M.S. in Computer Science

The Master's Program in Computer Science provides advanced study of fundamental concepts in computer science, including algorithm design and analysis, the theory of computation, and applications of computing. The degree plan is flexible, allowing students to use electives to focus on specific areas of interest within computer science, such as security, artificial intelligence, data sciences, software development, or systems. Students interested in conducting research have the opportunity to work individually with faculty members on a thesis or project.

Admission Requirements

Applicants must have earned a Baccalaureate degree from an accredited university. Students apply through the Graduate School by submitting an application and the following supporting materials:

- Official transcripts of all previous academic work.
- Official scores on the Graduate Record Exam (GRE).
- Applicants from countries where English is not the first language are required to demonstrate English proficiency. Please consult the graduate school (http://catalog.utep.edu/admissions/graduate/graduate-student/) website for required scores.
- Personal Statement of Purpose.
- Minimum of two letters of recommendation.
- A CV/resume with evidence of other relevant experience.

Depending on qualifications for study, students may need to complete leveling coursework at the undergraduate level. These courses are not applied towards the program. Applicants must be able to demonstrate knowledge of programming in a high-level language such as Java or C++, including knowledge of data structures and algorithms. This can be demonstrated by completing CS 2302 Data Structures with a B or better, or by completing equivalent coursework or certifications as approved by the program committee. Additional leveling courses may be required as prerequisites for specific graduate courses, or on a case-by-case basis depending on the qualifications of the student.

Degree Requirements

Students may select either the thesis or non-thesis track for this degree. Students enrolled in the thesis track must take 27 credit hours of course work plus six (6) additional credit hours of

CS 5398 Master's Thesis I and CS 5399 Master's Thesis. Students in the non-thesis track must complete 36 credit hours, which may optionally include up to six (6) hours of CS 5396 Graduate Projects and CS 5397 Graduate Projects No more than nine (9) total credit hours of Master's Thesis, Graduate Projects, Graduate Research, or Independent Study courses may be counted towards the degree in either track. All courses must be taken at the 5000 level or above, unless specifically approved by the graduate advisor.

Cybersecurity Certificate

The department also offers a certificate in cybersecurity that can be obtained in combination with the MS degree if the student selects the necessary courses as electives. See the description of the certificate program for the detailed requirements.

Degree Plan

Required Credits: 33 (thesis track) or 36 (non-thesis track)

Code	Title	Hours
Required Courses:		
Core Courses (6) credit hours (All courses require a B or better):		
CS 5350	Advanced Algorithms	3
CS 5315	Theory of Computation	3
Breadth Courses (12) credit hours (All courses require a B or better):		
Select at least one course in four of the five areas listed.		

Code	Title	Hours
Area 1: Systems		
CS 5340	Advanced Operating Systems	3
CS 5341	Advanced Computer Architecture	3
CS 5313	Computer Networks	3
Area 2: Security		
CS 5352	Computer Security	3

CS 5375	Software Reverse Engineering	3
CS 5376	Comp. Dec Making & Risk Anal	3
CS 5377	Cyber-Sec for Critical Op Tech	3
Area 3: Software Development		
CS 5382	Model-Based Software Devlpmnt	3
CS 5385	Software Requirements Engr	3
CS 5386	Software Architecture & Design	3
CS 5387	Software Integration and V&V	3
Area 4: Intelligent and Interactive Systems		
CS 5314	Artificial Intelligence I	3
CS 5317	Human-Computer Interaction	3
CS 5303	Logical Foundations of CS	3
Area 5: Data Management and Analytics		
CS 5342	Database Management	3
CS 5361	Machine Learning	3
CS 5362	Data Mining	3
Non-thesis Track (18) credit hours (All courses require a C or better)		
Students must complete six elective courses in CS at the 5000-level or above. These may include project courses CS 5396 Graduate Projects/ CS 5397 Graduate Projects.		
Thesis Track (15) credit hours (All courses require a C or better)		
All students must complete at least three hours of CS 5398 and three hours of 5399 Master's Thesis courses, and nine (9) additional credit hours of elective courses in computer science at the 5000-level or above.		
Total Hours		**33-36**

[2] May include project courses CS 5396 Graduate Projects/CS 5397 Graduate Projects.

Graduate CS Courses

Code	Title	Hours
CS 5303	Logical Foundations of CS	
CS 5313	Computer Networks	
CS 5314	Artificial Intelligence I	
CS 5315	Theory of Computation	
CS 5317	Human-Computer Interaction	
CS 5319	Topics in Language Processing	
CS 5334	Parallel & Concurrent Program	
CS 5339	Secure Web-Based Systems	
CS 5340	Advanced Operating Systems	
CS 5341	Advanced Computer Architecture	
CS 5342	Database Management	
CS 5350	Advanced Algorithms	
CS 5351	Interval Computations	
CS 5352	Computer Security	
CS 5354	Topics/Intelligent Computing	
CS 5371	Software Safety & Risk Anlysis	
CS 5372	Spec. & Desgn of Real-Time Sys	
CS 5373	Graduate Student Internship	
CS 5374	Software Construction	
CS 5375	Software Reverse Engineering	
CS 5376	Comp. Dec Making & Risk Anal	
CS 5377	Cyber-Sec for Critical Op Tech	
CS 5381	Topics in Software Engineering	
CS 5382	Model-Based Software Devlpmnt	

CS 5386	Software Architecture & Design
CS 5387	Software Integration and V&V
CS 5388	Software Project Management
CS 5389	Software Engineering Practicum
CS 5390	Special Topic Computer Science
CS 5391	Individual Studies
CS 5392	Graduate Research Methods
CS 5394	Graduate Research
CS 5396	Graduate Projects
CS 5397	Graduate Projects
CS 5398	Master's Thesis
CS 5399	Master's Thesis
CS 5694	Graduate Research
CS 6194	Doctoral Research
CS 6294	Doctoral Research
CS 6303	Logical Foundations of CS
CS 6315	Theory of Computation
CS 6341	Adv Computer Architecture
CS 6350	Advanced Algorithms
CS 6390	Special Topics
CS 6391	Individual Studies
CS 6392	Graduate Research Methods
CS 6394	Doctoral Research