexity, complexity analysis, stacks, queues, lists, trees, heaps, hash tables, sets, maps, and graphs.

## **CS 298 Independent Study: Computer Science (1-6 Credits)**

**Prerequisites:** Instructor approval required.

**Recommended preparation:** Prior coursework in the discipline.

Individualized, advanced study in computer science to focus on outcomes not addressed in existing courses or of special interest to a student. P/NP grading.

## **CS 299 Selected Topics: Computer Science (1-4 Credits)**

Provides a learning experience in computer science not currently available; this course is in development to be proposed as a permanent course.