

Masters Programs in Computer Science and Engineering

CSE 's master degree programs are designed to address a variety of post-graduate educational needs. As with our PhD programs, we offer majors in both [computer science](#) and [computer engineering](#) . Both majors permit pursuing either an in-depth research-oriented program with a thesis or a more skill-oriented program with more courses, a small project, and comprehensive exams. Our computer science program is highly customizable to each student's goals, featuring a [small core](#) and a choice of area concentrations. Our computer engineering program features a strong core of required classes and a small number of electives

These programs can be completed full-time or part-time by students working in industry. Students who are unsure of their interest in an MS degree can enroll in individual graduate classes through [UCSD Extension Concurrent Enrollment Program](#) (with permission of the instructor). A student may petition for a small number of these classes to transfer to their MS degree if they later apply to the MS program. Applications for admission to the MS program are considered annually. Admissions are effective the following Fall quarter.

Excellent students who develop an interest in pursuing a PhD in the course of their MS are encouraged to apply to the PhD program.

Computer Science Masters Program

The department offers a Master's of Science in Computer Science. The degree is offered under both the Thesis (Plan I) and the Comprehensive Examination (Plan II), and each plan requires forty-nine units of work. For full-time students, all the requirements can be completed within two years.

Computer Science Core. All students must complete a set of three core courses that provide a foundation for the study of computer science. To sensitize students to issues on the forefront of CS research and expose students to the breadth of the faculty's expertise, students must also take a one-quarter research seminar that is offered at least every fall quarter. In particular, the following 4 courses must be completed with an average grade of B, and no grade below B-:

- CSE 202
- CSE 221
- CSE 240A
- CSE 292

Technical Concentration. To help students establish goals and obtain a coherent education, students choose an area of concentration. Each concentration is in an area in which the faculty has significant research expertise. The typical concentration is a collection of three courses designed to give the student in-depth training in a chosen field.

Students must complete 12 units from one of the approved lists of courses in the following concentration areas, or design a personalized concentration with the help of a faculty member:

- Artificial Intelligence
- Bioinformatics

- Communication Networks
- Computer Architecture and Compilers
- Computer Graphics and Vision
- Cryptography and Security
- Database and Information Retrieval
- Design Automation for Microelectronic Designs
- Distributed Computing
- Embedded Systems and Software
- Parallel and Scientific Computing
- Software Engineering
- Storage Systems
- PhD Preparation

Plan I: Thesis, No Comprehensive Exam

This plan of study involves the course work outlined above and research, culminating in the preparation of a thesis. A minimum of forty-nine units of credit is required as follows:

1. **Core** : 13 credits, with an average grade of B, and no grade below B-.
2. **Concentration**: 12 units chosen from those offered on the [approved list of MS Concentrations](#) . These classes can be taken for a letter grade or S/U.
3. **Electives**: 12 units of technical electives consisting of CSE graduate courses or courses from a list of approved electives. The units obtained in the courses CSE 293, CSE 298, CSE 299, CSE 500, or CSE 501 and any of the one or two unit seminar courses CSE 209, CSE 229, CSE 269, CSE 290 do not count toward the 12 units required. The majority of these classes must be within the CSE department and must be graduate level (200 or higher). These classes can be taken for a letter grade or S/U.
4. **Thesis**: 12 units of CSE 298 is also required.

A thesis based on research must be written and subsequently reviewed by the student's thesis committee, which is set up at the beginning of the first quarter of CSE 298, consisting of three faculty members, with at least two members from within the CSE department. The committee is approved by the Dean of Graduate Studies. You must see the MS graduate advisor to fill out the requisite paperwork.

