

Computer Science Graduate Programs

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The Computer Science Graduate Program is in the [Scott M. Smith College of Engineering](#). To find the most up-to-date information, including Program Learning Outcomes for the Computer Science Graduate Program, visit their website.

[Master of Computer Science Graduate Program](#)

Degrees & Programs

Artificial Intelligence, Graduate Certificate

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Requirements

The Graduate Certificate in Artificial Intelligence provides fundamental and advanced skills in the principles, algorithms and technologies that enable AI and cybersecurity.

Total Program Credits: 18

Matriculation Requirements:			
<ol style="list-style-type: none"> 1. Application for admission to the graduate program with application fee by the established deadline. 2. Submit official transcripts from all universities attended. 3. A bachelor's degree from a regionally accredited college/university or the international equivalent. 4. A 3.0 cumulative undergraduate GPA or a 3.0 GPA calculated on the last 60 semester hours (90 quarter hours) of undergraduate work. 5. Completion of Introduction to Algorithms and Data Structures (CS 2420 or the equivalent). 6. For international students whose native language is not English, submit official TOEFL or IELTS band scores. 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. 7. International students must also meet all US government requirements for international students. 8. The university uses a selective admissions process for admitting students to graduate programs. Meeting minimum admissions criteria does not guarantee admission to the graduate program or to the University as a graduate student. 9. Recommended courses to take before the program begins are Linear Algebra (MAT 2270 or equivalent) and Statistics & Probability (STAT 2050 or equivalent). 			
Discipline Core Requirements:		12 Credits	
	CS 6150	Advanced Algorithms	3
	CS 6200	Cyberphysical Security	3
	CS 6460	Artificial Intelligence	3
	CS 6470	Machine Learning	3
Elective Requirements:		12 Credits	

Pick two of the following courses or other approved departmental electives:		6
	CS 6100	Database Management System Construction (3)
	CS 6300	Software Engineering Leadership (3)
	CS 6400	Modern Databases (3)
	CS 6480	Deep Learning (3)
	CS 6500	Software Architecture (3)
	CS 6620	Advanced Data Mining and Visualization (3)
	CS 6510	Design and Simulation of Operating Systems (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 B- or better.
2. Overall average GPA for 18 hours of 3.0 or higher.
3. A maximum of 6 credit hours transferred from another institution may be used to satisfy graduate requirements. At least two-thirds of the courses applied to the graduate certificate must be taken at UVU.

Artificial Intelligence, Graduate Certificate Careers

1. Apply principles and techniques of AI and Machine Learning to solve problems.
2. Apply security principles and practices to maintain operations in the presence of risks and threats.

Master of Computer Science, M.C.S.

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Requirements

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

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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.

Total Program Credits: 30

Matriculation Requirements:			
<p>1. Application for admission to the MCS will include letters of recommendation and a statement of purpose.</p> <p>2. Applicants must have an overall grade point average in their undergraduate work of 3.0 or higher on a 4.0 scale.</p> <p>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.</p> <p>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:</p> <ul style="list-style-type: none"> • CS 2300 Discrete 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 <p>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.</p> <p>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.</p> <p>7. All applicants will be subject to the approval of the Computer Science Graduate Committee.</p>			
Discipline Core Requirements:		18 Credits	
	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:		12 Credits	

Pick 4 courses, or other departmental approved electives to complete either the Graduate Project or Graduate Coursework Option:		12	
	CS 6100	Database Management System Construction (3)	
	CS 6400	Modern Databases (3)	
	CS 6480	Deep Learning (3)	
	CS 6600	Graduate Project I (3)	
	CS 6610	Graduate Project II (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 Option:
 - a. Graduate project proposal presented to and accepted by the student's Advisory Committee.
 - b. Completion and defense of graduate project (CS 6600 and CS 6610); 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. Graduate Coursework Option:
 - a. Completion of all required courses and elective courses (CS 6600 and CS 6610 do not count toward this option) for a total of 30 credit hours with an average GPA of 3.0 or higher.
4. No transfer credit can be used to satisfy graduation requirements.

Master of Computer Science, M.C.S.

Careers

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.

Related Careers

- Computer and Information Systems Managers
- Computer and Information Research Scientists
- Information Security Analysts
- Computer Programmers
- Software Developers, Applications
- Software Developers, Systems Software
- Web Developers
- Computer Network Support Specialists
- Computer Occupations, All Other
- Computer Science Teachers, Postsecondary