

MASTER'S DEGREE PROGRAM IN

Computer Science

College of Engineering
University of Colorado Denver

These degree requirements are in effect starting from 2017-2018 Admission.

The Department of Computer Science and Engineering offers a Master of Science degree in Computer Science.

Research areas of emphasis include: algorithms, automata theory, artificial intelligence, big data management and mining, bio-informatics, cloud computing, communication networks, combinatorial geometry, computational geometry, computer graphics, computer security, computer systems, cyber physical systems, cyber security, database, distributed computing, graph theory, high performance computing, information theory, internet, mobile computing, mobile health systems, machine learning, parallel processing, simulation, and software engineering.

Admission Requirements

Applicants should hold a bachelor's degree from an institution comparable to the University of Colorado. They need to have sufficient programming experience and mathematical maturity to understand advanced courses.

Qualified applicants holding a degree outside Computer Science, Computer Engineering or equivalent fields may need to take additional undergraduate courses before starting the graduate program.

Admission decisions are based on prior academic performance, letters of recommendation, English proficiency if applicable, as well as the applicant's written statement of purpose.

Additional requirements include:

- (1) University- level Calculus I and Calculus II (equivalent to two semesters); and
- (2) at least one math course beyond Calculus, such as Advanced Calculus, Differential Equations, Linear Algebra, Probability, Statistics, or Combinatorial Analysis.

Students lacking some of these requirements, whose background is otherwise satisfactory, might be admitted with the understanding that the certain undergraduate courses have to be completed after admission.

Grade Point Average (GPA):

Applicants are expected to have grade point average (GPA) of at least 3.0.

GRE Scores *(effective for fall 2015 admission)*

Applicants must submit evidence of adequate preparation for graduate study by either (a) submitting official GRE scores, or (b) documenting an earned bachelor's degree with a GPA of 3.00 or higher from an institution accredited by a U.S. accreditation body, or an earned master's degree with a GPA of 3.50

or higher from an institution accredited by a U.S. accreditation body. Use Institution Code 4875, Department Code 1102. Strong candidates typically have verbal plus quantitative scores exceeding 310. (For students that took the exam prior to August 2011, strong candidates have verbal plus quantitative scores exceeding 1200.)

International Students:

Applicants whose native language is not English must take either the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS) exam and must score above 537 (paper) or 75 (internet based) or 6.5 on the IELTS. Applicants whose native language is not English are not required to take the TOEFL test if they have completed a baccalaureate or graduate-level degree program at an English-speaking college or university or have completed at least 2 semesters at a college or university in the United States as a full-time student and obtained a “B” average (3.0 GPA) or higher.

Admission Decision:

Candidates applying for the MS study will be individually evaluated by the Department’s Graduate Committee. A letter with a decision will be sent to the applicant by the CSE Chair.

Provisional Admission:

Applicants may be accepted as “provisional degree students.” This status is indicated in the acceptance letter along with the conditions that need to be satisfied by a specified deadline in order for the student to obtain regular status.

MS in Computer Science Degree Requirements

Master’s degree candidates are required to complete a program of study consisting of at least 30 semester hours of graduate level computer science courses while maintaining a grade point average of at least 3.0. According to the Graduate school rules graduate courses with grades below B- cannot be applied toward the completion of the graduate degree.

Students need to submit an approved Plan of Study to the Department during the first semester of their admission. Students must consult their assigned advisor to develop a Plan of Study.

Students may choose **Plan I** (thesis), **Plan II** (project), or **Plan III** (course only). Both Plan I and II require successful defense of thesis or project in student’s graduating semester. Plan III requires successful completion of a final assessment during student’s graduating semester.

Plan I – Thesis:

Students take 24 hours of graduate course work, and additionally write and defend a thesis, which counts for 6 hours of graduate thesis work. In this plan students will take three out of four “category A” courses, a minimum of four “category B” courses, and six hours of MS thesis. In addition, students may take an “Independent Study” course or one “category C” course with approval of their faculty research advisor. Note: a fourth category “A” course can be counted toward satisfying category “B” requirement as well.

Plan II – MS Project:

Students take 27 hours of graduate course work, and additionally write and defend a MS project report, which counts for 3 hours of graduate MS project work. In this plan students will take four “category A” courses, a minimum of four “category B” courses, and three hours of MS project. In addition, students may take an “Independent Study” course or one “category C” course with approval of their faculty research advisor.

Plan III – Course Only:

Students must take 30 hours of graduate course work. In this plan students will take four “category A” courses and a minimum of four “category B” courses, and a maximum of two “category C” courses. All four category “A” courses must be taken, however, MS course only option students may take an additional category “B” course to make up a lower than passing grade in a category “A” course.

