Computer Science

Computer Science Major (CS)

The computer science major prepares students to be professional computer programmers and (with the proper area of specialization) to enter graduate school in Computer Science. Students will learn both the theory and practice of the profession, how to work in groups to complete large software projects and appropriate ethical standards. Computer science is a rapidly changing profession and the Mount Mercy computer science program endeavors to teach, model and demonstrate the most modern professional practices. Students with a computer science degree find excellent employment opportunities in almost all industries.

* NOTE: Computer science courses taken seven or more years ago are subject to review by the department before awarding credit for a major or minor in computer science.

Objectives established for students in this major include, among others: use programming languages to explain fundamental computer science concepts; design and analyze algorithms; and understand the process of software engineering (i.e. writing specifications.)

Career Opportunities

Graduates of the computer science program may be employed in business and industry. See the Graduate section (http://catalog.mtmercy.edu/archives/2014-15/graduateprograms) of this *Catalog* for more information on Graduate programs offered at Mount Mercy.

Major

MA 150	Discrete Mathematics	3
CS 105	Fundamentals Of Computer Science	4
CS 106	Data Structures	4
CS 112	Introduction to Object Oriented Programming [1]	3
CS 190	Computer Organization	4
CS 203	Information Ethics	3
CS 235	Systems Programming Concepts	4
CS 389	Algorithm Analysis	3
CS 435	Senior Project: CS	4
Plus one area of specialization		22-23
Total Hours		54-55

[1] NOTE: The student will have a chance to take challenge test to get credit for CS 112.

Area of specialization

CS electives 6-12 semester hours (2-4 courses) and specialization courses 11-16 semester hours (4-6 courses in a discipline other than CS).

The intent of the “Area of Specialization” is to allow students to create their own programs of study in Computer Science. A traditional computer science program is possible by selecting the Computational Science Specialization. Other programs of study are outlined beginning on the next page, but this list is incomplete. Potential students are encouraged to “think outside the box” as they, with the advice and approval of their advisors, create their personal computer science majors at Mount Mercy.

The area of specialization must be declared by the end of the Spring term of your sophomore year (can be changed later).

Sample Areas of Specialization for the Computer Science Major

Computational Science

This specialization is intended for those considering graduate school in computer science.

CS 302	Programming Languages	4
CS 399	Special Topics in Computer Science	3
MA 164	Calculus I	4
MA 165	Calculus II	4
MA 202	Linear Algebra	4
Total Hours		19

Information Security

Individuals choosing information security are encouraged to complete a mathematics minor.

CS 399	Special Topics in Computer Science (Cryptography)	3
CS 399	Special Topics in Computer Science (Any)	3
MA 164	Calculus I	4
MA 165	Calculus II	4
MA 214	Probability And Statistics	3
CJ 297	Criminal Law	3
Total Hours		20

Web Development

CS 315	Web Programming	4
CS 388	Database Systems	4
BK 208	Principles Of Marketing	3
AR 120	Visual Technology	3
AR 130	Graphic Design I	3
AR 330	Web and Motion Graphics	3
Total Hours		20

Software Development

This is a more CS intensive version of MIS.

This is the only area of specialization available in the evening accelerated program.

CS 326	Information Systems Analysis	3
CS 388	Database Systems	4
CS 399	Special Topics in Computer Science (Any)	3
BA 250	Technology & Communication In Business	3
BN 204	Principles Of Management	3
BN 377	Project Management	3
Total Hours		19

Embedded Systems

CS 399	Special Topics in Computer Science (Embeded Systems)	3
CS 399	Special Topics in Computer Science (Robotics)	3
CS 399	Special Topics in Computer Science (Any)	3
MA 164	Calculus I	4
MA 210	Introduction To Graph Theory	3
PH 151	Principles of Physics I	4.5

Software Engineering

CS 302	Programming Languages	4
CS 326	Information Systems Analysis	3
CS 399	Special Topics in Computer Science (Any)	3
CS 399	Special Topics in Computer Science (Any)	3
MA 164	Calculus I	4
MA 210	Introduction To Graph Theory	3

Academic Requirements

A grade of C or above (C- does not count) is required in all courses in the major and their prerequisites. A cumulative grade point average (all courses) of 2.00 or higher is required for graduation with a major in Computer Science.