Plan II: Comprehensive Examination, No Thesis

In order to receive the MS degree in computer science under this plan, a student completes the course requirements listed below including a one-quarter project, and passes a written comprehensive examination. The comprehensive examination is designed to test the student's knowledge in basic computer science material. The examination can normally be passed with a thorough knowledge of topics covered in an undergraduate CS program and the [three Computer Science MS core classes](#) . In particular, the written examination is structured around algorithms and data structures, operating systems, and computer architecture and digital logic design. The course and exam requirements are as follows:

1. **Core** : 13 credits, with an average grade of B, and no grade below B-.
2. **Concentration**: 12 units chosen from those offered on the [approved list of MS Concentrations](#) . These classes can be taken for a letter grade or S/U.

3. Electives: 20 units of technical electives consisting of CSE graduate courses or courses from a list of approved electives. The units obtained in the courses CSE 293, CSE 298, CSE 299, CSE 500, or CSE 501 and any if the seminar courses CSE 209, CSE 229, CSE 269, and CSE 290 do not count toward the 20 units required. The majority of these classes must be within the CS department and must be graduate level (200 or higher). These classes can be taken for a letter grade or S/U.
4. Project: 4 units of CSE 293 is also required.
5. Comprehensive examination: The student must secure at least a Master's level pass in the written comprehensive examination.

Computer Engineering Masters Program

The computer engineering program, jointly administered between CSE and the [Electrical and Computer Engineering Department](#), offers a masters degree with the title Computer Science and Engineering (Computer Engineering). Computer engineering explores the engineering analysis and design aspects of algorithms and technology. Specific research areas include computer systems, signal processing systems, architecture, networks, computer-aided design, fault-tolerance, and data storage systems. The computer engineering master of science degree requires forty-nine units of work; students may elect the Thesis Plan I or Comprehensive Examination Plan II. For full-time students, all the requirements can be completed within two years.

Computer Engineering Core. All students must complete a set of eight core courses from the areas of software, hardware, and analysis, providing a foundation for computer engineering. To sensitize students to issues on the forefront of CE research and expose all students to the breadth of the faculty's, students must also take a one-quarter research seminar that is offered at least every fall quarter. In particular, the following core courses must be completed with an average grade of B, and no grade below B-:

- Three Software Courses:
 - CSE 202
 - CSE 221
 - CSE 231
- Three Hardware Courses:
 - CSE 240A
 - ECE 260A
 - CSE 243A or CSE 244A or CSE 244B or ECE 251A
- Two Analysis Courses:
 - CSE 200 or CSE 201A
 - CSE 222A or ECE 257A
- and
 - CSE 292

Plan I: Thesis Option, No Comprehensive Exam

This plan of study involves both coursework and research, culminating in the preparation of a thesis. A total of forty-nine units of credit is required, as follows:

1. [Core Courses](#) : 33 credits, with an average grade of B, and no grade below B-.
2. Electives: Students must elect at least four technical units among graduate courses within the

Departments of CSE, MAE, ECE, Mathematics, or Physics.

3. Thesis: 12 units of CSE 298 must be taken to fulfill the research requirements.

A thesis based on research must be written and subsequently reviewed by the student's thesis committee, which is set up at the beginning of the first quarter of CSE 298, consisting of three faculty members, with at least two members from within the CSE department.

Plan II: Comprehensive Examination, No Thesis

In order to receive the M.S. degree in computer engineering under this plan, a student must complete the course requirements listed below and pass a written comprehensive examination. The comprehensive examination is designed to test the student's knowledge in basic computer science and engineering material. The examination can normally be passed with a thorough knowledge of topics covered in the undergraduate and the first-year graduate computer science or computer engineering programs. In particular, the written examination is structured around the following three CSE core areas: algorithms and data structures; operating systems; and computer architecture and digital logic design. This examination is the same for both the computer science and the computer engineering graduate programs.

1. [Core Courses](#) : 33 credits, with an average grade of B, and no grade below B-.
2. Electives: Students must elect at least 12 technical units among graduate courses within the departments of CSE, MAE, ECE, Mathematics or Physics.
3. Project: 4 units of CSE 293.
4. Comprehensive Examination: The student must secure at least a Master's level pass in the written comprehensive examination.