One of the category “B” courses must be from a designated list of courses that will satisfy a final MS project. Students may take these designated courses to satisfy category “B” requirements without the designation of final MS project. However students in course-only option, will select one such course based on their interest from the approved list of courses to conduct a more in-depth project:

Final Project MS course:

- List of approved final project MS courses will be available in the CSE department.
- The final MS project may be taken after completing at least three (3) “category A” courses.
- Students will notify the department [chair of the Graduate Committee] of their course selection by the second (2nd) week of the semester.
- The instructor of final MS project course submits his/her evaluation along with the completed project report to the Graduate Committee by the end of each semester.
- Final project must meet the following requirements:
 1. Must be an individual semester term project.
 2. Must demonstrate the mastery of the subject.
 3. Must demonstrate scholarly/scientific knowledge acquired over the course of their MS studies.
 4. Must require significant research and implementation.
 5. Must produce a written a final report documenting research, implementation, results, analysis, and bibliography.

Academic Advisor

- A student, who is in **Plan I** (thesis), and **Plan II** (MS project), will need to choose a CSE full time faculty member with a graduate faculty appointment as a Thesis/MS Project Advisor. The Thesis/MS Project Advisor will chair the Thesis/MS Project Committee. The Thesis/MS Project Committee will consist of at least three members, two of whom must be CSE graduate faculty members.
- Thesis/MS Project and Independent Study supervision:

1. Full-time faculty CSE faculty who are members of UCD Graduate School may supervise thesis, MS Project, and graduate independent studies.
 2. Tenured/tenure-track faculty from outside of CSE department may co-advise MS thesis, MS Project, and graduate independent studies, along with the approval of the designated CSE faculty advisor.
 3. Part-time CSE faculty, e.g., lecturers, honoraria, graduate students, may not supervise thesis and MS Project. They may, however, serve as informal supervisors of graduate independent studies, sponsored by a full-time tenured/tenure-track CSE faculty who is a member of the UCD Graduate School faculty as the supervisor-of-record.
- Students in thesis plan have priority in obtaining departmental assistantships.

CSE Graduate Course Areas in Computer Science

MS students will take graduate CS courses in the following categories:

1 - Category A ("core")

Every MS Project and course option students will need to complete the following four courses to satisfy the core requirement:

CSCI 5446 Theory of Automata
CSCI 5451 Algorithms
CSCI 5593 Advanced Computer Architectures
CSCI 5573 Operating Systems

2 - Category B ("breadth")

In addition to the core courses (Category A), students will breadth take courses from courses taught by the full-time graduate faculty in the CSE Department. The graduate CS course list to satisfy breadth course requirement is maintained on the department website for each semester. The availability of the courses may vary from semester to semester. Students must confirm if a certain course is offered in a specific semester through the department's website. Students must consult their faculty advisor for their course selection and degree planning.

3 - Category C

- Depending on the plan you choose, up to 3 courses can be taken from Category C courses described below.
- A student in **Plan I** (thesis) or **Plan II** (project) must select either CSCI 6950 MS thesis (6 credit hours maximum) or CSCI 6960 MS project (3 credit hours maximum).
- A student in **Plan III** (course only) must enroll in the CSE Department for the final assessment within the first two weeks of their final semester.
- Graduate Independent study is optional and allows up to 3 credit hours maximum. It is only applicable to students in **Plan I** (thesis), and **Plan II** (project) options. **Plan III** (course only) students are not eligible to count CSCI 5840 Independent study toward degree requirements.
- Students may take appropriate graduate courses from Mathematics and other Engineering departments with a prior approval of graduate committee (category C).

Transfer of Credit:

A maximum of nine semester hours of graduate course work may be transferred into the program based on department approval. In principle, core courses must be taken from the CSE department at UCD.

Students' Responsibilities and Steps to Follow

Failure to follow these steps may prolong or stop your graduation. All students are responsible to adhere to the Academic Calendar, and Graduate School dates and deadlines published every semester.

1. All new students must attend an orientation that is held the Thursday of the week before start of every semester
2. New students must prepare a plan of study and receive approval from an advisor, within the first month of their first semester. Forms will be available on the CSE web-site.
3. Students must receive a graduate advisor's approval for any change to their initial plan of study.
4. **Graduation check** (required for all students intending to graduate):
 - a. A student in **Plan III** (course only) must enroll in the CSE Department for their selected final project MS course within the first two weeks.
 - b. Students must apply for graduation through the UCDAccess student portal between the first day of registration for the term and census date for the term they are intending to graduate.
 - c. Students apply for admission to candidacy by completing the required forms. The form is on-line located on the Computer Science web-site. The form must be completed at the beginning of the semester the student intends to graduate (deadlines are published by the Graduate School every semester). Students must make an appointment and meet with a graduate advisor to have their application for candidacy approved.

Adequate Progress toward MS in Computer Science Degree

- Students are expected to finish the MS degree program within 5 years. Candidates for the MS degree may not get credit for a course taken longer than five years before the date on which the degree is to be granted.
- Students who do not enroll for any course work in the graduate program in a Fall or Spring semester need to notify the Computer Science and Engineering Department in writing. Students who are not enrolled for three consecutive Fall or Spring semesters might be removed from the program.

Contact Information:

Please contact the CSE Department for information, appointments, and inquiries:

Mailing Address:

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PO Box 173364
Denver, CO 80217 - 3364

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Petitions are submitted online and then need to be printed and signed in the Department's Office. Advising may be scheduled either online or directly through the Department's Office.

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