Master of Computer Science, M.C.S.

Visit the Computer Science Department page (https://www.uvu.edu/cs/) for more information on the program and access to advising.

Program Description

The Master of Computer Science (MCS) at Utah Valley University is an applied graduate program resulting in a professional degree. Students graduating with this degree will have a broad grounding in computer science as a discipline and be well equipped to take on leadership roles in a wide range of computing technology-related industries. Student education will be focused on developing software systems using current technologies while allowing them the freedom to explore and exploit new technologies to solve real-world problems. Students will be required to develop a broad base of competency by passing required courses in large scale implementation, applied mathematics computing, information management, and software engineering. Electives will allow a student to continue to add breadth to their education or allow them to focus on specific areas of computer science they find interesting or feel will best advance their professional objectives.

Matriculation Requirements

1. Application for admission to the MCS will include letters of recommendation and a statement of purpose.
2. Applicants must have an overall grade point average in their undergraduate work of 3.0 or higher on a 4.0 scale.
3. For international students whose native language is not English, a TOEFL score of 80 iBT (550 pBT) or higher, or an IELTS band score of 6.5 or higher within the past two years, is required.
4. Applicants with a bachelor's degree in a computer-related field (Computer Science, Computer Engineering, Software Engineering, or a closely related field) who have completed the following courses (or equivalent courses from other institutions) with a C+ or better will be deemed to have the fundamental computer science background to enter the program: CS 2300 Discrete Mathematical Structures I, CS 2420 Introduction to Algorithms and Data Structures, CS 2810 Computer Organization and Architecture, CS 3060 Operating Systems Theory, MATH 1210 Calculus I
5. Applicants without a bachelor's degree in a computer-related field or who have not completed the above courses with a C+ will be deemed lacking in fundamental computer science background to enter the program.
6. Applicants found lacking in fundamental computer science background can be conditionally admitted to the MCS. Conditionally admitted students will have an individualized MCS Leveling Plan (MCS LP) developed for them by the Computer Science Graduate Committee. Once the MCS LP has been met by the applicant, the applicant will be deemed to have the fundamental computer science background to enter the program. Graduate policy precludes conditionally admitted students from taking 6000 level courses.
7. All applicants will be subject to the approval of the Computer Science Graduate Committee.

Program Requirements

Code	Title	Credit Hours
Total Credit Hours		**30**
Discipline Core Requirements		**24 Credits**
CS 6600	Graduate Project I	3
CS 6610	Graduate Project II	3
CS 6150	Advanced Algorithms	3
CS 6300	Software Engineering Leadership	3
CS 6470	Machine Learning	3
CS 6500	Software Architecture	3
CS 6510	Design and Simulation of Operating Systems	3
CS 6700	Advanced Mathematics for Computer Science	3
Elective Requirements		**6 Credits**
Complete 2 courses from the following list:		6
CS 6100	Database Management System Construction (3)	
CS 6200	Cyberphysical Security (3)	
CS 6400	Modern Databases (3)	
CS 6460	Artificial Intelligence (3)	
CS 6480	Deep Learning (3)	
CS 6620	Advanced Data Mining and Visualization (3)	

CS 6730	Advanced Embedded Systems Engineering (3)
CS 6800	Computer Graphics and Mixed Realities (3)

Graduation Requirements

1. Completion of all courses with a grade of B- or better.
2. Graduate Project:
   a. Graduate project proposal presented to and accepted by the student's Advisory Committee.
   b. Completion and defense of graduate project (CS 6600 Graduate Project I and CS 6610 Graduate Project II); defense must be accepted by the student's Advisory Committee.
   c. Completion of all required courses and elective courses for a total of 30 credit hours with an average GPA of 3.0 or higher.
3. No transfer credit can be used to satisfy graduation requirements.

Graduation Plan

This graduation plan is a sample plan and is intended to be a guide. Your specific plan may differ based on your Math and English placement and/or transfer credits applied. You are encouraged to meet with an advisor and set up an individualized graduation plan in Wolverine Track (http://www.uvu.edu/wolverinetrack/).

First Year		Credit Hours
Semester 1		**Credit Hours**
CS 6150	Advanced Algorithms	3
CS 6300	Software Engineering Leadership	3
CS 6470	Machine Learning	3
	Credit Hours	**9**
Semester 2		
CS 6500	Software Architecture	3
CS 6510	Design and Simulation of Operating Systems	3
CS 6700	Advanced Mathematics for Computer Science	3
	Credit Hours	**9**
Second Year		
Semester 3		
CS 6600	Graduate Project I	3
Elective		3
Elective		3
	Credit Hours	**9**
Semester 4		
CS 6610	Graduate Project II	3
	Credit Hours	**3**
	Total Credit Hours	**30**

Program Learning Outcomes

1. Design of large-scale software systems: To meet this standard, students demonstrate knowledge of common software architectural styles, interaction of design and quality, design tradeoffs, and the role of technology in software design.
2. Implementation of large-scale systems: To meet this standard, students demonstrate the ability to write large programs, integrate software modules built over multiple releases, and devise unit and systems tests to ensure the quality of the system.
3. Professional maturity: To meet this standard, students must demonstrate the ability to understand all phases of software lifecycle, take a significant project from conception through delivery without excessive supervision, be able to communicate technical concepts and problems in a coherent and professional manner, and meet deadlines.
4. Broad base of competency: To meet this standard, students must demonstrate a breadth of knowledge that spans multiple functional domains of computer science. This breadth of knowledge must be deep enough that a student can apply their problem-solving skills to multiple domains or use multiple domains to solve a single problem.

Computer and information systems managers

- Total Positions613,500
- Field Growth17.4%
- Median Salary$169,510
- Average Openings54.7

Information security analysts

- Total Positions180,700
- Field Growth32.7%
- Median Salary$120,360
- Average Openings17.3

Computer and information research scientists

- Total Positions36,600
- Field Growth25.6%
- Median Salary$145,080
- Average Openings3.4

Computer network support specialists

- Total Positions166,700
- Field Growth7.3%
- Median Salary$71,530
- Average Openings12.1

Database architects

- Total Positions61,400
- Field Growth10.8%
- Median Salary$134,700
- Average Openings4.2

Computer programmers

- Total Positions139,400
- Field Growth-9.6%
- Median Salary$99,700
- Average Openings6.4

Software developers

- Total Positions1,692,100
- Field Growth17.9%
- Median Salary$132,270
- Average Openings125.1

Software quality assurance analysts and testers

- Total Positions205,000
- Field Growth11.8%
- Median Salary$101,800
- Average Openings15.0

Web developers

- Total Positions94,100
- Field Growth9.0%
- Median Salary$84,960
- Average Openings6.6

Web and digital interface designers

- Total Positions128,600
- Field Growth7.9%

- Median Salary$98,540
- Average Openings9.9

Computer occupations, all other

- Total Positions470,900
- Field Growth10.8%
- Median Salary$104,920
- Average Openings34.8

Data scientists

- Total Positions202,900
- Field Growth36.0%
- Median Salary$108,020
- Average Openings20.8

Computer science teachers, postsecondary

- Total Positions45,000
- Field Growth6.1%
- Median Salary$96,430
- Average Openings3.7