The Master of Science in Computer Science program emphasizes the study of advanced computational theory and practice to prepare students for successful careers in computer science. Graduates will understand the principles and practices in both classical and emerging domains of computer science, such as AI, data science, software engineering, cyber security, commercial application development, scientific computing and more. They will be well-positioned to seek rewarding careers in all areas of business, government, education and industry, and for pursuing Ph.D. studies.

Admission to Graduate Standing - Conditionally Classified

Students must meet the CSU requirements for admission to a master's degree program. Please consult the Graduate Admissions section in this catalog for complete information. In addition, to qualify for admission with conditionally classified standing, applicants must meet the following departmental requirements:

- Minimum GPA of 2.5 for applicants graduated from domestic (U.S.) institutions with undergraduate degrees in engineering or computer science.
- Minimum GPA of 2.5 for applicants graduated from ABET-accredited international institutions with undergraduate degrees in engineering or computer science.
- Minimum GPA of 3.0 for applicants graduated from domestic (U.S.) institutions with undergraduate degrees other than engineering or computer science.
- Minimum GPA of 3.0 for applicants with undergraduate degrees from non-ABET-accredited international institutions.

Students without an undergraduate degree in computer science must have completed at least one course in computer programming with a grade of at least "B-" within the past 2 years.

Classified Graduate Standing

For students without a bachelor's degree in computer science, satisfactory completion of the following courses or their equivalents. These courses may also have prerequisites, and students without preparation in a closely related degree may have additional work to complete: CPSC 121, CPSC 131,CPSC 240, CPSC 323, CPSC 335, CPSC 351, CPSC 362, MATH 170A, MATH 170B, MATH 338.

Degree Requirements

At least 15 of the total units shall represent courses offered by the Department of Computer Science. Courses offered by other disciplines, not listed here, and related to the student's objectives in Computer Science may be approved by petition to the Department of Computer Science.

Core (9 units)

Select 3 units from three of the areas below.

Computer Applications (3 units)

- CPSC 531 - Advanced Database Management (3)
- CPSC 559 - Advanced Blockchain Technologies (3)
- CPSC 566 - Advanced Computer Graphics (3)
- CPSC 583 - Expert Systems Design Theory (3)
- CPSC 585 - Artificial Neural Networks (3)

Computer Systems (3 units)

- CPSC 551 - Operating Systems Design (3)
- CPSC 552 - Cyber Forensics (3)
- CPSC 558 - Advanced Computer Networking (3)

Software Engineering (3 units)

- CPSC 541 - Systems and Software Standards and Requirements (3)
- CPSC 542 - Software Verification and Validation (3)
- CPSC 543 - Software Maintenance (3)
- CPSC 544 - Advanced Software Process (3)
- CPSC 545 - Software Design and Architecture (3)
- CPSC 546 - Modern Software Management (3)
- CPSC 547 - Software Measurement (3)
- CPSC 548 - Professional, Ethical and Legal Issues for Software Engineers (3)

Theoretical Computer Science (3 units)

- CPSC 535 - Advanced Algorithms (3)

Electives (15 units)

Other courses may be chosen with approval of the departmental graduate adviser. A maximum 9 units of 400-level courses are allowed.

- CPSC 411 - Mobile Device Application Programming (3)
- CPSC 431 - Database and Applications (3)
- CPSC 439 - Theory of Computation (3)
- CPSC 440 - Computer System Architecture (3)
- CPSC 449 - Web Back-End Engineering (3)
- CPSC 352 - Cryptography (3)
- CPSC 454 - Cloud Computing and Security (3)
- CPSC 455 - Web Security (3)
- CPSC 456 - Network Security Fundamentals (3)
- CPSC 458 - Malware Analysis (3)
- CPSC 459 - Blockchain Technologies (3)
- CPSC 462 - Software Design (3)
- CPSC 463 - Software Testing (3)
- CPSC 464 - Software Architecture (3)
- CPSC 466 - Software Process (3)
- CPSC 471 - Computer Communications (3)
- CPSC 474 - Parallel and Distributed Computing (3)
- CPSC 479 - Introduction to High Performance Computing (3)
- CPSC 481 - Artificial Intelligence (3)
- CPSC 483 - Introduction to Machine Learning (3)
- CPSC 484 - Principles of Computer Graphics (3)
- CPSC 485 - Computational Bioinformatics (3)
- CPSC 486 - Game Programming (3)
- CPSC 515 - Mobile Computing (3)
- CPSC 531 - Advanced Database Management (3)
- CPSC 533 - Applied Algorithms (3)
- CPSC 535 - Advanced Algorithms (3)
- CPSC 541 - Systems and Software Standards and Requirements (3)
- CPSC 542 - Software Verification and Validation (3)
- CPSC 543 - Software Maintenance (3)
- CPSC 544 - Advanced Software Process (3)
- CPSC 545 - Software Design and Architecture (3)

- CPSC 546 - Modern Software Management (3)
- CPSC 547 - Software Measurement (3)
- CPSC 548 - Professional, Ethical and Legal Issues for Software Engineers (3)
- CPSC 549 - Web Application Frameworks (3)
- CPSC 551 - Operating Systems Design (3)
- CPSC 552 - Cyber Forensics (3)
- CPSC 558 - Advanced Computer Networking (3)
- CPSC 559 - Advanced Blockchain Technologies (3)
- CPSC 566 - Advanced Computer Graphics (3)
- CPSC 583 - Expert Systems Design Theory (3)
- CPSC 585 - Artificial Neural Networks (3)
- CPSC 599 - Independent Graduate Research (1-3)

Culminating Experience (6 units)

CPSC 589 - Seminar in Computer Science (3)

CPSC 597 - Project (3) * or
CPSC 598 - Thesis (3) *

Note:

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* A “C” (2.0) or better will satisfy the graduate writing requirement.

Graduate Student Advisement

The graduate program adviser provides overall supervision of the graduate program. The individual student chooses an adviser for the thesis or project from the Computer Science Department’s full-time faculty on the basis of the student’s particular interests and objectives.

Total (30 units)